



# Ontario Clean Water Agency Agence Ontarienne Des Eaux

March 10, 2016

Larry Allison, CAO  
[allisonl@saugeenshores.ca](mailto:allisonl@saugeenshores.ca)  
Town of Saugeen Shores  
600 Tomlinson Dr.  
Box 820  
Port Elgin, Ontario  
N0H 2C0

**Re: Annual Report, Requirement under O. Reg. 170/03, Section 11**

Dear Mr. Allison,

Attached is the revised 2015 Annual Report for the Southampton Water Treatment Plant and Distribution System. This report was completed in accordance with Section 11 of Ontario Regulation 170/03.

The attached version 2 of the 2015 Annual Report for the Southampton Water Treatment Plant and Distribution System supersedes any previously submitted versions of the 2015 Annual Report for the Southampton Water Treatment Plant and Distribution System.

Section 12 of Ontario Regulation 170/03 requires that the Annual Report be made available for inspection, at no charge, by any member of the public during regular business hours. The report should be made available for inspection at the office of the Municipality or at a location that is convenient for the users of the water system.

Should you require further clarification of information regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrea Conway".

Andrea Conway  
Operations Manager  
OCWA, Georgian Bay Highlands Regional Hub

cc: Len Purdue, Acting Director of Public Works, Town of Saugeen Shores  
Dave Burnside, Engineering Services, Town of Saugeen Shores



**Ontario Clean Water Agency**  
**Agence Ontarienne Des Eaux**

## **SOUTHAMPTON WATER TREATMENT**

Large Municipal Residential Drinking Water System

### **SECTION 11** **ANNUAL REPORT**

**For the period of**  
**JANUARY 1, 2015 TO DECEMBER 31, 2015**

Prepared by the Ontario Clean Water Agency  
For The Corporation of the Town of Saugeen Shores

<b>Drinking Water System Number:</b>	210000078
<b>Drinking Water System Name:</b>	Southampton Water Treatment Plant & Distribution System
<b>Drinking Water System Owner:</b>	The Corporation of the Town of Saugeen Shores
<b>Drinking Water System Category:</b>	Large Municipal Residential
<b>Reporting Period:</b>	January 1, 2015 – December 31, 2015

**Does the Drinking Water System serve more than 10,000 people?**

Yes.

**Is your annual report available to the public at no charge on a web site on the Internet?**

Yes.

**Location where the Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection:**

Town of Saugeen Shores  
 600 Tomlinson Drive  
 Port Elgin, Ontario  
 N0H 2C0  
 519-832-2008

**Drinking-Water Systems (if any), which receive all of their drinking water from your system:**

Saugeen First Nations

**Did you provide a copy of the annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?**

Yes

**How system users are notified that the annual report is available, and is free of charge:**

- Public access/notice via the web
- Public access/notice via Government Office
- Public access/notice via a newspaper
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method: \_\_\_\_\_

**Description of Drinking Water System:**

Southampton Water Treatment Plant (WTP) and Distribution System is a Class 3 Treatment and Class 3 Distribution System.

The Southampton WTP Facility provides treated water to Southampton and Port Elgin via the Saugeen Shores Distribution System. There are two pressure zones, Zone 1 and Zone 2. Zone 1 provides water to the Southampton portion of the Saugeen Shores Distribution System and Zone 2 provides water to the Port Elgin portion of the Saugeen Shores Distribution System.

The Southampton WTP draws raw water from Lake Huron through a 1600 m long, 750 mm diameter HDPE intake pipe with a raw water sample line and a chlorine solution feed line for zebra mussel control.

There is a 600 mm diameter concrete standby intake pipe, with a wooden intake crib and flat sealed top and a 38 mm diameter solution feed for zebra mussel control inside the concrete pipe. There is an

underground inlet chamber equipped with a manually cleaned raw water screen.

