Elgin Area
Primary Water Supply System

2023 Compliance Report

Contact Info:

Owner:
Elgin Area Primary Water Supply System Board of Management
c/o City of London, Regional Water Supply Division
235 North Centre Road, Suite 200, London, ON N5X 4E7
519-930-3505

Operating Authority:
Ontario Clean Water Agency
P.O. Box 220, Port Stanley, ON N5L 1J4
519-782-3101

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Profile

Who We Are

The Elgin Area Primary Water Supply System (EAPWSS) is owned by a Board of Management who governs the drinking water system. The Board of Management is made up of members appointed from each of the eight (8) member municipalities that are currently supplied with water from the EAPWSS. One of these member municipalities, the City of London, acts as the Administering Municipality. Accordingly, the City of London provides all associated administrative and management services on behalf of the Board. The Board of Management currently contracts the operation and maintenance of the EAPWSS to the Ontario Clean Water Agency (OCWA), an independent Operating Authority.

Operating Authority:

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

EAPWSS Board Member Municipalities:

- City of London (Administering Municipality)
- Town of Aylmer
- Municipality of Bayham
- Municipality of Central Elgin
- Municipality of Dutton Dunwich
- Township of Malahide
- City of St. Thomas
- Township of Southwold

What Is Important

Values of the Water System

The values of the EAPWSS are the inherent beliefs or moral standards that generally reflect what the EAPWSS Board of Management stands for and believes in:

- **Sustainable** - be financially, environmentally, socially, and physically sustainable;
- **Inclusive** - provide access to bulk drinking water for current and prospective members, in accordance with Board policy;
- **Fair and equitable** - balance the interests of individual members with the best interests of all members, as well as the needs of existing members with the needs of new members;
- **Vigilant** - ensure an adequate supply of safe and reasonably priced drinking water is available to members;
- **Innovative** - be receptive to and supportive of new ideas and opportunities for improvement;
- **Cooperative** – be supportive to the needs of the Elgin Area Primary Water Supply System;
- **Open and transparent –** conduct business in a manner that enables member municipalities and the public to review and provide input into major decisions as appropriate;
- **Public Ownership –** retain ownership of the water system in public hands.

What We Do

Water Treatment & Supply

The EAPWSS is responsible for the treatment and transmission of drinking water to eight (8) member municipalities in southwestern Ontario. The population served by this system is approximately 138,000 (as per the 2020 Master Water Plan). Water is provided bulk wholesale to the member municipalities who then distribute it to their customers.

The Elgin Area Water Treatment Plant (WTP) was constructed in the late 1960's and officially began operating in 1972. The WTP employs pre-chlorination, screening, powder activated carbon addition (seasonally on an as-required basis), coagulation, flocculation, sedimentation, dual-media filtration, ultra-violet (UV) disinfection, post-chlorination, fluoridation and pH adjustment using both carbon dioxide and sodium hydroxide to treat raw water obtained from Lake Erie. After the water is treated it is pumped from the WTP to the member municipalities or to the terminal storage reservoirs. The drinking water system is monitored at various locations via a Supervisory Control and Data Acquisition (SCADA) system**.**

The EAPWSS is operated under the Municipal Drinking Water Licence (MDWL) #048-101 and Drinking Water Works Permit (DWWP) #048-201.

EAPWSS Assets:

- 1 low lift pumping station
- 1 water treatment plant
- 1 residuals management facility
- 2 surge facilities
- 1 terminal storage reservoir site (consisting of 2 reservoir cells)
- 14.7 km primary transmission pipeline (2 pipelines, 1 temporarily decommissioned)

Figure 1: Low Lift Pumping Station located on Lake Erie

EAPWSS: At A Glance

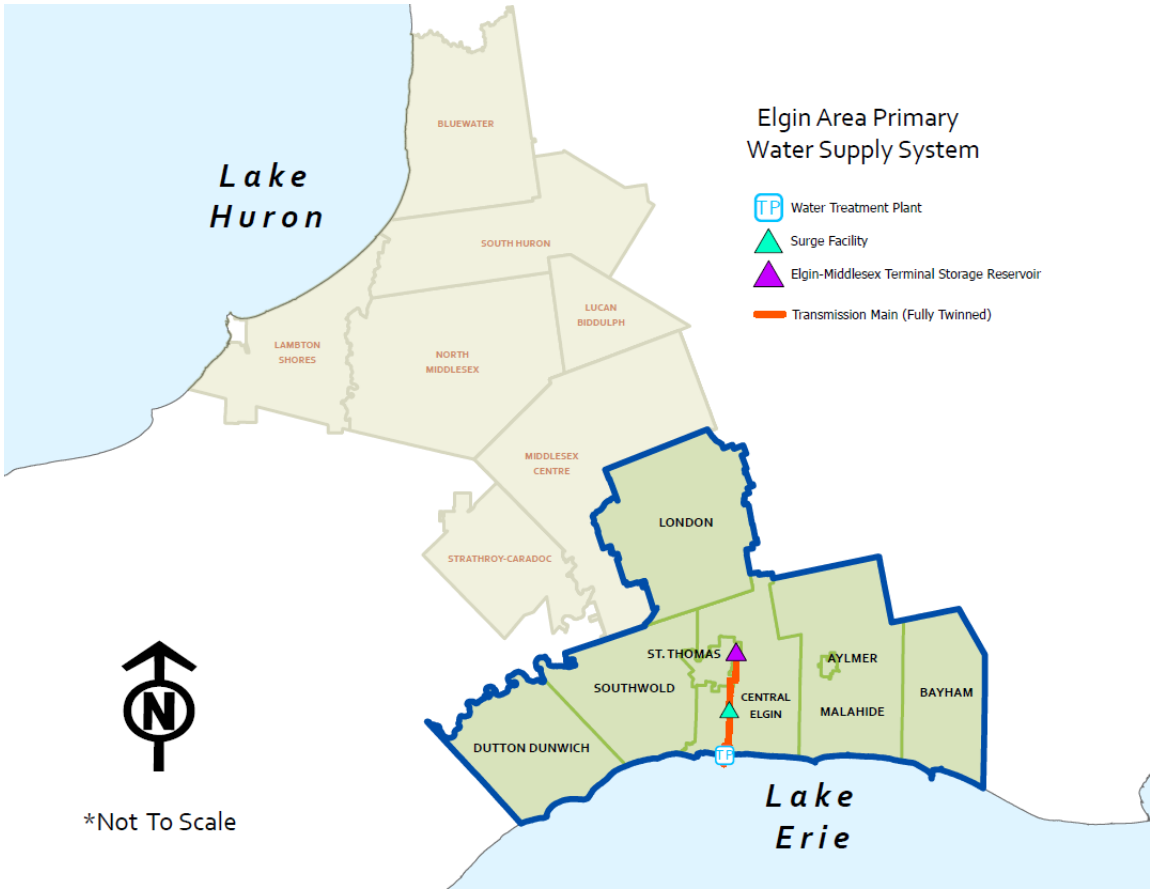

Figure 2: EAPWSS Major Infrastructure Locations

The Water Treatment Process

The following figure provides a general overview of the conventional water treatment process. The processes outlined below are very similar to the treatment at the Elgin Area WTP, although they are not an exact representation. Some details may vary.

