Elgin Area
Primary Water Supply System

2013 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 Board of Management owns and governs the drinking water system. The Board of Management is made up of representatives from each of the seven member municipalities that are currently supplied with water from the Elgin Area Primary Water Supply System (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 utilizes the services of an independent contracted Operating Authority.

The water system is operated and maintained by Ontario Clean Water Agency (OCWA) under contract to the Joint Board of Management.

OPERATING AUTHORITY: ONTARIO CLEAN WATER AGENCY / AGENCE ONTARIENNE DES EAUX

Elgin Area Primary Water Supply System

EAPWSS Board Member Municipalities

City of London *(administering municipality)*
Town of Aylmer
Municipality of Bayham
Municipality of Central Elgin
Township of Malahide
City of St. Thomas
Township of Southwold

WHAT WE DO

Water Treatment & Supply

The Elgin Area Primary Water Supply System is responsible for the treatment and transmission of drinking water to seven (7) municipalities in southwestern Ontario. The population served by this system is approximately 112,000. Water is provided bulk wholesale to the municipalities who then distribute it to their customers.

The Elgin Area Water Treatment Plant (WTP) employs pre-chlorination, screening, powder activated carbon addition (seasonally on an as-required basis), coagulation, flocculation, sedimentation, dual-media filtration, 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 various communities or to the terminal storage reservoirs. The drinking water system is monitored at various locations throughout the system via a Supervisory Control and Data Acquisition (SCADA) system.

Elgin Area Primary Water Supply System: Assets

1 low lift pumping station
1 water treatment plant
2 surge facilities
1 in-ground storage reservoir (consists of 2 reservoir cells)
29.4 km of watermain (twinned 14.7 km pipelines)

Figure 1: Low Lift Pumping Station located on Lake Erie

WHAT'S IMPORTANT

Values of the Water System

The values of the Elgin Area Primary Water Supply System are the inherent beliefs or moral standards that generally reflect what the Elgin Area Primary Water Supply System 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.

ELGIN AREA PRIMARY WATER SUPPLY SYSTEM: AT A GLANCE

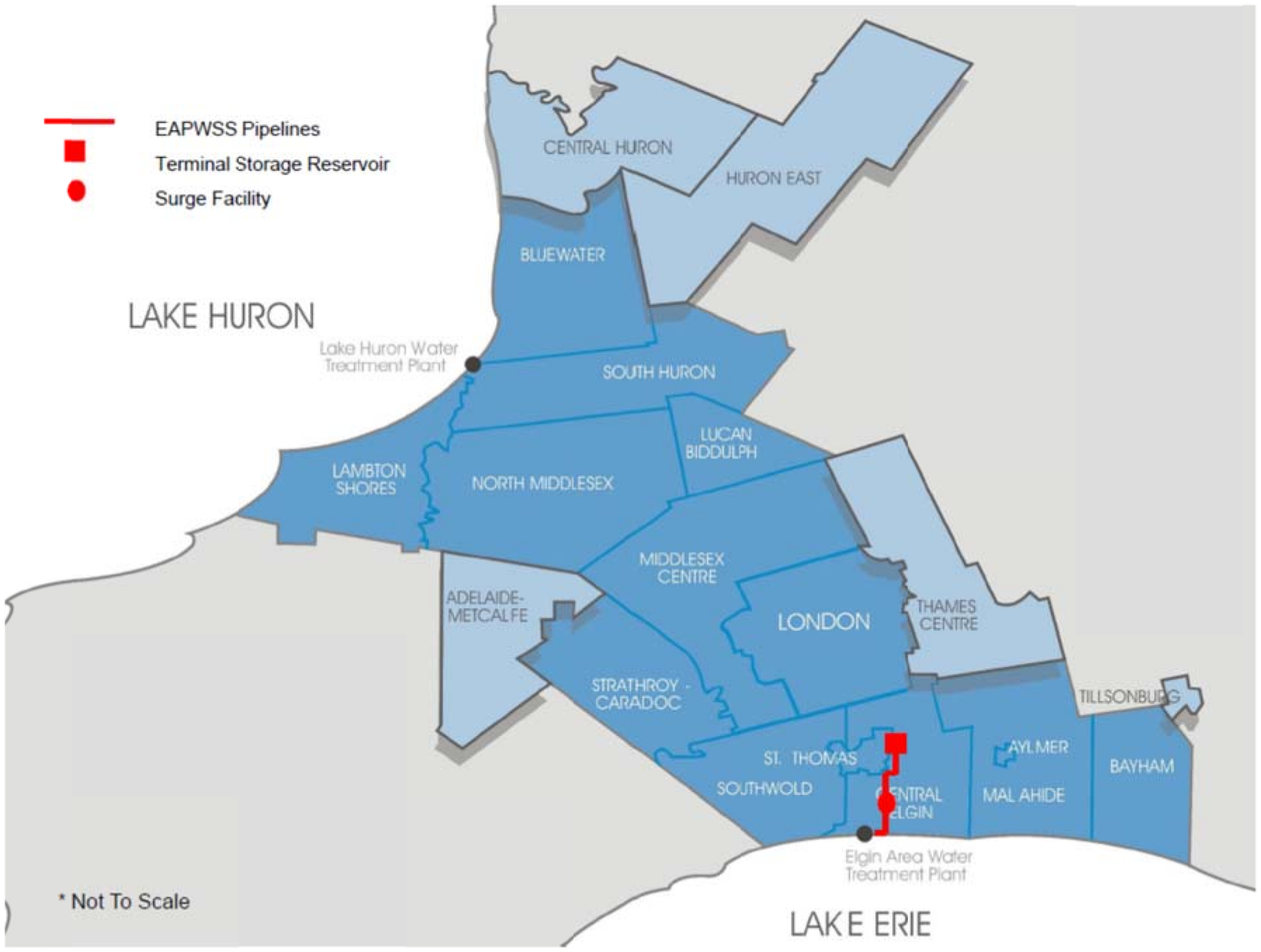

Figure 2: Elgin Area Primary Water Supply System Major Infrastructure Locations

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 Water Treatment Plant, although they are not an exact representation. Some details may vary.