The low lift pumping is located on the shores of Lake Huron consisting of a raw water well with a 20 m long by 14 m wide heated superstructure housing the pumping, treatment and control facilities. This includes:

- Three (3)VFD-controlled vertical turbine pumps (two duty, one standby) each rated at 104 L/s at a total dynamic head (TDH) of 37 m
- Two (2) self-cleaning strainers (one duty, one standby) with one (1) 1.5 m<sup>3</sup> strainer backwash wastewater storage tank
- Two (2) metering pumps (one duty and one standby) each rated at 20 L/hr and a chlorine solution feed line to the diffuser located in the mouth of the intake pipe for pre-chlorination and/or zebra mussel control
- a 230 kW diesel engine standby power generator set and associated equipment

The Southampton WTP is an approximately 31 m long by 19 m wide enclosed building located at 140 Island St., Southampton, ON. It houses the facilities described below, in addition to a laboratory/control room, electrical/mechanical room, storage room and washroom:

- Membrane Filtration System:
  - Four (4) individual submerged membrane trains (each with a capacity of 5950 m<sup>3</sup>/day)
  - Five (5) permeate pumps (four duty, one shelf standby) each rated at 73 L/s at 11.5 m TDH
  - Two (2) back-pulse pumps (one duty, one standby) each rated at 73 L/s at 13.5 m TDH
  - Two (2) Clean-in-place (CIP) membrane wash pumps (one duty, one standby) each rated at 56 L/s at 13.5 m TDH
  - Two (2) Vacuum Pumps (one duty, one standby) each rated at 22 L/s at 3.0 m TDH
  - Two (2) oil free compressors rated at 37.4 m<sup>3</sup>/hr
  - Two (2) air blowers (one duty, one standby) each rated at 4.4 m<sup>3</sup>/min at 31.5 kPa
  - A sodium hypochlorite feed system consisting of two metering pumps for recovery cleaning (one duty, one standby) with capacity of 28.1 L/min, two (2) metering pumps for biogrowth protection (one duty, one standby) with capacity of 2.78 L/min and one 1000 L storage tank
  - citric acid feed system consisting of two metering pumps (one duty and one standby) with capacity of 0.37 L/s and one 200 L storage tank
  - Calcium thiosulphate feed system consisting of two metering pumps (one duty and one standby) with capacity of 2.06 L/min and one 60 L storage tank
  - sodium hydroxide feed system consisting of two metering pumps (one duty and one standby) with capacity of 2.83 L/min and one 60 L storage tank
- Membrane Wastewater Treatment System:
  - one flocculator/clarifier including coagulation and sedimentation chambers equipped with draining system discharging sludge by gravity to sanitary sewer
  - two equalization tanks with total volume of 160 m<sup>3</sup>, for membrane back pulse water equalization
  - two tank drain/recirculation pumps (one duty and one standby) each rated at 24 L/s at 7.9 m TDH
  - two pumps (one duty and one standby) rated at 22 L/s at 12 m TDH to pump equalized wastewater to clarifier
  - alum feed system consisting of one storage tank and two mechanical metering pumps (one duty and one standby) each rated at 3.0 L/hr
  - one 25 m<sup>3</sup> neutralization tank
  - two 8.8 m long x 7 m wide decant chambers discharging clarifier effluent by gravity to

- the adjacent surface drainage ditch
  - Calcium thiosulphate feed system consisting of two metering pumps (one duty and one standby) with capacity of 0.32 L/hr and storage tank
  - Sodium Hypochlorite Disinfection System:
    - Two (2) storage tanks
    - Two (2) metering pumps (one duty, one standby) for post-chlorination, each rated at 20 L/hr
  - High Lift Works:
    - Two (2) clear wells in parallel at the WTP with a total storage volume of 3720 m<sup>3</sup>. It is complete with intra basin baffling for storage and chlorine contact
    - Four (4) vertical turbine pumps (two duty, two standby). Pump #1 has a rated capacity of 50 L/s at TDH of 49.9m, Pumps #2 and #3 have a rated capacity at 60 L/s at a TDH of 49.9 m, and Pump #4 has a rated capacity at 54 L/s at a TDH of 79.9 m.
    - Zone 2: Three (3) vertical turbine pumps (two duty, one standby), each rated at 54 L/s at a TDH of 80 m
  - Standby Power
    - 750 kW diesel engine standby power generator set and associated equipment located in a separate room of the Plant Enclosure Building.
- Treated water may be fed from Zone 1 to fill Zone 2 in case of an emergency condition or failure of either Zone 1 or Zone 2 Pumps, using Pump #4.

