

# **St. Clair Township Water Distribution System**

## **Annual Summary Report – O.Reg. 170/03**

**2015**

(Waterworks # 260006464)

### **Introduction**

The Corporation of the Township of St. Clair owns and operates the St. Clair Township Water Distribution System and supplies potable water to residents and businesses throughout the Township. Potable water is purchased from the Lambton Area Water Supply System (LAWSS), which operates a Water Treatment Plant in Sarnia and a trunk distribution system, serving six Lambton County municipalities.

The Township of St. Clair and the LAWSS operate their facilities in accordance with the Provincial Drinking Water System Regulation 170/03, introduced in June 2003 under the Safe Drinking Water Act, 2002. The new regulation updated Ontario Regulation 459/00 which set standards for all publicly operated water systems in the Province. Among the requirements of the regulation is the production of an Annual Report summarizing the results of water quality testing and an Annual Summary Report outlining the general operation of the water system.

The reports and detailed test results are available at the St. Clair Civic Centre, 1155 Emily Street, Mooretown, Ontario. The Annual Report may also be viewed on the Internet at [www.twp.stclair.on.ca](http://www.twp.stclair.on.ca). Copies of LAWSS test results and reports, and the regulations and standards are also available for review. If you have any questions concerning this report or the operation of the St. Clair Water System, please call the Water/Wastewater Specialist, Nova VanderSlagt, or the Director of Public Works, Matt Deline, P.Eng., at 519-867-2125.

### **History**

The current water supply system serving St. Clair Township has evolved significantly over the past 50 years. Initially, several of the urban areas developed their own independent water distribution systems. These systems obtained drinking water from communal wells or the St. Clair River. In the early 1950's, with the development of the Shell Canada Refinery, a piped water supply was obtained from the City of Sarnia to service the Shell Refinery and Corunna.

In the early 1970's, the Ontario Water Resources Commission and local municipalities developed an area water system, LAWSS. It supplied treated water to Point Edward, Sarnia, Moore, Sombra and part of Sarnia Township. This system was expanded in the late 1980's to service municipalities in the northeastern part of Lambton County. The LAWSS provided a safe treated water supply to the urban areas of Brigden, Corunna, Courtright, Mooretown, Port Lambton and Sombra Village in the mid 1970's. In the late 1980's expansion of the Township distribution system began, to service the rural areas of the Township. Today, over 95% of the population is serviced with a piped water supply.

The LAWSS is currently governed by the six member municipalities and operated under contract by the Ontario Clean Water Agency. The Council of the Township of St. Clair controls the St. Clair Township Water Distribution System.

### Annual Highlights

Frequent watermain flushing and chlorine residual testing indicates that residuals are remaining at acceptable levels. Monitoring is continuing across the entire Township to ensure that water quality is being maintained.

1. On July 23, 2015 a free chlorine residual of 0.04 mg/L was observed in Port Lambton during hydrant flushing. The MOH and SAC were contacted and a notice of adverse form was submitted. The flushing continued until an acceptable free chlorine residual was obtained. There was no further follow up required.
2. On November 6, 2015 the new continuous chlorine analyzer was commissioned at the Brigden Water Tower and seven Pocket Colorimeters were calibrated by Hach Canada.
3. On February 2, 2016 the MOECC conducted the 2015 inspection on the St. Clair Township Distribution System.

### Water Quality

Testing throughout the distribution system is conducted on a weekly basis for both chlorine residual and microbiological parameters. The maintenance of chlorine residual in the distribution system is one important step used to prevent microbiological contamination of the water supply. Chlorine is added at the treatment plant and at various locations throughout the distribution system to ensure adequate disinfection capabilities are maintained. The Township is careful to avoid possible contamination during the repair of water mains, the installation of new connections and services, and during routine maintenance.

Appendix 'A' summarizes the results of distribution system testing conducted from January through December 2015. Monitoring is required for parameters such as lead, quarterly for parameters such as trihalomethanes, weekly for parameters such as E-Coli and daily for parameters such as free chlorine residual all monitoring as per O. Reg 170/03. Appendix 'A' also summarizes the results from the non-regulatory continuous online chlorine analyzer at the Brigden Water Tower. These readings have been compared with the weekly and monthly testing in the area to confirm the accuracy and reliability of the equipment. An analysis of the data has confirmed that any low readings can be attributed to either a power outage or equipment malfunction. Appendix 'B' addresses the various parameters of water quality that are tested for.

**The test results confirm that our water met all health-related Ontario Drinking Water Standards.**

### Compliance

Ontario Regulation 170/03 requires that the Annual Summary Report list any requirements of the Safe Drinking Water Act (SDWA), the regulations under the SDWA or the drinking-water system's approval that the system failed to meet at any time during the period covered by the report. There were no non-compliances to report for 2015.

### System Capacity

Ontario Regulation 170/03 requires that the Annual Summary Report include a summary of the quantities and flow rates of the water supplied during the year such that the owner of the system will be able to assess the capability of the system to meet existing and planned uses of the system.