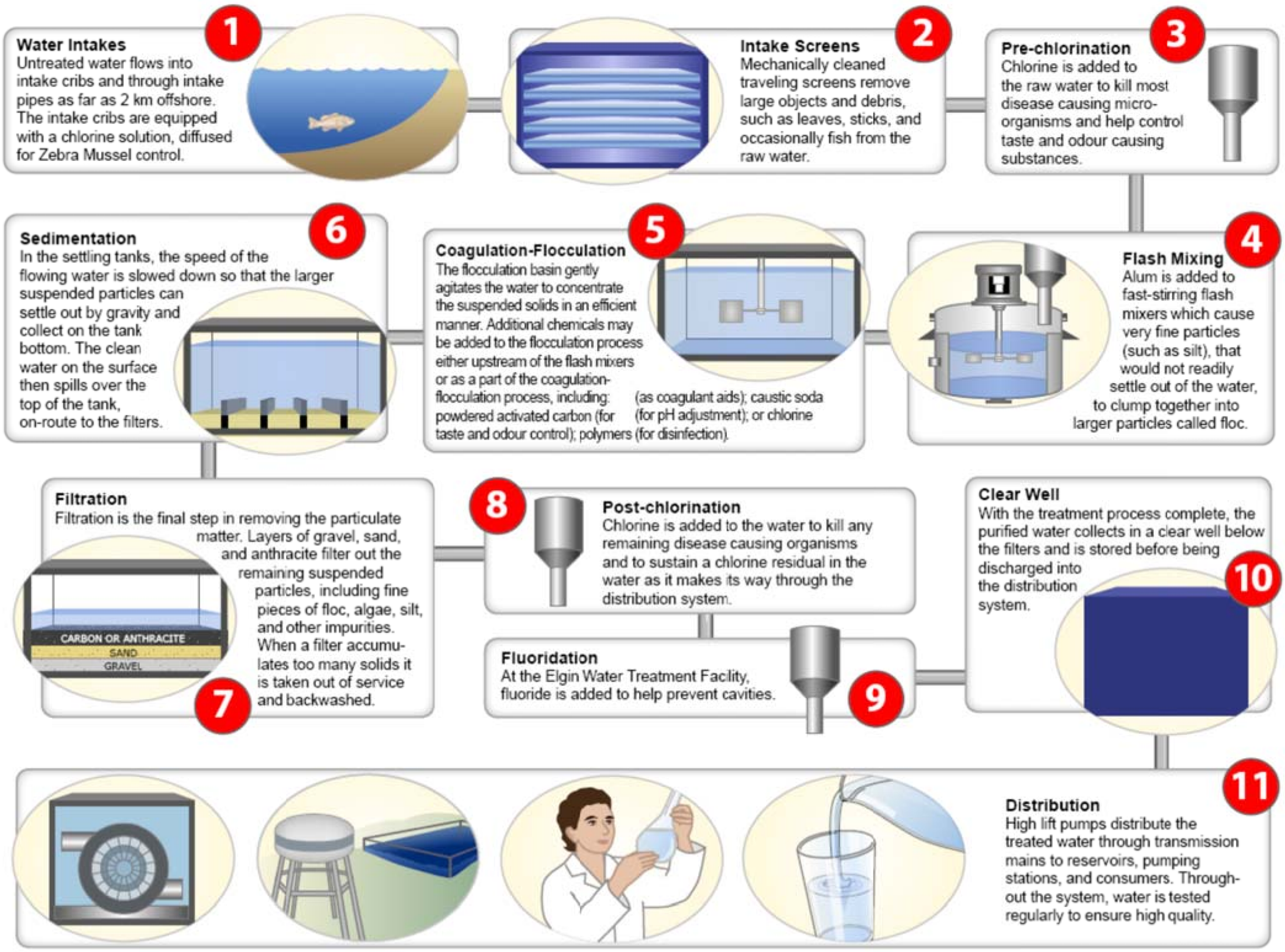

Figure 3: General Overview of the Water Treatment Process

At the Elgin Area Water Treatment Plant, several additional treatment steps take place:

- Carbon dioxide is injected prior to the flash mixing (Step 4) to lower the raw water pH in order 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 water treatment plant and enters the transmission system (Step 11) to raise the treated water pH, resulting in reduced corrosion potential.

2013 HIGHLIGHTS

FULL SCOPE DWQMS ACCREDITATION

The *Safe Drinking Water Act* requires that an accredited operating authority be in charge of a municipal residential drinking water system at all times. In order for an operating authority to become accredited, they must have implemented a Drinking Water Quality Management System (DWQMS) that meets the requirements of Ontario's Provincial Standard.

Prior to the commencement of operation of the drinking water system on July 1, 2012, OCWA applied to an accreditation body for DWQMS transitional accreditation. OCWA received limited scope accreditation on March 14, 2013 and was given six (6) months to apply for full scope accreditation as required by the Ministry of the Environment's Accreditation Protocol. Following a successful external audit, full scope DWQMS accreditation was achieved by OCWA on November 11, 2013.

2013 CAPITAL PROJECTS – HIGHLIGHTS

ALUM SYSTEM UPGRADE

In 2011, an engineering assessment of the existing aluminum sulphate (alum) coagulation system was undertaken and recommendations for improvement were identified. The scope of this project was to carry out upgrades to the alum metering pump system in order to meet periodic high dosing requirements and redundancy needs for operational assurance. New metering pumps also provide improved ease of operation and maintenance, and a more accurate dosage of the coagulant. The project was awarded to Finnbilt General Contracting Ltd. in March 2013 and the new alum chemical dosing system began operating in November 2013.

Figure 4: Two of the four new alum chemical metering pumps located adjacent to a bulk chemical storage tank.

LABORATORY UPGRADE

The Elgin Area Water Treatment Plant was constructed in the late 1960's by the Province of Ontario, with minimal building modifications being undertaken since that time. A multi-year program has been developed to undertake various projects to address plant operational needs. In 2013, the program focused on the renovation of the plant laboratory area. The renovation was largely comprised of an ergonomic redesign of the lab area, removal of asbestos-containing materials, replacement of the laboratory countertops and storage cabinets, and construction of new office spaces. The project was awarded to K&L Construction Ltd. in June 2013 and the majority of the laboratory upgrade was completed by year end.

Figure 5: Renovated water treatment plant laboratory.

FILTER #4 REBUILD AND AIR SCOUR

In December 2011, a catastrophic failure of filter #4 occurred. Upon removal of the filter media to inspect the underdrain blocks, it was discovered that more than 60% of the underdrain blocks had failed to the point that filter media had accumulated within the block and another 30% of the blocks had heaved and failed beyond repair. In early 2012, an emergency rebuild was undertaken on filter #4 and the filter was returned back into service in June 2012. The original underdrain blocks were replaced with a stainless steel underdrain system. Air scour was incorporated into the filter design, which replaces the previously existing surface wash. The air scour component of the project became operational in October 2013. As the opportunity arises in the future, air scour will also be incorporated into upgrades of the three remaining filters.