**List of water treatment chemicals used during the reporting period:**

- Sodium Hypochlorite 12%
- Poly-aluminum chloride
- Citric Acid
- Sodium Hydroxide
- Calcium Thiosulphate

**Significant expenses were incurred to:**

- |                                     |                                       |
|-------------------------------------|---------------------------------------|
| <input checked="" type="checkbox"/> | Install required equipment            |
| <input type="checkbox"/>            | Repair required equipment             |
| <input checked="" type="checkbox"/> | Replace required equipment            |
| <input type="checkbox"/>            | No significant expenses were incurred |

**Description of expenses:**

- Southampton Water Treatment Plant Projects:
- 90 Zeeweed 1000 CPXZ membranes were replaced (Filter Train 2)
  - 150 mm Surge Anticipator Relief Valve
- Distribution Construction Projects:
- Bricker Street – Davey Drive to Robin Road upgrade watermain from 150 mm diameter AC to 150 mm diameter DR18 with all new services
  - Shantz Street – Green Street South one block to limit. Upgraded watermain from galvanized 40 mm diameter to 50 mm diameter Municipex® with all new services and a blow off at the South limit.
  - Alley (East) off Harbour Street – between Elgin and Market upgraded 40 mm diameter galvanized to 50 mm diameter Municipex® with all new services. Last service is off the end of the line
  - Concession 6 – interconnected the 300 mm diameter DR18 watermain on Concession 6 with the 300 mm diameter watermain from Bricker Street. It connects through the easement on the West

- side of the trailer park.
- Adelaide Street – Grosvenor to Huron, switched 2 services for lots off of Grosvenor from watermain on Lair Lane to watermain on Grosvenor Street.
  - Replaced some services on Waterloo Street and Stafford Street. Damaged or curb stop relocations.

**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:**

Date of Incident	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
n/a	n/a	n/a	n/a	n/a	n/a

**Table 1. Microbiological testing done under Schedule 10, 11 or 12 of Regulation 170/03 during this reporting Period**

Location	Number of Samples	Range of E.coli Results		Range of Total Coliforms Results		Number of HPC Samples	Range of HPC Samples	
		Minimum	Maximum	Minimum	Maximum		Minimum	Maximum
Raw (RW)	52	0	218	0	1920	n/a	n/a	n/a
Treated (TW)	52	0	0	0	0	52	0	69
Distribution (DW)	308	0	0	0	0	105	0	7

**Table 2. Operational testing done under Schedule 7, 8 or 9 during the period covered by this Annual Report.**

	Number of Grab Samples	Range of Results	
		Minimum	Maximum
Turbidity, Filter 1 (NTU) <sup>1</sup>	8760	0.004	1.000
Turbidity, Filter 2 (NTU) <sup>1</sup>	8760	0.013	1.000
Turbidity, Filter 3 (NTU) <sup>1</sup>	8760	0.016	1.000
Turbidity, Filter 4 (NTU) <sup>1</sup>	8760	0.015	0.172
Chlorine Residual - Zone 1 (mg/L) <sup>1</sup>	8760	0.01	2.34
Chlorine Residual - Zone 2 (mg/L) <sup>1</sup>	8760	0.01	1.72
Free Chlorine Residual - DW (mg/L) <sup>2</sup>	8760	0.00	2.00

NOTE: Record the unit of measure if it is not milligrams per litre.