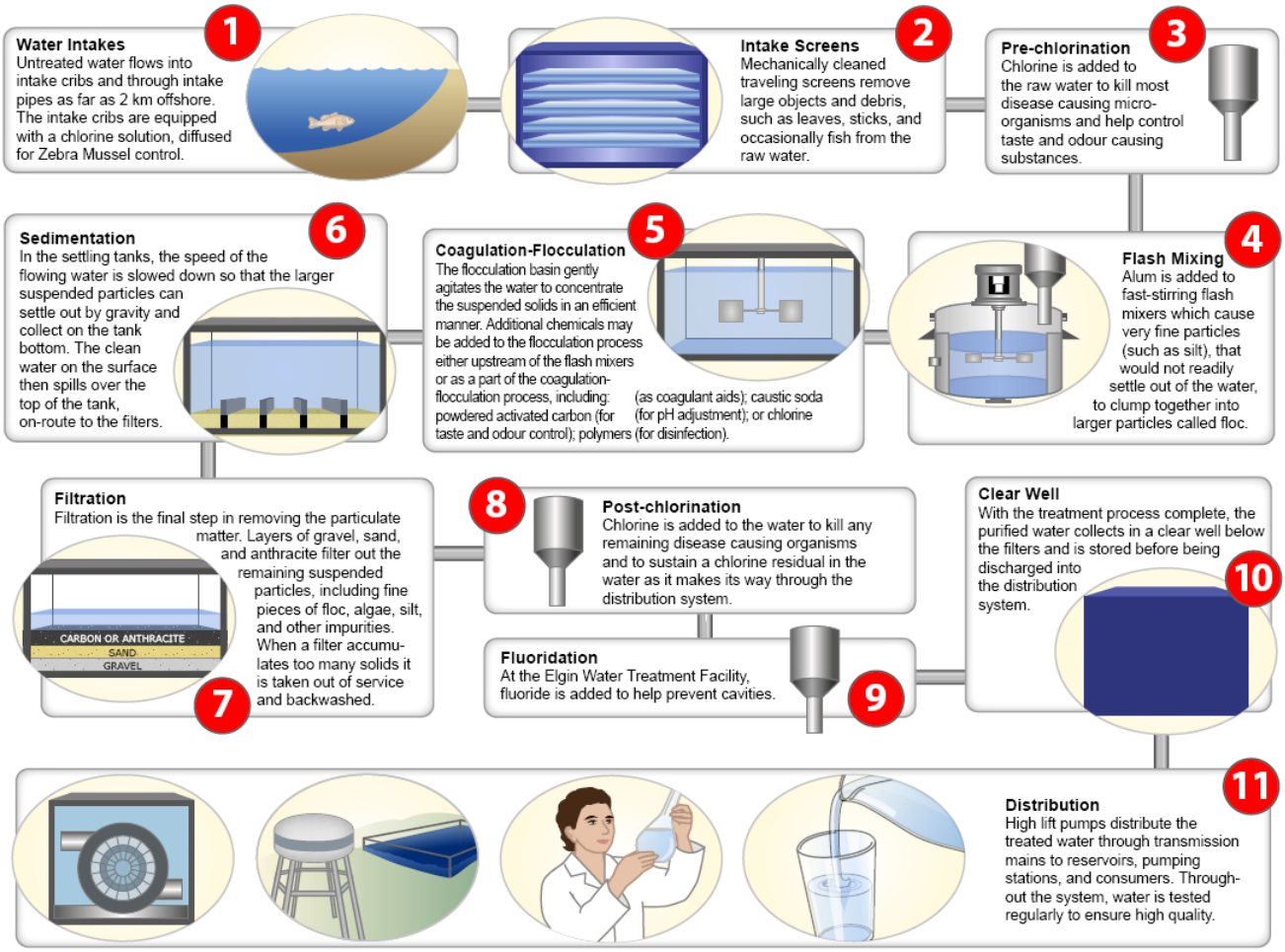

Figure 3: General Overview of the Water Treatment Process

At the Elgin Area WTP, several additional treatment steps take place:

- Carbon dioxide is injected prior to the flash mixing (Step 4) to lower the raw water pH to improve the treatment process effectiveness and efficiency.
- A UV reactor is located after each filter (Step 7) for additional disinfection when required.
- Sodium Hydroxide is added as the treated water leaves the WTP and enters the transmission system (Step 11) to raise the treated water pH, resulting in reduced corrosion potential.

2023 Highlights - General

Financial Plan Update

The Financial Plan update for the EAPWSS was awarded in June 2021 to Watson & Associates Economists Ltd. In March 2023 the updated Financial Plan was finalized and endorsed by the Board. The Financial Plan is available online.

The 2023 Financial Plan Update ensures that funds are available to meet current and required needs of the regional system in a timely and planned way well into the future. The Plan reviewed the policies, directions, and specific actions that are designed to be inclusive, fair, and equitable and provided recommendations to address current and anticipated pressures as well as opportunities facing the water system.

The Plan assists the Board in continuing to accomplish several key goals including the move toward a full lifecycle replacement funding structure and ensuring the ability to replace infrastructure at the end of its useful life. The Plan also considers the status of the reserve funds to ensure that they continue to remain healthy to stabilize rates and minimize use of debt by accessing the Board reserves.

ISO 14001:2015 Recertification

The EAPWSS has an Environmental Management System (EMS) which has been certified to the ISO 14001 standard since 2003. The EAPWSS underwent an external recertification audit in September 2023. It was determined that the EMS met the requirements of the ISO 14001:2015 standard and the EAPWSS was recommended for recertification for another three-year period. The continued utilization and certification of the EMS to the ISO 14001 standard is a requirement of the Service Agreement with OCWA and ensures that the Board's environmental commitments continue to be met.

2023 Capital Project Highlights

Low Lift Service Water Connection

The existing service water pipeline between the Elgin Area WTP and the Low Lift Pumping Station building was previously replaced to address longstanding limited service water pressure issues at the Low Lift Pumping Station. This new pipeline had not been put into service, however, due to pipeline profile and hydraulics which necessitated the need for a pressure reducing valve chamber and surge relief valve (along the new watermain near the Storage Building/Maintenance Garage), and a combination air release/vacuum valve (along the new watermain near the top of the hill). A portion of the watermain required lining as well to address pipeline condition.

Engineering design services were provided by GM BluePlan and SCADA integration was provided by Eramosa Engineering Inc. In March 2023 the construction tender was awarded to Birnam Excavating Ltd.

In the summer of 2023 construction was initiated and it was substantially completed in the fall of 2023. The project included the watermain yard piping and tie-in, valve chamber, valves and appurtenances, new hydrant near the Low Lift Pumping Station, watermain relining driveway restoration and repaving, and installation of a new flow meter at the Low Lift Pumping Station, as well as modifications and associated instrumentation and programming. This project improves operational conditions at the Low Lift Pumping Station, and for the designated watermain which services the Low Lift Pumping Station, to enhance overall performance and resiliency.

Figure 4: Installation of a new pressure reducing valve chamber.

Filter Emergency Repairs

The Elgin Area WTP utilizes four (4) dual-media filters as part of the conventional water treatment process. Water flows from the filters into a common filtered water conduit, which then further flows into the clearwell. During routine maintenance and inspection of the filtered water conduit, a large amount of filter media was observed to be accumulating at the discharge piping of filters #2 and #3. It was also noted that the filter's mortar coating was spalling (i.e. breaking up) and ending up in the filtered water conduit. The presence of filter media and mortar coating material in this location suggested that the filter underdrains, which structurally separate the filter media from the treated water in the filtered water conduit and clearwell, were in the process of failing and presented a risk to water quality. Filter #2 was taken out of service to prevent further damage and an emergency repair was scheduled. Two suppliers, AWI Underdrains and Continental Carbon Group (CCG), were retained to inspect the filter and perform repairs.