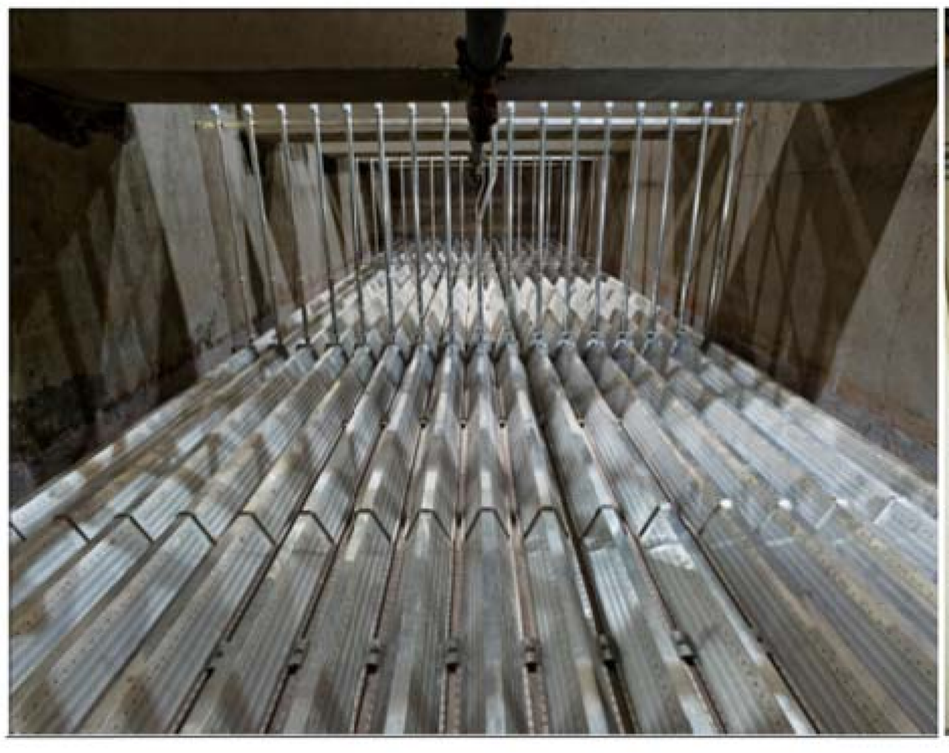

Figure 6: Completed installation of the new stainless steel underdrains and air scour piping in Filter #4.

Filter 7: The air scour blower provides air to the filter during the air scour cycle of a filter backwash.

2013 FLOW SUMMARY

As per the water system's current Permit To Take Water (PTTW), the amount of raw water taken into the Elgin Area Water Treatment Plant cannot exceed 91.0 million litres/day or 63,194 litres/minute. This converts to 1053L/s.

The water taking in 2013 was approved under PTTW #6283-8QZM3N.

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

The following table contains a flow summary, with 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)
Permit To Take Water (PTTW) – permitted amount of raw water taking	91.0	100%	1053
Raw Water Flow – Average Day	44.783	49.2%	757
Raw Water Flow – Max. Day	73.165	80.4%	1045
Water Treatment Plant Rated Capacity	91.0	100%	1053
Treated Water Flow – Average Day	42.035	46.2%	744
Treated Water Flow – Max. Day	68.575	75.4%	1193

A complete flow summary for the Elgin Area Primary Water Supply System can be found in Appendix A.

Treated water instantaneous peak flow rates exceeded the requirements of the MDWL on seven (7) occasions in 2013:

Date	Treated Water Instantaneous Flow Rate	Reason
January 9, 2013	1183 L/s	Exceedance occurred when running two high lift pumps together to maintain the Elgin-Middlesex Pumping Station & London water levels during Lake Huron Primary Water Supply System pipeline maintenance.
January 21,2013	1187 L/s	Exceedence happened when stopping one high lift pump and starting another too soon.
April 24, 2013	1193 L/s	Exceedance occurred when running two high

Date	Treated Water Instantaneous Flow Rate	Reason
		lift pumps together to maintain the Elgin-Middlesex Pumping Station & London water levels during Lake Huron Primary Water Supply System maintenance.
October 19, 2013	1054 L/s	Tested high lift flow for upcoming pipeline repair.
October 21, 2013	1054 L/s	Running two high lift pumps in order to build water in Port Stanley Tower for maintenance/repair of Valve P006B.
November 7, 2013	1060 L/s	Preparing for plant maintenance.
November 26, 2013	1087 L/s	Energy & Pump Optimization Study.

The majority of the volume of treated drinking water from the EAPWSS is used by the City of London. As shown in Figure 8, London takes approximately 55.5% of the volume, with the other six municipalities using the remaining 44.5%.