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

NOTE: Zone 1 & Zone 2 pumps pull from the same clearwell source, thus one can be used to verify the other.

**Table 3. Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.**

Date of Order of MDWL	Parameter	Date Sampled	Result	MDWL Allowable Annual Average Concentration
August 4, 2011 MDWL #093-101 (Issue 1)	Filter Backwash Suspended Solids (composite)	Monthly	2 mg/L	15 mg/L

**Table 4. Summary of Inorganic parameters tested during this reporting period or most recent sample results**

Parameter	Sample Date	Sample Result	Exceedance
Antimony: Sb (ug/L) - TW	1/12/2015	0.11	No
Arsenic: As (ug/L) - TW	1/12/2015	0.5	No
Barium: Ba (ug/L) - TW	1/12/2015	15.2	No
Boron: B (ug/L) - TW	1/12/2015	16.8	No

<sup>1</sup> Data from 2015 SCADA Yearly Report.

<sup>2</sup> Data from 2015 SCADA Yearly Report. Chlorine residual of the Port Elgin Reservoir.

Parameter	Sample Date	Sample Result	Exceedance
Cadmium: Cd (ug/L) - TW	1/12/2015	<0.003	No
Chromium: Cr (ug/L) - TW	1/12/2015	0.1	No
Mercury: Hg (ug/L) - TW	1/19/2015	<0.01	No
Selenium: Se (ug/L) - TW	1/12/2015	<1.0	No
Uranium: U (ug/L) - TW	1/12/2015	0.235	No
Fluoride (mg/L) - TW	1/14/2013	0.08	No
Nitrite (mg/L) - TW	1/12/2015	<0.003	No
Nitrite (mg/L) - TW	4/8/2015	<0.003	No
Nitrite (mg/L) - TW	7/6/2015	<0.003	No
Nitrite (mg/L) - TW	10/5/2015	<0.003	No
Nitrate (mg/L) - TW	1/12/2015	0.38	No
Nitrate (mg/L) - TW	4/8/2015	0.329	No
Nitrate (mg/L) - TW	7/6/2015	0.26	No
Nitrate (mg/L) - TW	10/5/2015	0.306	No
Sodium: Na (mg/L) - TW	1/14/2013	6.94	No

*NOTE: There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.*

**Table 5. Summary of lead testing under Schedule 15.1 during this reporting period.**

Location Type	Number of Samples	Range of Lead Results		Number of Exceedances
		Minimum	Maximum	
Plumbing	-	-	-	-
Distribution (ug/L)	-	-	-	-

*NOTE: This system now qualifies for the plumbing exemption as per Ontario Regulation 170/03 Schedule 15.1-5 (9) (10). Distribution lead samples are only taken every 36 months. The last set of distribution lead samples was taken in 2014. The next set of distribution lead samples is scheduled for 2017.*

