St. Clair Township Water Distribution System

Annual Summary Report – O.Reg. 170/03

2016

(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 stclairtownship.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, Coordinator of Operations Water/Wastewater, Chris Westbrook or the Water/Wastewater Specialist, Nova VanderSlagt 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 May 26, 2016 the Township reported a possible contamination after a contractor hit a watermain on Courtight Line. The MOH and SAC were notified and a notice of adverse form was submitted. The watermain was repaired, flushed, acceptable chlorine residuals were observed and negative bacti results were obtained. No boil water advisory was issued.

2. On November 2, 2016 the new continuous chlorine analyzer was commissioned at the Port Lambton Storm Station, the CL17 at the Brigden Water Tower and seven Pocket Colorimeters were calibrated by Hach Canada.

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 2016. 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 2016.

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 2015 values and a yearly comparison.

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 2016. The largest users in the water distribution system are the Nova-Moore Site and the St Clair Ethanol Plant.

APPENDIX 'A'
2016 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
Microbiological Parameters								
Total Coliforms (membrane filter analysis) (counts / 100ml)	Schedule 10-2	Jan/01 - Dec/31 (sampled weekly)	416[1]	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[1]	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[1]	8	0-2000	200	No	Indicates presence of aerobic bacteria and effectiveness of disinfection.
* indicator of adverse water quality if detected in treated water								
Parameters Related to Microbiological Quality								
Free Chlorine (Distribution System) (mg/l)	Schedule 6-3	Jan/01 - Dec/31 (sampled weekly)	416[1]	416	0.35 – 1.76	--	N/A	Recommended level of at least 0.2mg/l in system to maintain microbiological quality.
Free Chlorine (Operational - Flushing)	♦	Jan/01 - Dec/31	918	--	0.12 – 1.70	--	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	--	0.36 - 1.70	--	N/A	
Free Chlorine (SCADA)	♦ (C of A)	Jan/01 - Dec/31	105,120	--	0.00 – 2.68[4]	--	N/A	
Volatile Organics								
Trihalomethanes (running annual average) (ug/l)	Schedule 13-6	Jan/01 – Dec/31 (sampled quarterly)	4	4	44.25	100	No	Byproduct of chlorine reacting with naturally occurring organics.
Inorganic Parameters								
Lead (ug/l)	O. Reg. 170/03 399/07	2016 Distribution	8	8	0.01 – 0.37	10	No	Results from corrosion of lead pipe or lead solder in plumbing.

[1] The number of samples significantly exceeds the required number (23 per month – 276 annually).
[2] Re-sampling and re-testing yielded acceptable results.
[3] A full year of data consists of 105,120 samples when taken at 5 minute intervals.
[4] 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"

2016 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*	*361,394*	*320,682*	*337,418*	*302,438*	*426,234*	*478,298*	*550,684*	*600,000*	*378,832*	*406,702*	*364,220*	*375,750*	*4,902,652*
Lasalle Road	3001	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Fire School	3002, 3003	430	753	46	1,611	492	191	19	323	892	1,109	1,686	690	**8,242**
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	7,301	5,337	9,286	18,052	6,104	7,724	6,943	7,390	7,420	9,132	7,432	4,794	**96,915**
Corunna - removed	3007, 3008													**0**
Industrial Park														**0**
Rokeby	3009													**0**
Praxair	3010													**0**
Nova Moore	3011, 3012	86,903	95,508	83,683	99,249	101,889	117,331	182,367	191,079	146,001	92,600	100,052	85,962	**1,382,624**
Dow / Dobson														**0**
Mooretown	3013, 3014													**0**
Moore / Brigden	3015													**0**
Courtright	3017													**0**
Oil Springs Line	3018													**0**
Canadian Waste														**0**
GATX		45	115	45	35	30	35	30	40	40	35	95	65	**565**
Residential Homes				80			103			284			114	**581**
Nova (unmetered)														**0**
Sombra	4001													**0**
Greenfield Energy		22,055	19,693	8,444	742	11,411	27,022	35,166	30,010	38,897	15,135	24,269	33,173	**266,017**
Envirofresh Produce		80	56	41	64	66	73	70	123	289	80	453	123	**1,518**
Greenfield South Power		211	411	647	1,830	7,575	4,220	1,413	9,026	7,407	20,383	19,661	9,258	**82,042**
Plank Road		-1,275	675	480	305	965	665	16	8	6	7	2	2	**1,856**
Back to Sarnia/out to Chatham Kent		-293	-6	-4	-6	-15	-10	-12	-820	-9	-764	-248	-51	**-2,238**
St. Clair Township total consumption and metered consumption difference		239,369	193,809	230,146	175,855	293,667	316,599	319,676	357,009	172,602	263,228	205,572	236,571	**3,004,103**
2016 Actual Metered Volume		**359,826**	**321,351**	**337,894**	**302,737**	**427,184**	**478,953**	**550,688**	**599,188**	**378,829**	**405,945**	**363,974**	**375,701**	**4,902,270**
	(x 1,000 cu.m)	360	321	338	303	427	479	551	599	379	406	364	376	
2016 Average Daily Volume		11,607	11,081	10,900	10,091	13,780	15,965	17,764	19,329	12,628	13,095	12,132	12,119	13,394
2016 Purchased Volume		374,219	334,205	351,410	314,846	444,271	498,111	572,716	623,156	393,982	422,183	378,533	390,729	5,098,361
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 cu.m)	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