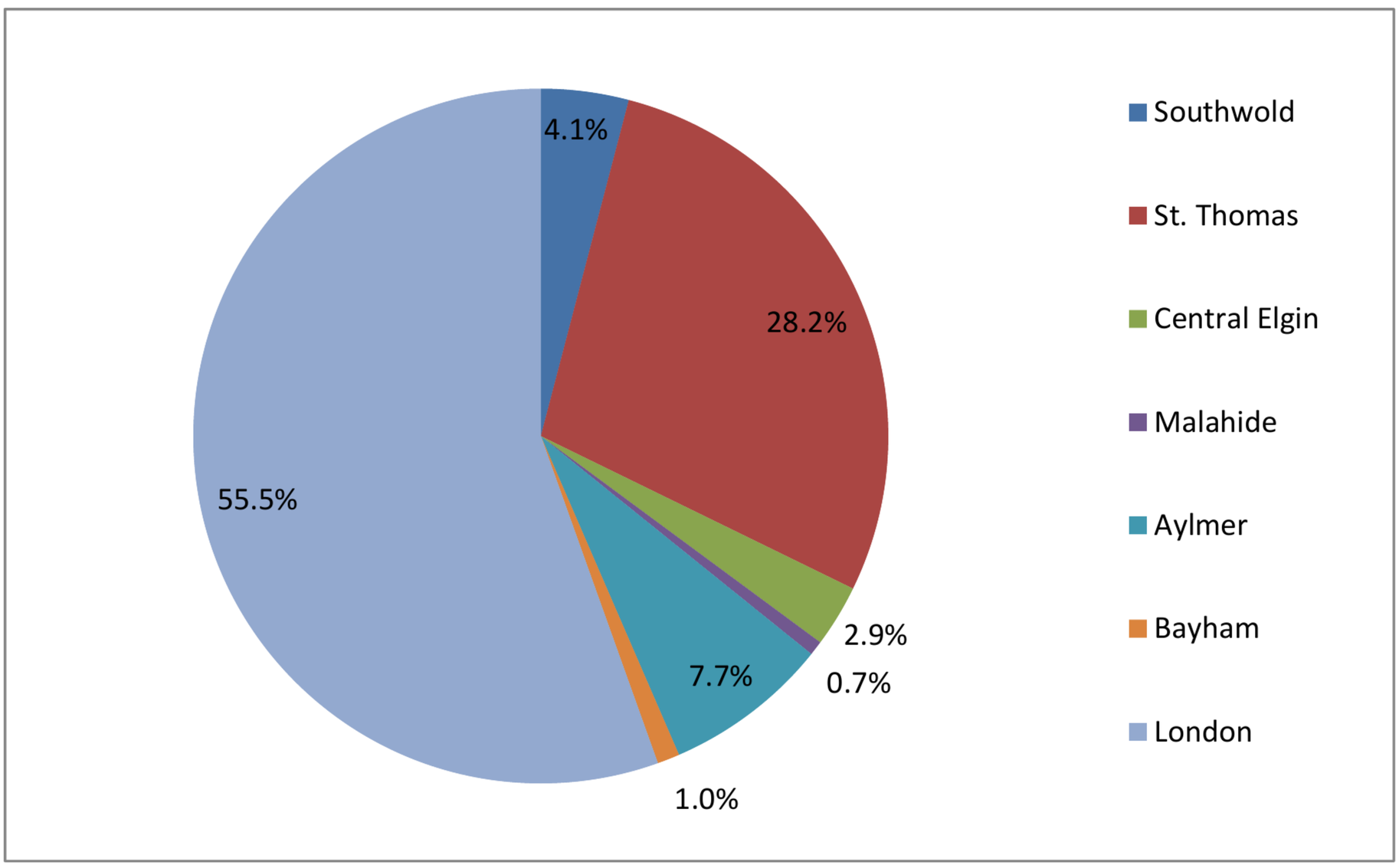

Figure 8: 2013 Treated Water Volume per Municipality

2013 CHEMICAL CONSUMPTION

A variety of water treatment chemicals are used at the Elgin Area Water Treatment Plant to ensure safe, clean drinking water. The following table outlines the chemicals most frequently used for the Elgin Area Primary Water Supply System. 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 2013
Aluminum sulphate	Coagulation	626,470 kg
Polymer	Coagulant and filter aid	485 kg
Powdered activated carbon	Taste and odour control (seasonally)	10,503 kg
Chlorine gas	Primary disinfection	34,518 kg
Sodium hypochlorite	Zebra mussel control at the intake crib	4,797 kg
Fluoride	Prevention of dental cavities	8,908 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	279,382 kg
Sodium Hydroxide	pH adjustment – injected at the end of the treatment process to raise the treated water pH for reduced corrosion potential	402,640 L

2013 WATER QUALITY SUMMARY

Water Quality Sampling and Monitoring

The Elgin Area Primary Water Supply System (EAPWSS) consistently provides treated drinking water with water quality above the standards required by provincial regulation. Where desirable, the EAPWSS standards are more stringent than what is required by regulation. For example, the target at the Elgin Area Water Treatment Plant for treated water turbidity (a measure of the cloudiness of water) is 10 times more stringent than the provincial standard. The EAPWSS is practicing continual improvement to ensure that high drinking water standards are maintained and enhanced where possible.

All water quality sampling at the Elgin Area Primary Water Supply System (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 CALA/SCC accredited laboratories for both bacterial and chemical analysis.

In 2013, a total of 514 microbiological samples were collected from raw, treated and distribution system water, and were tested for E Coli, total coliforms and heterotrophic plate count (HPC). There were no incidents of adverse microbiological test results in 2013.

Annual samples are collected and tested for inorganics (metals) and organics which include herbicides, pesticides and volatile organic parameters. Quarterly sampling is also conducted for trihalomethanes (a disinfection by-product), nitrates and nitrite.

In addition, the water treatment plant operator samples the raw, in-process and treated water six times per day and carries out a battery of physical and chemical tests 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 Annual Report can be found in Appendix B.

Research & Partnerships

The Elgin Area Primary Water Supply System 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 University of Toronto to pursue research opportunities, as well as University of Western Ontario and 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. The EAPWSS also participates in the Ministry of the Environment's Drinking Water Surveillance Program (DWSP) and intake monitoring studies.

MINISTRY OF THE ENVIRONMENT INSPECTION

Annual Inspection

The Ontario Ministry of the Environment (MOE) conducts an inspection of the Elgin Area Primary Water Supply System annually. A MOE inspection took place in August 2013. The final inspection report was issued on September 30, 2013. A total of three (3) non-compliances were identified in the inspection report. The final inspection rating received for the 2013-2014 reporting year was 93.4%. A complete summary of the non-compliances and corrective action required by the MOE can be found in Appendix C.

Elgin Area
Primary Water Supply System

Regional Water Supply Division
235 North Centre Road
Suite 200
London, ON N5X 4E7
519-930-3505 (ext. 2714)