*NOTE: pH and Alkalinity samples were taken in 2015.*

**Table 6. Summary of Organic parameters sampled during this reporting period or most recent sample results.**

Parameter	Sample Date	Result Value	Exceedance
Alachlor (ug/L) - TW	1/12/2015	<0.02	No
Aldicarb (ug/L) - TW	1/12/2015	<0.01	No
Aldrin+Dieldrin (ug/L) - TW	1/12/2015	<0.01	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	1/12/2015	0.030	No
Azinphos-methyl (ug/L) - TW	1/12/2015	< 0.02	No
Bendiocarb (ug/L) - TW	1/12/2015	< 0.01	No
Benzene (ug/L) - TW	1/12/2015	< 0.32	No
Benzo(a)pyrene (ug/L) - TW	1/12/2015	< 0.004	No
Bromoxynil (ug/L) - TW	1/12/2015	< 0.33	No
Carbaryl (ug/L) - TW	1/12/2015	< 0.01	No
Carbofuran (ug/L) - TW	1/12/2015	< 0.01	No
Carbon Tetrachloride (ug/L) - TW	1/12/2015	< 0.16	No
Chlordane: Total (ug/L) - TW	1/12/2015	< 0.01	No
Chlorpyrifos (ug/L) - TW	1/12/2015	< 0.02	No
Cyanazine (ug/L) - TW	1/12/2015	< 0.03	No
Diazinon (ug/L) - TW	1/12/2015	< 0.02	No
Dicamba (ug/L) - TW	1/12/2015	< 0.2	No
1,2-Dichlorobenzene (ug/L) - TW	1/12/2015	< 0.41	No
1,4-Dichlorobenzene (ug/L) - TW	1/12/2015	< 0.36	No
DDT + metabolites (ug/L) - TW	1/12/2015	< 0.01	No
1,2-Dichloroethane (ug/L) - TW	1/12/2015	< 0.35	No
1,1-Dichloroethylene (ug/L) - TW	1/12/2015	< 0.33	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	1/12/2015	< 0.35	No
2,4-Dichlorophenol (ug/L) - TW	1/12/2015	< 0.15	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	1/12/2015	< 0.19	No

Parameter	Sample Date	Result Value	Exceedance
Diclofop-methyl (ug/L) - TW	1/12/2015	< 0.4	No
Dimethoate (ug/L) - TW	1/12/2015	< 0.03	No
Dinoseb (ug/L) - TW	1/12/2015	< 0.36	No
Diquat (ug/L) - TW	1/12/2015	< 1.0	No
Diuron (ug/L) - TW	1/12/2015	< 0.03	No
Glyphosate (ug/L) - TW	1/12/2015	< 1.0	No
Heptachlor+hepachlor epoxide (ug/L) - TW	1/12/2015	< 0.01	No
Lindane (ug/L) - TW	1/12/2015	< 0.01	No
Malathion (ug/L) - TW	1/12/2015	< 0.02	No
Methoxychlor (ug/L) - TW	1/12/2015	< 0.01	No
Metolachlor (ug/L) - TW	1/12/2015	< 0.01	No
Metribuzin (ug/L) - TW	1/12/2015	< 0.02	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	1/12/2015	< 0.3	No
Paraquat (ug/L) - TW	1/12/2015	< 1.0	No
Parathion (ug/L) - TW	1/12/2015	< 0.02	No
PCB (ug/L) - TW	1/12/2015	< 0.04	No
Pentachlorophenol (ug/L) - TW	1/12/2015	< 0.15	No
Phorate (ug/L) - TW	1/12/2015	< 0.01	No
Picloram (ug/L) - TW	1/12/2015	< 1.0	No
Prometryne (ug/L) - TW	1/12/2015	< 0.03	No
Simazine (ug/L) - TW	1/12/2015	< 0.01	No
Temephos (ug/L) - TW	1/12/2015	< 0.01	No
Terbufos (ug/L) - TW	1/12/2015	< 0.01	No
Tetrachloroethylene (ug/L) - TW	1/12/2015	< 0.35	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	1/12/2015	< 0.2	No
Triallate (ug/L) - TW	1/12/2015	< 0.01	No
Trichloroethylene (ug/L) - TW	1/12/2015	< 0.44	No
2,4,6-Trichlorophenol (ug/L) - TW	1/12/2015	< 0.25	No
2,4,5- Trichlorophenoxy acetic acid (ug/L) - TW	1/12/2015	< 0.22	No
Trifluralin (ug/L) - TW	1/12/2015	< 0.02	No
Vinyl Chloride (ug/L) - TW	1/12/2015	< 0.17	No
THM (ug/L) – DW	1/12/2015 4/08/2015 7/06/2015 10/05/2015	16.25	No

\*Annual average of THMs

**Table 7. List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.**

Parameter	Result Value	Unit of Measure	Date of Sample
n/a	n/a	n/a	n/a

NOTE: This is required only if DWS category is large municipal residential, small municipal residential, large municipal non-residential, small municipal non-residential, large non municipal non-residential)