CCG repaired the underdrain system, repaired and re-coated the filter box, and installed new filter media. Filter #2 was returned to service in September 2023. A similar repair is being considered for filter #3 in 2024.

Figure 5: Filter #2 pre-repair. The filter media (anthracite and sand) was removed to inspect the filter. Four (4) underdrains are set aside revealing filter

media (sand) below and confirming a leak between the underdrains and concrete filter base.

Asset Condition Field Assessments

The 2022 Asset Management Plan included recommendations surrounding the updating of condition assessment information and reducing the uncertainty in asset condition data confidence. The most recent formal comprehensive independent visual condition assessment available for the EAPWSS assets was completed in 2013. The EAPWSS retained WSP Canada in 2023 to complete a comprehensive field verified visual condition assessment of the EAPWSS assets. The results of this field verified assessment resulted in a marked overall improvement to the WTP asset condition data confidence from previous field and desktop assessments. The report also identified deficiencies in certain assets and/or recommended remediation and improvement activities to extend the service life of the assets. This project has enhanced the utility's asset management system by establishing a new asset condition baseline, which provides improved data accuracy and completeness, increased the level of confidence in our asset data, and will support the utility in making data-driven evidence-based decisions.

Standby Generator Fuel System Repairs

The emergency and back-up power system at the Elgin Area WTP consists of a 2.5 megawatt (MW) diesel-fueled generator and a 100 kilowatt (kW) diesel-fueled generator, each with separate day tanks, inlet air damper assemblies, a fuel oil cooler for the 2.5 MW generator, and a separate exhaust system for each generator. A 65,000 litre bulk storage tank is installed beneath a landscaped area in relatively close proximity to the generator building.

In accordance with regulations under the *Technical Standards and Safety Act*, fuel distributors are required to inspect generator installations every ten (10) years. During the most recent inspection, the fuel distributor noted a number of non-compliances with the generator fuel supply system. The fuel system had to be updated to bring it into compliance with the current version of the Canadian Standards Association (CSA) code for oil-burning equipment, to allow for future fuel deliveries.

The project included replacement of the fuel day tank for the large backup power generator, modifications to various equipment associated with the fuel system (e.g. valves, fuel flex lines, pump control panels), alterations to the building so that the generator room now forms secondary containment, and other minor modifications.

The engineering assignment was completed by GM BluePlan. The construction was undertaken by WSN Construction in 2023 with anticipated completion in early 2024.

Figure 6: New fuel day tank, diesel transfer pump control panels, and associated piping.

Figure 7: View of the 2.5 MW generator and associated fuel day tank, with the smaller 100 kW generator in the background.

Ultraviolet (UV) System Replacement

The existing UV disinfection system at the Elgin Area WTP is at the end of its manufactures life cycle and requires replacement. The existing UV system is considered “first-generation” technology which poses various operational challenges, including equipment servicing and obtaining replacement parts. The existing system is energy inefficient in comparison to current UV systems now available.

A study was completed in 2020 to evaluate alternatives for renewal or replacement of the existing UV system. In June 2022, AECOM Canada Ltd. was awarded the consulting engineering services for the detailed design of the UV upgrade.

In 2023, AECOM advanced the detailed design of the UV system to the point where the UV equipment could be selected. Due to the long lead times required to order, fabricate, and deliver the new UV system, pre-selection and pre-purchase of this equipment was recommended. In June 2023 the Board approved the pre-purchase of the new UV disinfection system from Trojan Technologies, a local company that is an industry leader in UV disinfection. The shop drawings for the Trojan UV equipment was finalized in December 2023.

The new UV equipment is anticipated to arrive onsite in summer 2024. The project is anticipated to be tendered in summer 2024, with construction starting in fall 2024 and continuing through 2025.

This project will also include a reservoir drain repair and a partial replacement of the filter backwash header.

Figure 8: One (1) of four (4) original TrojanUVSwift reactors that is scheduled for replacement with a new UV disinfection system.

Backwash Pump Replacements

The existing filter backwash pumps are original to the Elgin Area WTP construction and are over fifty years old. Two backwash pumps are utilized for each filter backwash in order to satisfy the full flow and volume range necessary to adequately clean the filters. There are no backup or standby pumps for the backwash system should one of the existing pumps fail or be taken out of service for maintenance. Therefore given the age of the pumps (end of life) this replacement project is a priority.

In 2021, AECOM commenced the detailed design and equipment selection. The pump pre-purchase was approved at the March 3, 2022 Board meeting. Shop drawings for the backwash pumps were provided in 2022 and were approved in December 2023. It is estimated that the new pumps will be delivered to site by summer 2024.

The Backwash Pump Replacement project is being combined with the above noted UV System Replacement project as one tender/construction contract, with the same overall schedule outlined above.

Building Roof Replacements

A condition assessment in 2012 identified that several roofs at the Elgin Area WTP required advanced repairs or replacement. In 2023 the Chemical and Flocculation Building roof was replaced. This was part of a multi-year replacement program which included previous replacements of the Chlorine Building roof in 2022, and a portion of the High Lift / Administration Building roof in 2020-2021. This replacement program concluded in 2023.

Residuals Management Facility (RMF) Mixing Pump

GM BluePlan was retained to complete an operational and maintenance investigation of the Sludge Mixing Pump which was experiencing ongoing failures, excessive wear, and significant upkeep and maintenance costs. An in-depth review of the pump technology, operating conditions, and maintenance procedures was completed to develop a corrective action plan. In 2023, the recommended piping and system modifications were completed to mitigate risks.

2023 Flow Summary

As per the water system's current Permit to Take Water (PTTW), the amount of raw water taken into the EAPWSS cannot exceed 91.0 million litres/day. This converts to 1053 litres/second.

The water taking in 2023 was approved under PTTW #P-300-4168104920.

As per the water system's Municipal Drinking Water Licence (MDWL), the rated capacity of the WTP is 91.0 million litres/day. The maximum daily flow of treated water from the treatment plant into the distribution system shall not exceed this value.

The following table contains a flow summary, with a comparison to the system's rated capacity and permit limits in order to assess the capability of the system to meet existing and planned uses.

	Total Daily Flow (ML/day)	**Total Daily Flow (% of Capacity)**	**Daily Instantaneous Peak Flow (L/s)**
PTTW – permitted amount of raw water taking	91.0	100.00%	1053
Raw Water Flow – Average Day	45.1	49.6%	886
Raw Water Flow – Max. Day	64.0	70.3%	1050
WTP Rated Capacity	91.0	100.00%	1053
Treated Water Flow – Average Day	44.1	48.5%	766
Treated Water Flow – Max. Day	61.1	67.1%	1030

A complete flow summary for the EAPWSS can be found in Appendix A.

Treated Water Flows

The average daily flow from the EAPWSS was 44.1 ML/day, which is a <1% increase from the previous year. The maximum daily flow for 2023 was 61.1 ML/day, which is a <1% increase from the previous year.