www.watersupply.london.ca

APPENDIX A – 2013 FLOW SUMMARY

1. RAW WATER INTAKE – FLOW (m^3/DAY)

MONTH DAY	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	52,621	36,529	38,825	39,930	45,659	35,780	50,985	46,735	49,141	40,644	43,562	50,757	
2	32,014	47,559	44,407	46,211	61,608	54,659	39,857	39,576	38,976	43,964	38,660	47,586	
3	42,385	42,313	50,937	42,961	59,341	35,391	49,839	51,111	50,985	50,720	43,391	52,927	
4	41,804	37,768	44,360	36,708	40,338	49,423	41,065	48,254	47,822	43,030	41,160	47,692	
5	50,839	41,780	44,428	43,032	50,878	50,084	50,768	39,712	45,261	48,533	43,359	27,680	
6	48,009	43,096	42,169	49,113	47,518	43,666	53,403	44,488	44,904	45,269	39,164	42,884	
7	44,182	40,936	39,078	37,199	40,297	38,519	52,176	45,772	45,743	40,393	37,926	42,129	
8	45,215	39,388	46,026	36,004	53,648	52,774	50,471	45,063	54,983	51,069	43,996	41,809	
9	73,165	45,235	39,520	52,068	51,117	46,378	41,805	46,118	50,238	41,972	51,789	33,289	
10	51,899	42,479	44,055	42,570	40,424	42,649	64,186	51,992	44,583	42,338	42,938	42,983	
11	48,370	40,682	42,635	42,423	51,242	46,252	53,858	51,489	45,713	44,012	36,111	40,203	
12	41,996	44,375	42,764	37,366	41,200	48,076	43,047	38,627	44,907	47,078	37,586	36,562	
13	41,252	40,482	45,079	50,261	39,694	48,087	51,055	41,354	43,004	45,375	47,047	40,776	
14	49,904	46,811	42,032	41,243	44,731	29,047	49,308	52,546	46,499	43,259	35,938	38,355	
15	38,092	44,144	44,346	48,791	47,224	65,821	43,978	43,665	39,502	53,270	43,190	45,546	
16	47,934	36,739	36,634	44,851	45,952	31,081	38,159	49,890	50,714	44,068	52,620	39,237	
17	44,256	43,996	50,694	40,047	38,433	42,186	56,949	51,378	42,157	51,637	49,892	36,375	
18	35,352	47,142	38,916	40,039	53,054	49,782	46,762	48,382	46,645	41,709	58,710	36,668	
19	47,140	39,636	50,514	41,183	56,517	47,000	55,633	48,351	46,842	43,452	46,617	39,433	
20	50,858	46,741	29,363	44,583	52,524	51,864	44,635	47,933	49,666	55,357	45,923	41,826	
21	38,436	40,530	46,913	44,522	34,837	48,298	45,870	53,982	47,731	47,529	50,818	36,838	
22	42,642	36,944	47,690	51,646	59,323	46,703	41,951	43,431	48,475	64,335	35,825	48,510	
23	48,564	48,553	46,934	50,104	29,171	51,624	44,052	45,908	39,818	21,158	53,660	35,052	
24	48,810	39,412	39,929	66,523	35,501	49,886	44,771	50,429	44,729	37,298	49,657	41,356	
25	39,274	41,587	41,040	50,348	47,741	48,171	41,816	53,377	44,161	41,183	44,434	37,140	
26	47,026	43,890	33,784	39,863	52,090	50,653	56,747	45,669	48,883	47,537	44,518	29,372	
27	47,605	40,779	36,306	47,072	49,608	38,029	44,551	40,180	39,604	43,670	51,459	43,516	
28	45,043	41,489	45,917	42,071	36,170	46,475	45,676	50,247	50,644	31,947	55,935	34,403	
29	37,022		38,629	43,395	46,595	43,191	40,760	43,905	44,562	47,567	37,524	35,562	
30	25,393		47,527	50,169	44,754	46,657	49,346	52,920	44,247	44,161	44,754	36,832	
31	33,568		44,532		47,230		44,469	46,021		44,355		36,440	
Total	1,380,670	1,181,015	1,325,983	1,342,296	1,444,419	1,378,206	1,477,948	1,458,505	1,381,139	1,387,889	1,348,163	1,239,738	16,345,971
Minimum	25,393	36,529	29,363	36,004	29,171	29,047	38,159	38,627	38,976	21,158	35,825	27,680	21,158
Maximum	73,165	48,553	50,937	66,523	61,608	65,821	64,186	53,982	54,983	64,335	58,710	52,927	73,165
Average	44,538	42,179	42,774	44,743	46,594	45,940	47,676	47,049	46,038	44,771	44,939	39,992	44,783

Note: (i) Elgin Area Primary Water Supply System Permit To Take Water #6283-8QZM3N permits the taking of 91MLD.

APPENDIX A – 2013 FLOW SUMMARY

2. RAW WATER INSTANTANEOUS PEAK FLOW (L/s)

MONTH 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	767	780	715	821	909	779	780	730	722	722	713	711
2	717	816	755	771	910	1,005	709	784	595	723	713	776
3	655	605	729	722	911	1,005	911	593	720	721	713	886
4	766	718	662	590	794	1,013	727	898	832	722	828	973
5	766	719	662	826	775	1,030	1,003	780	808	872	828	410
6	767	552	719	591	775	786	795	605	788	780	831	575
7	791	822	829	695	776	826	607	838	912	720	861	701
8	765	795	776	835	1,014	872	606	819	912	780	779	712
9	1,005	771	794	721	1,017	628	918	818	825	722	714	710
10	1,004	770	719	721	820	592	1,022	605	593	637	830	711
11	795	770	721	664	591	709	1,023	605	592	718	578	798
12	769	762	719	599	592	778	915	628	580	578	771	806
13	769	719	722	725	756	830	595	730	589	718	832	655
14	902	624	719	685	836	723	751	727	778	779	830	708
15	602	769	717	724	910	915	637	729	716	1,018	714	710
16	718	768	698	723	994	779	806	780	780	1,020	714	575
17	615	629	592	727	721	917	781	602	779	831	715	575
18	825	677	597	782	841	911	842	687	779	817	718	712
19	666	604	597	819	776	725	731	809	779	732	713	736
20	602	769	770	772	776	577	731	780	932	779	714	575
21	798	600	771	773	913	1,012	914	780	694	821	787	575
22	769	693	771	773	911	725	780	788	797	998	745	714
23	1,045	817	770	838	899	725	727	779	589	913	776	912
24	1,008	608	774	910	721	726	727	722	779	717	577	799
25	590	739	770	909	716	725	732	781	811	765	913	712
26	770	779	400	772	866	917	732	780	588	663	812	573
27	718	774	864	623	912	913	784	804	719	714	1,007	574
28	722	595	835	601	912	780	732	841	722	753	1,011	613
29	634		771	725	856	780	730	780	589	780	575	576
30	719		591	774	926	881	782	727	643	779	823	716
31	710		621		894		918	723		576		577
Minimum	590	552	400	590	591	577	595	593	580	576	575	410	400
Maximum	1,045	822	864	910	1,017	1,030	1,023	898	932	1,020	1,011	973	1,045
Average	766	716	715	740	839	819	789	744	731	770	771	689	757

Note: (i) Elgin Area Primary Water Supply System Permit To Take Water #6283-8QZM3N permits the taking of 63,194 L/min. This converts to 1053 L/s.