Appendix ‘C’ lists the volumes of water received from the LAWSS distribution system each month throughout the year along with a monthly comparison with the 2014 values and a yearly comparison.

Table 1 lists the Average Daily flow for the maximum month for 2014 and 2015 along with the Average Daily flow for each year since 2008.

**Table 1 – Average Daily Flows**

2015 Average Daily Flow – Max. Month (Sept)	15,216 cu. m./day
2014 Average Daily Flow – Max. Month (June)	14,904 cu. m./day
2015 Average Daily Flow - Year	13,053 cu. m./day
2014 Average Daily Flow - Year	12,741 cu. m./day
2013 Average Daily Flow – Year	13,289 cu. m./day
2012 Average Daily Flow – Year	12,435 cu. m./day
2011 Average Daily Flow – Year	13,400 cu. m./day
2010 Average Daily Flow – Year	11,700 cu. m./day
2009 Average Daily Flow – Year	11,000 cu. m./day
2008 Average Daily Flow – Year	11,900 cu. m./day

The Lambton Area Water Treatment Plant has a rated maximum daily flow rate of 181,844 cu.m./day. St. Clair Township’s proportion of the normal flow rate is approximately 28%.

Large industrial consumers accounted for approximately 72% of the total volume of water used in St. Clair Township in 2015. The largest users in the water distribution system are the Nova-Moore Site and the St Clair Ethanol Plant.

**APPENDIX 'A'**  
**2015 Water Quality Test Results**  
 (Waterworks # 260006464)

	O.Reg. 170/03	Sampling Period	Number of Samples	Number of Detectable Results	Range	MAC or IMAC	Exceedence ?	Typical Source of Parameter
<b>Microbiological Parameters</b>								
Total Coliforms (membrane filter analysis) (counts / 100ml)	Schedule 10-2	Jan/01 - Dec/31 (sampled weekly)	416 <sup>1</sup>	0	0-0	0*	No	Indicates possible presence of fecal matter.
Fecal Coliforms (membrane filter analysis) (counts / 100ml)	Schedule 10-2	Jan/01 - Dec/31 (sampled weekly)	416 <sup>1</sup>	0	0-0	0*	No	Definite indicator of fecal contamination.
Background Count (membrane filter analysis) (counts / 100ml)	Schedule 10-2	Jan/01 - Dec/31 (sampled weekly)	416 <sup>1</sup>	1	0-76	200	No	Indicates presence of aerobic bacteria and effectiveness of disinfection.
* indicator of adverse water quality if detected in treated water								
<b>Parameters Related to Microbiological Quality</b>								
Free Chlorine (Distribution System) (mg/l)	Schedule 6-3	Jan/01 - Dec/31 (sampled weekly)	416 <sup>1</sup>	416	0.32 – 1.99	--	N/A	Recommended level of at least 0.2mg/l in system to maintain microbiological quality.
Free Chlorine (Operational - Flushing)	◆	Jan/01 - Dec/31	655	--	0.18 – 2.20 <sup>4</sup>	--	N/A	Recommended level of at least 0.2mg/l in system to maintain microbiological quality.
Free Chlorine (Daily)	Schedule 7-2(3)	Jan/01 - Dec/31	365	--	0.74 - 1.68	--	N/A	
Free Chlorine (SCADA)	◆ (C of A)	Jan/01 - Dec/31	105120	--	0.00 – 3.31 <sup>4</sup>	--	N/A	
<b>Volatile Organics</b>								
Trihalomethanes (running annual average) (ug/l)	Schedule 13-6	Jan/01 – Dec/31 (sampled quarterly)	4	4	40.75	100	No	Byproduct of chlorine reacting with naturally occurring organics.
<b>Inorganic Parameters</b>								
Lead (ug/l)	O. Reg. 170/03 399/07	2015 Plumbing 2015 Distribution	8	8	0.01 – 1.29	10 10	No No	Results from corrosion of lead pipe or lead solder in plumbing.

<sup>1</sup> The number of samples significantly exceeds the required number (23 per month – 276 annually).

<sup>2</sup> Re-sampling and re-testing yielded acceptable results.

<sup>3</sup> A full year of data consists of 105,120 samples when taken at 5 minute intervals.

<sup>4</sup> High / Low chlorine levels were attributed to maintenance, power outages and/or equipment malfunction.

◆ Indicates additional operational testing not required by O.Reg. 170/03.

## APPENDIX 'B' WATER QUALITY PARAMETERS

### **What parameters do we test for?**

Some parameters may be present in source water before it is treated. Here is a description of the various groups of parameters. The presence of these substances in drinking water does not necessarily mean that the water poses a health risk.

*Microbiological parameters* such as bacteria may come from sewage plants, livestock operations, septic systems and wildlife. Microbiological quality is the most important aspect of drinking water quality because of its association with dangerous water-borne diseases, which can strike quickly.

*Inorganic parameters* such as salts and metals can be naturally occurring or a result of urban storm runoff, industrial or domestic wastewater discharge, mining or agriculture. Some may be a result of treatment and distribution of water (for example, lead from old solder in pipes).