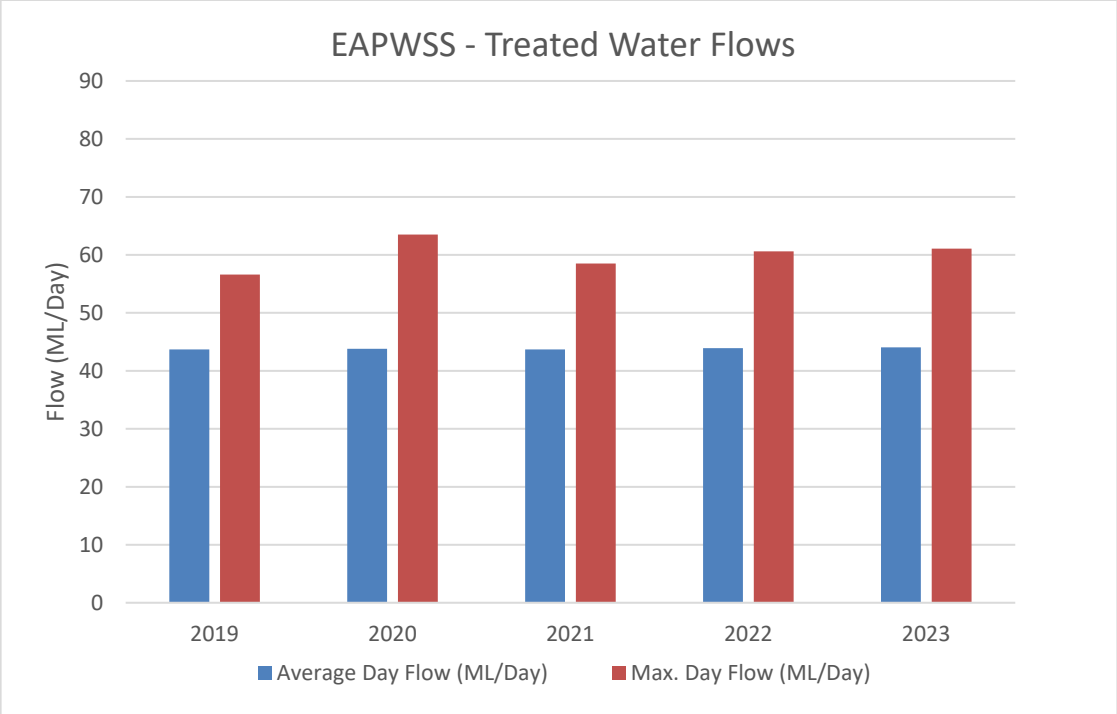

Figure 9: Five (5) Year Treated Water Flow Comparison

The City of London utilizes the largest volume of treated drinking water from the EAPWSS. As shown in Figure 10, the City of London utilizes 52.36% of the volume; the City of St. Thomas utilizes 25.71%, and the other six municipalities utilize the remaining 21.93% of the volume.

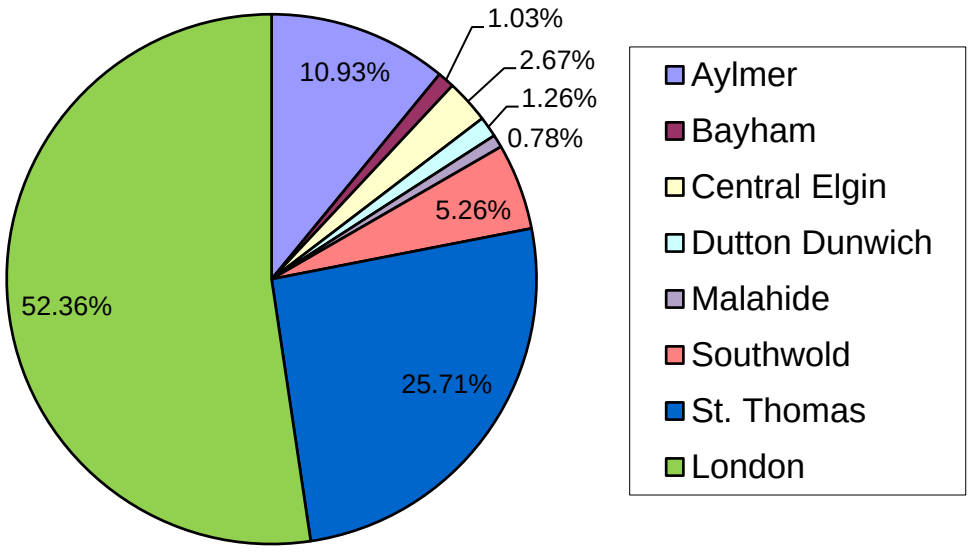

Figure 10: 2023 Treated Water Volumes per Municipality

2023 Chemical Consumption

A variety of water treatment chemicals are used at the EAPWSS to ensure safe, clean drinking water. The following table outlines the chemicals most frequently used for the EAPWSS. As part of the system's registered ISO14001 Environmental Management System, objectives and targets are currently in place to optimize chemical usage.

Chemical	Purpose	Total amount used in 2023
Aluminum Sulphate	Coagulant	595,057 kg
Polymer	Coagulant aid	91 kg
Powdered Activated Carbon	Taste and odour control (seasonally)	16,027 kg
Chlorine Gas	Primary disinfection	19,879 kg
Chlorine Gas	Mussel control at the intake crib	5,675 kg
Fluoride	Prevention of dental cavities	9,046 kg
Carbon Dioxide	pH adjustment - injected at the start of the treatment process to lower the raw water pH for improved treatment effectiveness and efficiency	165,014 kg
Sodium Hydroxide	pH adjustment – injected at the end of the treatment process to raise the treated water pH for reduced corrosion potential	274,605 kg
Sodium Bisulphite	Residuals Management Facility Dechlorination	7,287 kg
Polymer	Residuals Management Facility Centrifuge	1,971 kg
Polymer	Residuals Management Facility Thickener	536 kg

2023 Water Quality Sampling and Monitoring

The EAPWSS consistently provides treated drinking water with water quality above the standards required by provincial regulation. Where applicable, this is a result of the EAPWSS standards being more stringent than what is required by provincial regulation. For example, the target at the EAPWSS for filtered water turbidity (a measure of the cloudiness of water) is ten times more stringent than the provincial standard. The EAPWSS is utilizing best management practices and continual improvement to ensure that high drinking water standards are maintained and enhanced where possible.

All water quality sampling at the EAPWSS is performed in accordance with the Safe Drinking Water Act and its associated regulations. All samples are collected by licensed operating authority personnel and are submitted to Canadian Association for Laboratory Accreditation (CALA) / Standards Council of Canada (SCC) accredited laboratories for both bacterial and chemical analysis.

In 2023, a total of 537 microbiological samples were collected from raw, treated and distribution system water, and were submitted to the laboratory for E. Coli, total coliforms and heterotrophic plate count (HPC) analysis. There were no reported incidents of adverse microbiological test results in 2023. For more information please see the Annual Report which is included as Appendix B.

Annual samples are collected and submitted to the laboratory for inorganics (metals) and organics analysis, which include herbicides, pesticides and volatile organic compounds. Quarterly sampling and laboratory analysis is also completed for trihalomethanes and haloacetic acids (disinfection by-products), nitrates and nitrites.

Seasonal samples are collected and submitted to the laboratory for total microcystin analysis from June through to the end of October as part of the Harmful Algal Bloom (HAB) Monitoring and Sampling Program. The purpose of the HAB program is to keep drinking water safe from potential impacts of aquatic algal bacteria overgrowth (i.e. cyanobacteria) which can produce toxins (i.e. cyanotoxins) in the surrounding water when the algal cells are damaged or die. These toxins, which include microcystins, can be harmful to people. A total of 24 raw water samples were collected and submitted to the laboratory for total microcystin analysis. There were no detectable results in the raw water samples.