APPENDIX A – 2013 FLOW SUMMARY

3. TREATED WATER FLOW (m^3/DAY)

MONTH DAY	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	49,385	33,651	36,829	39,486	41,726	33,705	46,321	45,856	48,388	39,330	41,665	46,225	
2	30,048	43,350	41,083	42,791	55,820	50,498	41,062	36,171	36,780	40,539	34,722	42,873	
3	41,009	41,468	47,613	40,253	56,863	36,045	44,867	50,283	46,728	49,921	41,087	48,832	
4	37,322	34,564	43,298	35,983	39,172	46,366	39,775	43,195	45,081	40,519	40,094	47,323	
5	48,011	38,603	39,287	41,616	43,871	46,015	49,296	36,674	42,895	45,644	40,784	26,296	
6	42,912	41,605	40,663	45,494	45,622	42,159	51,716	43,729	41,336	43,490	38,179	40,925	
7	42,269	38,356	36,364	35,449	39,315	36,878	50,536	42,973	42,761	37,498	36,974	38,928	
8	40,426	36,462	43,580	35,000	44,039	48,090	48,795	42,506	53,202	48,837	41,945	39,452	
9	68,575	43,216	36,485	50,904	44,675	43,828	38,152	44,523	48,029	38,848	50,005	33,845	
10	49,842	38,725	41,163	39,781	38,454	39,592	56,638	49,464	42,012	41,769	39,882	41,358	
11	44,090	38,419	32,962	39,472	48,188	43,507	43,575	51,337	44,282	39,509	35,167	37,195	
12	38,130	40,525	42,899	32,693	39,470	44,733	40,637	35,767	42,992	48,107	36,123	34,940	
13	38,968	39,210	40,724	48,526	35,056	44,826	47,806	38,889	39,140	43,275	44,260	38,989	
14	47,050	42,261	41,032	39,250	42,794	28,477	47,286	51,828	43,782	40,716	33,749	36,924	
15	35,462	39,652	40,850	42,725	43,765	61,403	41,917	41,672	37,525	44,659	41,334	43,181	
16	43,455	35,394	33,001	43,720	44,022	30,503	35,067	47,759	48,960	37,842	49,289	35,144	
17	38,436	40,577	48,089	39,273	36,934	39,179	56,435	51,607	40,661	50,380	47,696	35,143	
18	35,155	42,842	37,494	37,078	52,115	47,069	46,112	44,567	40,004	37,358	57,167	34,411	
19	43,795	38,293	44,099	39,931	51,237	44,089	51,722	45,348	43,512	43,198	43,053	38,108	
20	46,596	42,757	26,829	38,078	52,607	49,863	42,227	44,274	47,623	52,807	43,355	41,588	
21	35,140	36,787	36,453	42,248	30,287	45,137	43,870	52,737	45,898	42,112	48,086	34,503	
22	38,387	36,510	45,795	49,379	57,582	42,871	40,371	40,026	45,176	61,882	32,946	45,093	
23	38,646	46,985	45,169	44,179	28,413	48,901	40,602	45,038	37,708	20,713	49,765	33,330	
24	40,309	36,132	35,642	63,641	32,482	47,322	43,902	48,594	43,707	36,204	48,101	39,057	
25	37,739	39,811	44,643	46,131	45,105	45,261	41,099	48,672	41,019	39,679	43,093	35,899	
26	44,521	41,135	26,035	38,714	49,726	47,633	52,337	44,334	48,011	45,013	42,150	26,265	
27	45,292	38,499	28,167	46,061	45,632	34,777	41,303	38,035	37,541	41,751	39,662	43,195	
28	39,852	38,731	36,883	38,630	36,321	44,376	44,338	45,901	47,316	31,869	48,913	32,457	
29	32,433		37,558	40,096	44,870	41,619	40,827	44,446	42,786	45,633	36,895	34,475	
30	17,131		44,485	47,358	38,858	43,512	42,968	49,360	40,572	40,636	42,964	36,174	
31	32,473		40,637		47,830		42,027	44,845		44,901		33,861	
Total	1,262,859	1,104,520	1,215,811	1,263,940	1,352,851	1,298,234	1,393,586	1,390,410	1,305,427	1,314,639	1,269,105	1,175,989	15,347,371
Minimum	17,131	33,651	26,035	32,693	28,413	28,477	35,067	35,767	36,780	20,713	32,946	26,265	17,131
Maximum	68,575	46,985	48,089	63,641	57,582	61,403	56,638	52,737	53,202	61,882	57,167	48,832	68,575
Average	40,737	39,447	39,220	42,131	43,640	43,274	44,954	44,852	43,514	42,408	42,304	37,935	42,035

Note: (i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 91.0 million litres/day

APPENDIX A – 2013 FLOW SUMMARY

4. TREATED WATER INSTANTANEOUS PEAK FLOW (L/s)

MONTH 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	931	568	600	636	635	596	650	847	877	794	653	699	
2	701	610	661	700	963	594	717	866	876	780	606	693	
3	565	696	581	627	962	584	737	576	757	612	584	955	
4	942	963	700	577	606	931	930	742	797	828	814	592	
5	566	943	687	713	931	582	937	676	625	895	812	389	
6	696	770	640	609	878	931	905	589	585	825	817	574	
7	672	722	616	622	637	918	592	736	798	610	1,060	566	
8	658	931	615	965	966	568	951	939	801	624	999	606	
9	1,183	579	682	639	946	707	947	937	673	625	633	587	
10	933	701	902	746	605	633	930	682	797	613	818	595	
11	954	832	712	642	625	565	960	602	630	628	608	659	
12	663	674	938	576	720	628	949	952	596	618	625	555	
13	663	911	943	570	583	932	566	925	619	628	826	579	
14	922	931	643	740	909	608	561	607	597	811	840	633	
15	930	762	820	692	954	962	645	755	574	836	938	630	
16	739	635	726	962	928	633	593	646	635	624	903	708	
17	941	566	568	631	604	798	916	695	926	812	812	582	
18	582	704	952	629	724	931	723	695	803	904	820	596	
19	712	715	730	736	718	597	730	785	774	1,054	641	635	
20	660	734	678	718	826	917	725	952	894	1,051	597	951	
21	1,187	935	963	569	964	931	918	946	752	1,054	591	572	
22	949	921	946	810	947	730	735	693	583	1,033	704	565	
23	647	568	585	919	733	723	642	927	576	957	703	386	
24	637	580	595	1,193	702	699	761	575	649	645	567	605	
25	671	780	958	926	670	633	736	790	637	610	901	585	
26	644	814	381	905	720	969	631	749	633	581	1,087	609	
27	714	676	741	591	951	961	733	651	850	930	814	705	
28	789	692	747	618	971	903	768	810	791	626	804	601	
29	577		590	947	956	707	714	804	700	625	584	598	
30	704		605	618	938	953	905	625	796	603	588	584	
31	721		640		904		786	907		581		720	
Minimum	565	566	381	569	583	565	561	575	574	581	567	386	381
Maximum	1,187	963	963	1,193	971	969	960	952	926	1,054	1,087	955	1,193
Average	769	747	714	728	812	761	774	764	720	755	758	623	744

(i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 1053 litres/second.