*Organic parameters* can be naturally occurring, but most organics of concern are synthetic. They originate from industrial discharges, urban storm runoff and other sources. Included in this group are pesticides that originate from both rural and urban areas. Some may originate from treatment of drinking water (for example, chlorination byproducts such as trihalomethanes).

### **Definitions**

Here are some terms you should know about before reading the information below.

#### *MAC*

*Maximum Acceptable Concentration.* This is a health-related Ontario drinking water standard established for contaminants that have known or suspected adverse health effects when above a certain concentration. The length of time the MAC can be exceeded without injury to health will depend on the nature and concentration of the parameter.

#### *IMAC*

*Interim Maximum Acceptable Concentration.* This is a health-related Ontario drinking water standard established for contaminants when there are insufficient toxicological data to establish a MAC with reasonable certainty, or when it is not practical to establish a MAC at the desired level.

#### *Parameter*

This is a substance that we sample and analyze for in the water.

#### *mg/l*

*milligrams per litre.* This is a measure of the concentration of a parameter in water, sometimes called parts per million (ppm).

APPENDIX "C"														
2015 FLOWS														
Unless otherwise specified, volumes are expressed in cubic metres.														
Meter Name	Meter No.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
West Lambton Flowmeter	WL to S CL	350,742	351,612	371,472	323,636	430,884	453,777	451,714	424,538	455,030	415,390	376,874	343,542	4,749,211
Lasalle Road	3001	2,315	0	5,422	2,636	3,223	3,167	3,242	0	0	0	0	0	20,005
Fire School	3002, 3003	327	32	905	2,485	1,295	889	23	214	1,477	2,391	1,551	132	11,721
Basell Polyolefins	3004	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000
Nova St. Clair	3005, 3006	7,366	5,677	5,841	5,621	5,564	6,748	8,796	6,922	7,035	7,871	5,715	4,900	78,056
Coruma - removed	3007, 3008	0												0
Industrial Park		650	950	1,450	650	850	900	1,300	2,200	4,300	4,100	2,850	1,750	21,950
Rokeby	3009	64,605	60,687	71,439	54,942	70,537	78,953	81,070	73,412	72,429	70,798	62,810	73,429	835,111
Praxair	3010	0												0
Nova Moore	3011, 3012	91,280	99,912	93,742	104,505	135,429	140,716	104,267	115,857	90,157	87,508	110,339	83,078	1,256,790
Dow / Dobson		0												0
Mooretown	3013, 3014	870	0	1,695	940	1,325	1,920	1,520	1,020	1,100	680	1,190	910	13,170
Moore / Brigden	3015	18,065	0	37,600	19,420	21,450	23,670	25,300	22,735	28,310	24,575	21,090	14,310	256,525
Courtright	3017	0												0
Oil Springs Line	3018	0												0
Canadian Waste		0												0
GATX		45	35	35	35	0	50	60	25	35	50	45	30	445
Residential Homes		0	0	90	0	0	75	0	0	93	0	0	107	365
Nova (unmetered)														0
Sombra	4001	27,300	0	56,500	27,650	35,100	36,450	42,200	36,100	38,750	34,250	26,500	36,700	397,500
Greenfield Energy		25,552	37,376	18,621	10,198	13,586	22,764	27,300	32,202	32,989	30,736	16,307	15,282	282,913
Envirofresh Produce		52	58	43	56	60	58	57	102	121	77	202	297	1,183
Greenfield South Power		32	56	63	60	55	83	57	54	28	2,981	583	165	4,217
Plank Road		1,030	1,285	1,465	1,145	1,715	1,230	1,405	1,415	1,750	1,855	1,160	1,235	16,690
Back to Sarnia/out to Chatham Kent		0	-1	-2	-69	-1	-9	-1	-3	-267	-1,024	-2	0	-1,379
St. Clair Township total consumption and metered consumption difference		107,973	141,825	73,021	89,434	137,408	132,321	151,518	128,689	173,158	143,746	122,689	107,449	1,509,231
2015 Actual Metered Volume		352,462	352,892	372,930	324,708	432,596	454,985	453,114	425,944	456,465	415,594	378,029	344,774	4,764,493
(x 1,000 cum)		352	353	373	325	433	455	453	426	456	416	378	345	
2015 Average Daily Volume		11,370	12,169	12,030	10,824	13,955	15,166	14,617	13,740	15,216	13,406	12,601	11,122	13,053
2015 Purchased Volume		366,560	367,008	387,847	337,696	449,900	473,184	471,239	442,982	474,724	432,218	393,150	358,565	4,955,073
2014 Actual Metered Volume		380,148	357,742	355,179	382,700	376,199	447,131	453,716	412,267	395,306	367,869	320,538	401,726	4,650,521
(x 1,000 cum)		380	358	355	383	376	447	454	412	395	368	321	402	
2014 Average Daily Volume		12,263	12,777	11,457	12,757	12,135	14,904	14,636	13,299	13,177	11,867	10,685	12,959	12,741