In addition, the WTP operator samples the raw, in-process and treated water six times per day and carries out an array of physical and chemical analysis for operational control.

As required by regulation, the EAPWSS also prepares an Annual Report which includes a summary of water quality test results and a maintenance report. The 2023 Annual Report can be found in Appendix B.

Residuals Management Facility (RMF) Compliance

The Municipal Drinking Water Licence (MDWL) for the EAPWSS requires that non-compliant discharges of total chlorine residual to the natural environment must be reported. This annual compliance report includes a report on the date and time of any non-compliant discharges, the duration, maximum total chlorine residual value, volume of non-compliant discharge, reason, and corrective action taken.

In 2023, there was one (1) incident of reportable failure to continuously monitor total chlorine residual. The 2023 RMF Non-Compliant Discharge Summary Report can be found in Appendix C.

Research and Partnerships

The EAPWSS acknowledges the importance of scientific research on water quality and the effects on human health. The EAPWSS has partnered with the Natural Sciences and Engineering Research Council (NSERC) Chair in Drinking Water Research at the University of Waterloo and the University of Toronto to pursue research opportunities, as well as Western University. The EAPWSS is a member of the Water Research Foundation (WRF). In addition, the EAPWSS continues to evaluate and conduct specific research on the efficacy of the existing treatment processes, optimizing and improving treatment systems, and evaluating the potential and need of more advanced treatment alternatives.

Ministry Inspection

Annual Inspection

The Ontario Ministry of the Environment, Conservation and Parks (MECP) conducts an inspection of the EAPWSS annually. A MECP inspection took place on January 11, 2024. The final inspection report was issued on February 23, 2024. There were no non-compliance or best management practices identified in the inspection report. The final inspection rating received for the 2023-2024 reporting year was 100%.

Elgin Area
Primary Water Supply System

Regional Water Supply Division
235 North Centre Road
Suite 200
London, ON N5X 4E7
519-930-3505

https://huronelginwater.ca/

Appendix A: 2023 Flow Summary

1. Raw Water Intake – Daily Flow (m^3/Day)

Day	January (m^3/day)	February (m^3/day)	March (m^3/day)	April (m^3/day)	May (m^3/day)	June (m^3/day)	July (m^3/day)	August (m^3/day)	September (m^3/day)	October (m^3/day)	November (m^3/day)	December (m^3/day)
1	38,362	38,256	57,976	35,908	37,060	50,148	45,076	53,900	50,780	45,420	41,976	49,056
2	43,968	45,534	51,152	33,684	44,636	57,944	47,660	43,864	47,552	48,120	45,160	40,960
3	43,150	45,396	39,302	45,480	40,728	59,640	46,812	49,340	45,832	45,768	43,324	46,304
4	34,718	21,626	45,004	39,500	50,072	63,972	46,444	47,700	50,336	51,344	47,276	42,764
5	58,266	41,804	46,188	44,584	42,404	48,104	51,124	48,660	53,444	51,620	45,668	51,136
6	42,180	55,956	37,006	39,784	48,492	55,464	40,424	47,168	48,476	43,292	40,200	45,876
7	45,396	40,332	41,906	39,544	43,680	52,536	54,128	51,848	50,344	49,164	17,388	46,252
8	49,066	47,778	42,542	44,360	48,632	51,760	46,740	45,696	50,540	41,464	49,076	48,608
9	42,790	43,454	45,218	40,640	41,576	52,296	45,012	47,808	43,952	50,564	48,332	47,288
10	36,714	50,906	47,826	49,688	45,424	43,528	50,440	45,756	48,172	39,976	45,788	40,968
11	46,542	37,020	43,278	43,304	52,632	60,952	46,748	48,592	44,412	52,496	38,884	47,452
12	46,514	45,726	43,000	42,496	46,784	45,012	45,564	49,132	45,972	47,364	47,708	41,956
13	38,548	19,636	35,512	55,136	46,800	41,468	47,616	44,160	47,556	42,696	45,136	54,912
14	45,712	31,602	50,596	43,816	45,936	51,496	43,724	50,692	50,500	49,248	47,620	39,780
15	45,472	36,192	51,092	41,568	50,704	43,384	50,148	49,720	52,984	44,044	49,360	44,428
16	40,898	42,188	42,512	48,276	46,584	48,692	47,152	46,320	44,444	47,668	46,336	39,160
17	42,822	44,424	44,236	39,232	46,096	41,884	45,548	50,416	48,428	47,528	43,964	34,000
18	47,672	48,452	46,106	43,376	45,772	46,672	47,828	51,428	49,600	47,492	43,452	39,324
19	43,372	44,042	49,130	36,780	47,748	51,208	48,088	42,896	39,148	45,548	42,984	37,496
20	47,578	40,908	42,756	42,960	47,620	52,356	49,100	46,124	26,600	48,444	46,196	39,612
21	37,198	44,406	51,212	46,620	43,020	55,556	57,072	49,660	49,080	42,528	43,096	37,852
22	44,130	50,026	37,742	40,440	46,092	45,792	39,100	46,932	46,236	47,468	43,944	39,152
23	43,938	17,364	35,210	43,256	52,592	47,776	50,656	45,484	52,548	51,188	48,900	36,332
24	40,964	25,350	44,612	45,944	43,116	49,348	47,052	45,852	50,076	38,356	40,568	40,712
25	50,832	10,548	40,364	40,440	53,984	48,792	52,968	48,892	50,328	49,160	52,288	33,108
26	44,378	16,070	47,776	46,028	48,336	49,592	44,880	47,448	47,668	47,928	41,376	33,108
27	41,812	20,110	41,658	42,468	46,448	42,060	48,144	46,612	49,376	43,772	44,328	31,616
28	43,200	32,290	43,034	49,732	51,144	54,972	49,516	51,644	50,744	44,828	46,596	33,840
29	41,794		41,018	42,980	55,740	50,660	40,792	44,260	48,260	47,540	50,368	18,716
30	44,894		37,328	48,860	52,504	50,144	47,416	48,388	49,920	40,560	38,712	36,036
31	42,736		49,968		51,504		46,188	48,332		54,728		36,656
Monthly Total	1,355,616	1,037,396	1,372,260	1,296,884	1,463,860	1,513,208	1,469,160	1,484,724	1,433,308	1,447,316	1,326,004	1,254,460

Day	January (m^3/day)	February (m^3/day)	March (m^3/day)	April (m^3/day)	May (m^3/day)	June (m^3/day)	July (m^3/day)	August (m^3/day)	September (m^3/day)	October (m^3/day)	November (m^3/day)	December (m^3/day)
Monthly Minimum	34,718	10,548	35,210	33,684	37,060	41,468	39,100	42,896	26,600	38,356	17,388	18,716
Monthly Maximum	58,266	55,956	57,976	55,136	55,740	63,972	57,072	53,900	53,444	54,728	52,288	54,912
Monthly Average	43,730	37,050	44,266	43,229	47,221	50,440	47,392	47,894	47,777	46,688	44,200	40,466

Annual Total (m^3)	16,454,196
Annual Minimum (m^3/day)	10,548
Annual Maximum (m^3/day)	63,972
Annual Average (m^3/day)	45,080

Note: (i) As per the water system's current Permit To Take Water, the amount of raw water taken into the Elgin Area Water Treatment Plant cannot exceed 91,000 m^3/day.