APPENDIX B – 2013 ANNUAL REPORT

Ontario 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 Category:	Large Municipal Residential
Period being reported:	January 1, 2013 through December 31, 2013

Complete if your Category is Large Municipal Residential or Small Municipal Residential

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
http://www.watersupply.london.ca

Elgin Area Water Treatment Plant
43665 Dexter Line, Union, ON

Complete for all other Categories.

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 [ ]

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 Secondary Water Supply System	260004735
Municipality of Central Elgin	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
Municipality of Bayham	260004748
Southwold Distribution System	210001362
Ontario Police College Distribution System	260002161
St. Thomas Psychiatric Hospital Distribution Supply	260005255

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
[X] Public access/notice via Public Request
[ ] Public access/notice via a Public Library
[X] Public access/notice via other method News Release

Describe your Drinking-Water System

The Elgin Area Water Treatment Plant (WTP) 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 two 750 mm and 900mm diameter water mains to various communities en route to the Elgin-Middlesex terminal reservoir located northeast of St. Thomas in the Municipality of Central Elgin. The drinking water system is monitored at various locations throughout the system via a Supervisory Control and Data Acquisition (SCADA) system.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite
Carbon Dioxide
Aluminum Sulphate
Cationic Polymer
Powder Activated Carbon
Chlorine Gas
Hydrofluosilicic Acid
Sodium Hydroxide

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

Major Capital Projects:

- upgraded alum chemical metering pump system
- upgraded in-plant phone systems
- renovated and upgraded laboratory
- upgraded all access doors with automated key system
- installed blower for filter air scour system
- replaced backwash pump check valves
- filter trough extensions installed
- filter #4 media top-up
- installation of automated valve actuators at key chambers on A and B Pipeline

Minor Capital Projects:

- analytical equipment upgrades
- replacement of chemical tank level meters
- replaced hot water tanks in low lift, chlorine and sodium hydroxide areas
- upgraded chlorine building eyewash system
- installed pump well access hatch in old fluoride area
- provide uninterruptable power supply (UPS) power to UV system Programmable Logic Controller (PLC)
- replaced gate controller system
- new controls for high lift overhead hoist
- connected uninterruptable power supply (UPS) power to fluoride day tank scale
- replaced low lift butterfly valves on pump discharge
- replacement of various plant sump pumps
- replaced carbon dust collector header

Major Maintenance:

- high lift and low lift valve rebuilding
- corrections to 5KV neutral grounding resistor system and kirk key system

- repairs to cooling system of 2.5MW generator engine
- upgraded UV system programming and completed wiring corrections
- boiler system repairs
- inspections and cleaning of low lift wells
- inspections of clearwells and reservoirs
- rebuilt backwash header surge anticipator valve
- battery replacement in generator starting banks
- cleaned interior of carbon tanks
- replaced air valve at chamber P027A
- removed TSSA non-complaint air receiver tanks
- installed new electrical vault cover at low lift
- UV capacitor replacements
- corrected drainage and sealant at tunnel and high lift building
- replacement of gate valve at chamber P006B
- replaced backup power batteries in all Programmable Logic Controllers (PLCs)

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
Jan. 30, 2013	Fluoride	>1.50	mg/L	Fluoride system was turned off and WTP was offline for 4 hrs. Fluoride was at 0.24mg/L upon WTP start-up.	Jan. 30, 2013
Mar. 18, 2013	Fluoride	1.79	mg/L	Fluoride system was turned off and WTP was offline for 1 hrs. Fluoride was at 0.70mg/L upon WTP start-up.	Mar. 18, 2013
Mar. 21, 2013	Fluoride	>1.50	mg/L	Fluoride system was turned off and WTP was offline. Fluoride was at 0.80mg/L upon WTP start-up.	Mar. 21, 2013
June 19, 2013	Sodium	21.2	mg/L	Increased the frequency of sodium sampling and testing to four times per year (quarterly).	June 20, 2013

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 (counts/100 mL) (min #)-(max #)	Range of Total Coliform Results (counts/100 mL) (min #)-(max #)	Range of HPC Results (counts/1 mL) (min #)-(max #)
Raw Water	104	(<10)-(430)	(0)-(86,000)	(<10)-(>2160)
Treated Water (WTP)	254	(0)-(0)	(0)-(0)	(0)-(>2000)
Distribution (EMPS Valve House & Fruitridge Surge Facility)	156	(0)-(0)	(0)-(0)	(0)-(>2000)

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	(0.20)-(2.13)
	2095	(0.85)–(1.59)
Treated Water Turbidity (NTU)	Continuous Monitoring	(0.003)–(2.00)
	2096	(0.050)–(0.220)
Treated Water Fluoride (mg/L)	Continuous Monitoring	(0)-(2.00)
	694	(0.11)–(0.83)
Filter #1 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.005)-(2.00)
Filter #2 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.006)–(2.00)
Filter #3 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.008)–(2.00)
Filter #4 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.003)–(2.00)
Combined Filtered Water Turbidity (NTU)	2094	(0.051)–(0.114)

NOTE:
Turbidity spikes above 1.00 NTU on filtered and treated water coincide with instrument calibrations, instrument flushing, pump start-ups, or maintenance. Filter effluent turbidity spikes did not exceed fifteen minutes on any of the filters.

Fluoride spikes above 1.50 mg/L coincide with reports to the Spills Action Centre as noted above.