2. Raw Water Instantaneous Peak Flow (L/s)

Day	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	990	881	999	813	953	901	813	900	991	854	1,000	918
2	898	815	875	410	955	872	862	954	961	884	1,017	942
3	853	995	992	902	924	995	879	961	981	881	901	927
4	786	410	846	986	910	817	835	988	959	906	905	840
5	980	786	827	944	960	838	863	878	977	866	930	854
6	938	988	795	928	992	848	848	997	811	1,000	914	840
7	992	1002	998	794	1,002	847	851	948	792	794	820	862
8	938	829	801	912	944	903	847	941	815	895	924	849
9	986	808	986	897	850	847	851	976	977	865	944	894
10	960	927	911	876	985	941	843	853	877	927	939	886
11	984	965	856	814	1,017	818	850	911	990	842	937	917
12	995	924	879	857	993	910	867	899	854	850	902	941
13	983	891	820	840	861	968	876	834	945	833	896	849
14	957	839	834	884	1,004	899	895	923	981	978	920	901
15	982	895	810	858	1,016	874	816	946	978	987	921	972
16	984	935	965	872	988	946	828	880	897	977	938	883
17	861	991	970	906	795	779	766	908	966	984	1,009	866
18	994	932	977	912	972	969	773	896	929	851	950	890
19	992	990	985	943	810	802	793	909	978	956	877	917
20	952	1000	1,002	907	835	786	800	971	891	902	959	907
21	845	965	980	927	820	800	931	837	979	981	932	867
22	854	881	801	848	802	800	927	896	870	976	516	895
23	911	489	639	842	802	766	941	907	865	863	934	873
24	870	545	986	882	799	800	978	908	877	860	908	879
25	881	517	779	872	887	794	979	1,050	864	869	874	389
26	994	426	922	972	833	800	785	899	862	975	942	404
27	924	616	977	849	932	800	899	828	906	979	879	401
28	844	688	903	954	822	768	960	801	865	856	902	902
29	946		965	930	821	1,003	961	940	827	888	869	552
30	812		796	989	823	830	987	819	850	936	963	849
31	878		836		862		968	999		939		904

Day	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)
Monthly Minimum	786	410	639	410	795	766	766	801	792	794	516	389
Monthly Maximum	995	1,002	1,002	989	1,017	1,003	987	1,050	991	1,000	1,017	972
Monthly Average	928	819	894	877	902	857	873	915	911	908	911	831

Annual Minimum (L/s)	389
Annual Maximum (L/s)	1,050
Annual Average (L/s)	886

Note: (i) As per the water system's current Permit To Take Water, the amount of raw water taken into the Elgin Area Water Treatment Plant cannot exceed 91,000 m^3/day. This converts to 1053 litres/second.

3. Treated Water Daily Flow (m^3/Day)

Day	January (m^3/day)	February (m^3/day)	March (m^3/day)	April (m^3/day)	May (m^3/day)	June (m^3/day)	July (m^3/day)	August (m^3/day)	September (m^3/day)	October (m^3/day)	November (m^3/day)	December (m^3/day)
1	37,036	35916	53,404	34,896	35,728	50,972	45,104	53,240	49,304	45,684	43,052	46,488
2	43,744	44980	51,372	32,624	44,960	55,380	44,636	41,780	46,696	48,580	45,724	41,396
3	43,000	43316	39,640	45,552	39,976	59,408	45,352	48,620	47,144	44,784	42,656	46,200
4	32,568	19096	43,632	38,384	48,764	61,088	46,096	46,528	46,812	48,520	46,804	40,932
5	58,364	39164	45,320	42,968	42,540	46,896	48,936	47,964	52,548	50,940	43,772	50,572
6	41,572	54648	37,684	40,184	47,488	56,692	38,768	45,524	43,536	44,192	41,004	46,796
7	43,112	40060	39,516	39,700	44,360	49,968	52,048	51,576	45,336	45,360	15,372	44,816
8	48,228	48396	41,680	42,164	46,992	50,972	46,048	43,728	46,740	44,452	48,972	46,324
9	42,012	40112	46,496	40,188	42,648	50,496	43,968	46,328	41,988	48,032	46,156	47,328
10	36,016	49728	45,200	49,436	45,260	41,656	49,160	45,584	46,900	39,460	45,384	39,972
11	44,536	37168	43,112	39,584	48,952	58,776	45,892	47,216	42,076	51,496	39,704	47,280
12	48,128	45680	43,032	44,072	46,588	45,440	44,268	47,940	47,616	47,900	46,504	42,224
13	36,516	19120	34,776	55,048	46,872	39,584	45,640	44,036	44,040	42,844	45,436	52,672
14	45,676	30080	51,052	43,896	44,688	49,952	45,412	48,916	47,736	49,628	45,844	39,224
15	43,844	33992	48,228	39,868	51,532	42,344	46,292	47,468	53,852	41,220	48,152	43,720
16	40,520	43456	39,960	47,732	43,932	47,116	46,688	46,152	43,488	47,376	45,592	38,560
17	41,588	42040	45,876	38,832	47,644	41,896	45,688	48,176	46,980	46,964	41,488	34,664
18	43,184	48492	45,096	42,248	44,956	46,352	45,736	50,128	46,764	45,688	44,920	37,896
19	42,616	42316	46,580	37,144	45,880	48,760	47,492	44,032	37,860	45,444	42,192	35,808
20	45,096	40452	42,416	40,448	46,984	52,128	46,996	43,248	22,908	49,608	45,232	39,664
21	38,364	43620	51,552	46,104	43,456	57,060	50,280	49,904	49,316	41,976	41,624	36,856
22	42,464	50216	35,112	39,504	44,928	42,640	39,976	47,028	47,416	45,640	43,384	37,024
23	42,676	16056	33,636	41,428	50,748	49,240	49,748	43,452	50,856	52,232	46,860	35,672
24	39,776	22148	45,284	46,108	43,544	47,080	43,984	45,072	49,640	37,480	38,940	39,672
25	47,244	10908	40,000	40,564	49,732	47,136	51,708	46,136	48,724	50,096	51,204	34,096
26	43,508	14712	47,056	43,456	48,336	50,544	45,740	45,928	47,552	46,020	40,636	30,512
27	41,688	18960	39,608	42,812	45,232	40,560	46,060	45,556	50,452	44,524	44,896	30,448
28	41,316	31638	43,644	47,620	51,432	47,724	48,728	50,636	49,344	45,068	45,752	34,040
29	41,120		38,412	41,380	54,260	49,680	40,888	41,360	46,236	46,596	47,848	18,744
30	44,064		38,828	49,440	51,932	50,304	45,984	49,344	49,328	39,344	39,680	35,040
31	42,812		49,260		50,984		46,240	44,704		53,296		35,920
Monthly Total	1,322,388	1,006,470	1,346,464	1,273,384	1,441,328	1,477,844	1,429,556	1,447,304	1,389,188	1,430,444	1,304,784	1,230,560

Day	January (m^3/day)	February (m^3/day)	March (m^3/day)	April (m^3/day)	May (m^3/day)	June (m^3/day)	July (m^3/day)	August (m^3/day)	September (m^3/day)	October (m^3/day)	November (m^3/day)	December (m^3/day)
Monthly Minimum	32,568	10,908	33,636	32,624	35,728	39,584	38,768	41,360	22,908	37,480	15,372	18,744
Monthly Maximum	58,364	54,648	53,404	55,048	54,260	61,088	52,048	53,240	53,852	53,296	51,204	52,672
Monthly Average	42,658	35,945	43,434	42,446	46,494	49,261	46,115	46,687	46,306	46,143	43,493	39,695

Annual Total (m^3)	16,099,714
Annual Minimum (m^3/day)	10,908
Annual Maximum (m^3/day)	61,088
Annual Average (m^3/day)	44,057

Note: (i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 91,000 m^3/day. The maximum daily volume of treated water that flows from the treatment plant into the distribution system shall not exceed this value.

4. Treated Water Instantaneous Peak Flow (L/s)

Day	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	853	624	866	829	489	865	824	858	844	638	635	640
2	875	650	856	482	871	866	851	860	851	859	875	645
3	856	817	468	865	650	867	917	849	835	646	830	762
4	658	478	865	832	878	854	628	847	843	857	862	626
5	875	648	846	867	647	854	856	836	634	855	634	872
6	829	878	619	832	867	864	841	632	851	635	621	845
7	876	832	758	470	648	866	859	858	853	625	612	872
8	863	863	644	638	859	853	716	836	848	856	859	868
9	831	867	644	627	844	866	847	849	853	862	628	864
10	867	868	834	864	861	859	854	851	838	627	630	838
11	872	481	869	875	862	848	854	844	841	864	627	771
12	866	874	873	881	855	859	847	629	839	867	646	634
13	469	878	643	863	869	821	842	1,027	846	827	641	875
14	863	862	848	848	659	1,030	866	856	838	868	863	461
15	631	867	867	642	858	823	846	847	900	830	639	760
16	618	870	837	627	625	866	857	865	631	859	637	463
17	626	859	634	471	860	866	856	853	836	642	644	650
18	841	869	865	629	645	847	665	626	628	863	647	774
19	852	865	863	649	872	867	644	626	615	840	631	469
20	859	755	654	631	857	866	854	854	850	875	633	463
21	470	866	861	629	630	865	856	850	865	630	634	481
22	629	865	737	610	622	848	624	622	858	874	636	479
23	639	483	640	629	866	840	863	619	861	871	861	484
24	487	482	880	863	847	851	630	840	864	837	836	649
25	700	488	864	632	867	828	859	661	646	861	858	608
26	818	488	864	868	852	852	870	613	643	861	869	468
27	644	467	469	837	862	816	871	614	873	858	852	478
28	854	487	630	896	869	855	872	847	877	647	633	478
29	637		863	869	867	859	639	840	869	860	868	476
30	638		858	874	653	854	866	847	652	460	853	869
31	637		865		866		870	848		870		478

Day	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)
Monthly Minimum	469	467	468	470	489	816	624	613	615	460	612	461
Monthly Maximum	876	878	880	896	878	1,030	917	1,027	900	875	875	875
Monthly Average	743	726	770	738	786	859	811	790	803	788	723	648

Annual Minimum (L/s)	460
Annual Maximum (L/s)	1,030
Annual Average (L/s)	766

Note: (i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 91,000 m^3/day. This converts to 1053 litres/second. The maximum daily volume of treated water that flows from the treatment plant into the distribution system shall not exceed this value.

Appendix B: 2023 Annual Report

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

Drinking-Water System Number:	210000871
Drinking-Water System Name:	**Elgin Area Primary Water Supply System**
Drinking-Water System Owner:	Elgin Area Primary Water Supply System Joint Board of Management
Drinking-Water System Operating Authority:	Ontario Clean Water Agency (OCWA)
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2023 through December 31, 2023

Complete if your Category is Large Municipal Residential or Small Municipal Residential	**Complete for all other Categories.**
Does your Drinking-Water System serve more than 10,000 people? **Yes [X] No [ ]** **Is your annual report available to the public at no charge on a web site on the Internet?** **Yes [X] No [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.** Lake Huron and Elgin Area Water Supply Systems c/o Regional Water Supply Division 235 North Centre Road, Suite 200 London, ON N5X 4E7 https://huronelginwater.ca/ Elgin Area Water Treatment Plant 43665 Dexter Line, Union, ON N0L 2L0	**Number of Designated Facilities served:** N/A **Did you provide a copy of your annual report to all Designated Facilities you serve?** **Yes [ ] No [ ]** **Number of Interested Authorities you report to:** N/A **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?** **Yes [ ] No [ ]**

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

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 EAPWSS:

Drinking Water System Name	Drinking Water System Number
City of London Distribution System	260004917
St. Thomas Area Secondary Water Supply System	260078897
Aylmer Area Secondary Water Supply System	260004722
Port Burwell Area Secondary Water Supply System	260004735
Central Elgin Distribution System	260004761
St. Thomas Distribution System	260002187

Systems that receive their drinking water indirectly from the EAPWSS:

Drinking Water System Name	Drinking Water System Number
Aylmer Distribution System	260002136
Malahide Distribution System	260004774
Dutton Dunwich Distribution System	220002967
Bayham Distribution System	260004748
Southwold Distribution System	210001362
Ontario Police College Distribution System	260002161

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 [ ]

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

[X] Public access/notice via the web
[X] 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 Area Primary Water Supply System employs pre-chlorination, screening, process pH adjustment (utilizing carbon dioxide), powder activated carbon addition (seasonally on an as-required basis), coagulation, flocculation, sedimentation, dual-media filtration, UV disinfection, post-chlorination, final pH adjustment (utilizing sodium hydroxide) and fluoridation to treat raw water obtained from Lake Erie. The WTP has a rated capacity of 91 ML/day (MLD). Water is pumped from the plant through the primary transmission main (900mm diameter) to various communities enroute to the Elgin-Middlesex Terminal Reservoir located in northeast St. Thomas. The drinking water system is monitored at various locations throughout the system via a Supervisory Control and Data Acquisition (SCADA) system.
A Residuals Management Facility (RMF) provides equalization, clarification, sediment thickening and dechlorination. Thickened sediment is dewatered by centrifuges and the thickened sediment is sent to the landfill for final disposal. Clarified and dechlorinated liquid streams are discharged back to Lake Erie through the plant drain.

List all water treatment chemicals used over this reporting period

Carbon Dioxide
Aluminum Sulphate
Cationic Polymer
Powder Activated Carbon
Chlorine Gas
Hydrofluosilicic Acid
Sodium Hydroxide
Dewatering Polymer (Residuals Management Facility)
Sodium Bisulphite (Residuals Management Facility)

Were any significant expenses incurred to?

[X] Install required equipment
[X] Repair required equipment
[X] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred:

Capital Projects:

- Low lift service water connection project
- Safety railing replacements (Low Lift Building, Surge Building)
- Standby generator Technical Standards & Safety Authority (TSSA) fuel system upgrades
- Flocculation Building roof replacement
- Chlorine Building roof drain replacements
- Replaced lighting (Tunnel, Flocculation Building, Chlorine Building, and Low Lift Building)

- Residuals Management Facility (RMF) sludge mixing pump modifications
- Security Upgrades: Installation of cameras and card readers at WTP; fencing and lighting upgrades
- SCADA & PLC software review and upgrade

Maintenance Projects:

- Filter #2 Rebuild
- Chamber P039B and P048 chamber modifications and actuator replacements
- Replacement of Elgin Middlesex Pumping Station Reservoir level transmitter in cell #2

Studies and Design:

- Sodium Bisulphite (SBS) Room industrial hygiene sampling and recommendations
- Water Quality Facility Plan update
- Financial Plan update
- Asset condition field assessment
- Ultraviolet (UV) System Replacement Project – detailed design & equipment pre-selection and pre-purchase
- Backwash Pump Replacement Project – detailed design