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 10, 2013 August 6, 2013	0.02 0.13	µg/L µg/L	NO
Arsenic	January 10, 2013 August 6, 2013	0.4 0.7	µg/L µg/L	NO
Barium	January 10, 2013 August 6, 2013	24 22	µg/L µg/L	NO
Boron	January 10, 2013 August 6, 2013	23 21	µg/L µg/L	NO
Cadmium	January 10, 2013 August 6, 2013	0.007 0.009	µg/L µg/L	NO
Chromium	January 10, 2013 August 6, 2013	0.7 Not Detected	µg/L µg/L	NO
Lead *(EMPS Valve House)*	January 10, 2013 July 9, 2013	0.03 0.06	µg/L µg/L	NO
Mercury	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	NO
Selenium	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	NO
Sodium	February 19, 2013 June 13, 2013 July 16, 2013 October 3, 2013	19.5 21.2 20.1 21.8	mg/L mg/L mg/L	NO
Uranium	January 10, 2013 August 6, 2013	0.064 0.039	µg/L µg/L	NO
Nitrite	January 17, 2013 April 15, 2013 July 15, 2013 October 12, 2013	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
Nitrate	January 17, 2013 April 15, 2013 July 15, 2013 October 12, 2013	0.144 0.154 0.132 0.103	mg/L mg/L mg/L mg/L	NO

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 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Aldicarb	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Aldrin + Dieldrin	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Atrazine + N-dealkylated metobolites	January 10, 2013 August 6, 2013	0.08 0.07	µg/L µg/L	**NO**
Azinphos-methyl	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Bendiocarb	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**

Benzene	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Benzo(a)pyrene	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Bromoxynil	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Carbaryl	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Carbofuran	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Carbon Tetrachloride	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Chlordane (Total)	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Chlorpyrifos	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Cyanazine	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Diazinon	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Dicamba	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
1,2-Dichlorobenzene	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
1,4-Dichlorobenzene	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Dichlorodiphenyltrichloroethane (DDT) + metabolites	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
1,2-Dichloroethane	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
1,1-Dichloroethylene (vinylidene chloride)	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Dichloromethane	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
2-4 Dichlorophenol	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
2,4-Dichlorophenoxy acetic acid (2,4-D)	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Diclofop-methyl	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Dimethoate	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Dinoseb	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Diquat	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Diuron	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Glyphosate	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Heptachlor + Heptachlor Epoxide	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**

Lindane (Total)	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Malathion	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Methoxychlor	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Metolachlor	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Metribuzin	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Monochlorobenzene	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Paraquat	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Parathion	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Pentachlorophenol	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Phorate	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Picloram	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Polychlorinated Biphenyls(PCB)	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Prometryne	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Simazine	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Total Trihalomethanes *(EMPS Valve House)*	January 17, 2013 April 15, 2013 July 15, 2013 October 12, 2013	7.7 15 21 26	µg/L µg/L µg/L µg/L	**NO**
Temephos	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Terbufos	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Tetrachloroethylene	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
2,3,4,6-Tetrachlorophenol	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Triallate	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Trichloroethylene	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
2,4,6-Trichlorophenol	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Trifluralin	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**
Vinyl Chloride	January 10, 2013 August 6, 2013	Not Detected Not Detected	µg/L µg/L	**NO**

NOTE: *During 2013, no Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.*

APPENDIX C - MINISTRY OF THE ENVIRONMENT INSPECTION SUMMARY

Ministry of the Environment (MOE) Inspection Report – Issued September 30, 2013

Summary of Non-compliances

#	MOE Inspection Module	MOE Non-compliance (Summary)	Corrective Action Required by MOE (Summary)
NC #1	Treatment Process Monitoring	The process analyzers continuously monitor the chlorine residual and turbidity in the treatment plant and the SCADA system captures the data. There is also information on UV disinfection units, pH, temperature and other parameters. Since more than one data point is captured every five minutes, the data provided included a minimum, maximum and average for each five minutes of every day for each parameter. For UV and secondary disinfection, data is captured every hour of every day for each parameter. There were instances where the chlorine analyzer for secondary disinfection was out of service and grab samples were taken by an operator during this time to satisfy the requirements of the regulation. Records were provided related to SCADA alarms but the alarm summary did not contain any values. These SCADA records are required to be generated and stored as required by O. Reg. 170/03, Schedule 6, section 6.5 (1) and (1.1). The SCADA data provided was in a Microsoft Excel format.	The Owner and Operating Authority shall ensure that SCADA records are generated and stored for review as required by O. Reg. 170/03, Schedule 6, section 6-5 (1) and (1.1). These SCADA records will include a log of alarms that are generated by the SCADA system when pre-determined set points are reached. These SCADA records will easily identify the result, location, date and time of the test. It is the responsibility of the OIC to ensure that SCADA records are complete and they have been reviewed for compliance purposes. Compliance with this requirement shall be verified during the next physical inspection.
NC #2	Water Quality Monitoring	A review of Chain of Custody forms and log records related to regulated water samples indicate that there are instances where information such as chlorine residual and time are not being recorded by operators.	The Operating Authority shall ensure that chlorine residual tests are conducted when microbiological samples are taken at the treatment plant and in the distribution system as required by O. Reg. 170/03, Schedule 6, section 6-3 (1). Compliance with this requirement shall be verified during the next physical inspection.

#	MOE Inspection Module	MOE Non-compliance (Summary)	Corrective Action Required by MOE (Summary)
NC #3	Other Inspection Findings	1 - The Owner and Operating Authority indicated that they follow AWWA procedures for the disinfection water system components. For this inspection review, documents were requested from the Operating Authority for work performed in the water treatment plant. The work involved filter bed disinfection and replacement of a backwash valve. For these tasks, the Operating Authority provided documentation that included log records and bacteriological sample results. The work completed on filters 1 to 4 included log records and bacteriological sample results. A backwash valve and piping was replaced and a log record was provided and it indicated that parts were disinfected, but there was no bacteriological sample taken to confirm the effectiveness of the disinfection procedure.	1 - The Owner and Operating Authority shall ensure that the AWWA disinfection procedures outlined in the current Drinking Water Works Permit, Schedule B, section 2.0, subsection 2.3 are undertaken as required for water system components. Also, the Owner must ensure that proper documentation is kept for all work and repairs undertaken in all facilities and the water distribution system. On September 20, 2013, the Operating Authority created a form to record information for maintenance conducted in the water treatment plant to ensure that all required information related to disinfection requirements and bacteriological sampling are captured on this form. The Owner / Operating Authority should advise contractors of the disinfection requirements set out in the Drinking Water Works Permit and the requirement for record keeping. No further action is required.