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 Report Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
N/A	N/A	N/A	N/A	N/A	N/A

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

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

Location	Number of Samples	Range of E. coli Results (CFU/100 mL) (min #)-(max #)	Range of Total Coliform Results (CFU/100 mL) (min #)-(max #)	Range of HPC Results (CFU/100 mL) (min #)-(max #)
Raw Water	103	(0)-(200)	(0)-(18,100)	(<10)-(1,360)
Treated Water (WTP)	217	(0)-(0)	(0)-(0)	(0)-(20)
Distribution (EMPS Valve House)	53	(0)-(0)	(0)-(0)	(<10)-(30)
Distribution (Fruitridge Surge Facility)	53	(0)-(0)	(0)-(0)	(<10)-(30)

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	Range of Results (min #)-(max #)
Treated Water Free Chlorine (mg/L)	Continuous Monitoring	(0.48)-(1.75)
Treated Water Free Chlorine (mg/L)	2130	(0.77)-(1.83)
Treated Water Turbidity (NTU)	Continuous Monitoring	(0.020)-(1.56)
Treated Water Turbidity (NTU)	2129	(0.019)-(0.196)
Treated Water Fluoride (mg/L)	Continuous Monitoring	(0.11)-(1.43)
Treated Water Fluoride (mg/L)	726	(0.29)-(0.80)
Filter #1 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.024)-(0.269)
Filter #2 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.023)-(0.282)
Filter #3 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.019)-(0.333)
Filter #4 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.013)-(0.310)
Combined Filtered Water Turbidity (NTU)	2131	(0.007)-(0.680)

Summary of Inorganic parameters tested during this reporting period
*(*All tests were conducted on treated water leaving the WTP unless otherwise noted)*

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Arsenic	January 4, 2023 August 1, 2023 November 22, 2023	0.0002 0.0003 0.0003	mg/L mg/L mg/L	NO
Barium	January 4, 2023 August 1, 2023 November 22, 2023	0.0247 0.0238 0.0309	mg/L mg/L mg/L	NO
Boron	January 4, 2023 August 1, 2023 November 22, 2023	0.018 0.019 0.022	mg/L mg/L mg/L	NO
Cadmium	January 4, 2023 August 1, 2023 November 22, 2023	0.000006 0.000004 0.000010	mg/L mg/L mg/L	NO
Chromium	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected 0.00015 Not Detected	mg/L mg/L mg/L	NO
Lead (EMPS Valve House)	January 4, 2023 July 4, 2023 October 3, 2023	Not Detected Not Detected 0.00001	mg/L mg/L mg/L	NO
Mercury	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Selenium	January 4, 2023 August 1, 2023 November 22, 2023	0.00017 0.00013 0.00015	mg/L mg/L mg/L	NO
Uranium	January 4, 2023 August 1, 2023 November 22, 2023	0.000028 0.000037 0.000057	mg/L mg/L mg/L	NO
Sodium	January 12, 2023	16.9	mg/L	NO
Nitrite	January 12, 2023 April 4, 2023 July 4, 2023 October 3, 2023	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
Nitrate	January 12, 2023 April 4, 2023 July 4, 2023 October 3, 2023	0.024 0.277 0.073 0.028	mg/L mg/L mg/L mg/L	NO

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

Summary of Organic parameters sampled during this reporting period
*(*All tests were conducted on treated water leaving the WTP unless otherwise noted)*

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Atrazine + N-dealkylated metabolites	January 4, 2023 August 1, 2023 November 22, 2023	0.00006 0.00004 0.00006	mg/L mg/L mg/L	NO
Azinphos-methyl	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Benzene	January 4, 2023 August 1, 2023 November 22, 2023 November 23, 2023	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
Benzo(a)pyrene	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Bromoxynil	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Carbaryl	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Carbofuran	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Carbon Tetrachloride	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Chlorpyrifos	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Diazinon	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Dicamba	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
1,2-Dichlorobenzene	January 4, 2023 January 19, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
1,4-Dichlorobenzene	January 4, 2023 January 19, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
1,2-Dichloroethane	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Dichloromethane	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
2,4-Dichlorophenol	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Diclofop-methyl	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Dimethoate	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Diquat	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Diuron	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Glyphosate	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) EMPS Valve House	January 4, 2023 April 4, 2023 July 4, 2023 September 19, 2023	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Haloacetic Acids (HAA's) EMPS Valve House = Running Annual Average	2023	Not Detected	mg/L	NO
Malathion	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
2-Methyl-4-chlorophenoxyacetic acid	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Metolachlor	January 4, 2023 August 1, 2023 November 22, 2023	0.00002 0.00001 0.00002	mg/L mg/L mg/L	NO
Metribuzin	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Monochlorobenzene	January 4, 2023 January 19, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
Paraquat	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Pentachlorophenol	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Phorate	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Picloram	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Polychlorinated Biphenyls (PCB)	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Prometryne	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Simazine	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Total Trihalomethanes (THMs) EMPS Valve House	January 4, 2023 April 4, 2023 July 4, 2023 September 19, 2023	0.010 0.012 0.018 0.019	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (THMs) EMPS Valve House = Running Annual Average	2023	0.015	mg/L	NO
Terbufos	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Tetrachloroethylene	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
2,3,4,6-Tetrachlorophenol	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Triallate	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Trichloroethylene	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
2,4,6-Trichlorophenol	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Trifluralin	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO
Vinyl Chloride	January 4, 2023 August 1, 2023 November 22, 2023	Not Detected Not Detected Not Detected	mg/L mg/L mg/L	NO

NOTE: During 2023, no Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Appendix C: 2023 RMF Non-Compliant Discharge Summary Report

Appendix C - 2023 Residuals Management Facility (RMF) Non-Compliant Discharge Summary Report

Date & Time	Duration	Max. Total Chlorine Residual (mg/L)	Volume	Reason	Corrective Actions
October 5th 2024	Event start date & time – September 18th 2024 @09:25 Event end date & time – October 4th 2024 @11:30 Note: The Sodium Bisulphite de-chlorination system operates off of an Oxidation-Reduction Potential (ORP) instrument. Data was reviewed and the de-chlorination system was fully functional during the noted time frame.	Failure to continuously monitor Total Chlorine Residual (TCR) from Residual Management Facility effluent. Note: Any TCR spikes that occurred over 0.1 mg/L were verified by an Operator to be false with a grab sample.	20,021 m3	On Sept 18th the TCR analyzer buffer and indicator bottles were replaced by the RMF Operator-in-Charge (OIC). After the reagents were changed, the analyzer appeared to be working properly and placed back into service. On October 4th, the RMF OIC received a low flow alarm and upon investigation found the buffer and indicator reagent bottles level discrepancy. The RMF OIC stopped the clarifiers (CLF01 and CLF02) and notified the Utility Plant Instrumentation Technician (UPIT) who found the tubes that draw off the reagent and buffer solution bottles to be installed incorrectly. The UPIT correctly installed the instrumentation tubing resolving the issue. Due to the reagent lines not being properly installed, OCWA can't determine that the analyzer functioned properly during the time frame, therefore continuous monitoring was not met.	Retrain Operators on how to properly change reagents. Develop a Standard Operating Procedure (SOP) for RMF TCR reagent changing, start-up and cleaning and complete training on new SOP. Purchase a secondary online TCR analyzer that can be used as a back-up when issues with the primary analyzer arise. All corrective actions have been completed.