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Drinking-Water System Number:	210000078
Drinking-Water System Name:	The Southampton Water Treatment Plant & Distribution System
Drinking-Water System Owner:	Town of Saugeen Shores
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2014 to December 31, 2014

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.

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

Complete for all other Categories.

Number of Designated Facilities served:

Did you provide a copy of your annual report to all Designated Facilities you serve?
Yes [ ] No [ ]

Number of Interested Authorities you report to:

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?
Yes [ ] No [ ]

List Drinking-Water Systems, which receive all of their drinking water from your system:

- Saugeen First Nations

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?
Yes [X**] No [ ]**

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

[X**] Public access/notice via the web**
[X**] Public access/notice via Government Office**
[ ] Public access/notice via a newspaper
[ ] Public access/notice via Public Request
[ ] Public access/notice via a Public Library
[ ] Public access/notice via other method _____

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Describe your Drinking-Water System

Class 3 Distribution, Class 3 Treatment

Note: The Southampton WTP Facility provides the treated water to Southampton and Port Elgin through the Saugeen Shores Distribution System. There are two pressure Zones. Zone 1 provides water to Southampton part of the Saugeen Shores Distribution System and Zone 2 provides water to Port Elgin part of Saugeen Shores Distribution System.

The Southampton Water Treatment Plant (WTP) draws its raw water from Lake Huron through a 1600 m long,750 mm diameter intake pipe with a chlorine solution feed line for zebra mussel control and a raw water sample line. There is also a backup 600 mm diameter concrete pipe. It has 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 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 self-cleaning strainers (one duty and one standby) with a 1.5 m^3 strainer backwash wastewater storage tank
- 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 approximately 31 m long by 19 m wide enclosed building located at 140 Island St. housing all the facilities described below as well as a laboratory/control room, an electrical/mechanical room, a storage room and a washroom.

The membrane filtration system is comprised of the following components:

- four individual submerged membrane trains (each with a capacity of 5950 m^3/day
- five permeate pumps (four duty and one shelf standby) each rated at 73 L/s at 11.5 m TDH
- two back pulse pumps (one duty and one standby) each rated at 73 L/s at 13.5 m TDH
- two Clean-in-place (CIP) membrane wash pumps (one duty and one standby) each rated at 56 L/s at 13.5 m TDH
- two Vacuum Pumps (one duty and one standby) each rated at 22 L/s at 3.0 m TDH
- two oil free compressors rated at 37.4 m^3/hr
- two air blowers (one duty and one standby) each rated at 4.4 m^3/min at 31.5 kPa
- sodium hypochlorite feed system consisting of two metering pumps for recovery cleaning (one duty and one standby) with capacity of 28.1 L/min, two metering pumps for biogrowth protection (one duty and 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
- sodium bisulfate feed system (calcium thiosulphate as of July 2012) 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

The Membrane Wastewater Treatment System is comprised of:

- 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^3, 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^3 neutralization tank
- two 8.8 m long x 7 m wide decant chambers discharging clarifier effluent by gravity to the adjacent surface drainage ditch
- sodium bisulfate feed system consisting of two metering pumps (one duty and one standby) with capacity of 0.32 L/hr and storage tank

There are two clear wells in parallel at the Water Treatment Plant with a total storage volume of 3720 m^3. It is complete with intra basin baffling for storage and chlorine contact

There are also two sets of high lift pumps that consist of the following:

- Four 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.
  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.

- Three vertical turbine pumps (two duty, one standby), each rated at 54 L/s at a TDH of 80 m

A sodium hypochlorite disinfection system is used at the Southampton WTP. The system consists of two storage tanks and two metering pumps (one duty and one standby) for post chlorination, each rated at 20 L/hr

Finally, there is a 750 kW diesel engine standby power generator set and associated equipment located in a separate room of the Plant Enclosure Building.

List all water treatment chemicals used over this reporting period

- Sodium Hypochlorite12%
- Poly-aluminum chloride
- Citric Acid
- Sodium Hydroxide
- Calcium Thiosulphate

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Were any significant expenses incurred to?

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

Describe

Installation of post chlorine hypo pump discharge and suction lines
Repair water main break Eastwood & Elgin Street
Replacement of chlorine analyzer parts for WTP
New water main construction projects (Eugenie St - replace water services and Adelaide St - site servicing)
Installation of new raw turbidity and chlorine analyzers at the low lift pump station
Installation of new SCADA and communications network at the Reservoir and WTP
Replacement of membrane filter unit at WTP
Replacement of Reservoir High Lift Pump and Control Valve

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 Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
2014/03/06	DW lead exceedance	16.6	Ug/L	Initial sample taken at Booster Pump Station March 3, 2014; at direction of MOH, additional sample taken March 6, 2014 with result of 0.09 ug/L; SGS Lakefield suggested this could have been the result of small amounts of lead & adhesives which may have scaled off, leading to the exceedance; as all previous and subsequent samples were well below the limit, this was most likely an anomaly	2014/03/12

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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 (min #) - (max #)	Range of Total Coliforms Results (min #) - (max #)	Number of HPC Samples	Range of HPC Samples (min #) - (max #)
Raw - RW	55	0 - 113	0 – 2000		
Treated - TW	55	0 - 0	0 - 0	55	0 - 1
Distribution - DW	321	0 - 0	0 - 0	109	0 - 3

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

	Number of Grab Samples	Range of Results (#-#)
Turbidity	8760	#1 0.014– 0.988 NTU #2 0.013 – 0.195 NTU #3 0.012 – 1.000 NTU #4 0.017 – 1.000 NTU
Chlorine Zone 1 **Chlorine Zone 2**	8760 8760	0.00 – 3.11 *** 1.00 – 1.79
Chlorine Residual Distribution System	365	0.91– 1.45

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

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

- *Filter #1 turbidity spike due to momentary power failure to analyzer. Filter #2 spike was momentary in nature and not reportable. Filters #3 and #4 showing high turbidity due to calibrations of turbidity meter*
- *Zone 1 Chlorine 0.00 mg/L-3.11 mg/L readings due to analyzer failure*

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

Although we had these occurrences, the monthly turbidity requirements for membrane filtration was not exceeded.

Summary of Inorganic parameters tested during this reporting period or most recent

Parameter	Sample Date	Sample Result	Exceedance
Antimony: Sb (ug/L) - TW	2014/01/20	0.06	No
Arsenic: As (ug/L) - TW	2014/01/20	0.60	No
Barium: Ba (ug/L) - TW	2014/01/20	14.50	No
Boron: B (ug/L) - TW	2014/01/20	14.00	No
Cadmium: Cd (ug/L) - TW	2014/01/20	0.0080	No
Chromium: Cr (ug/L) - TW	2014/01/20	<0.50	No
Lead: Pb (ug/L) – DW			
Mercury: Hg (ug/L) - TW	2014/01/20	< 0.010	No
Selenium: Se (ug/L) - TW	2014/01/20	< 1.00	No
Sodium: Na (mg/L) - TW	2013/01/14	6.94	No
Uranium: U (ug/L) - TW	2014/01/20	0.229	No
Fluoride: F (mg/L) - TW	2013/01/14	0.08	No
Nitrite (mg/L) - TW	2014/01/20	< 0.0030	No
Nitrite (mg/L) - TW	2014/04/07	< 0.0030	No
Nitrite (mg/L) - TW	2014/07/02	< 0.0030	No
Nitrite (mg/L) - TW	2014/10/06	< 0.0030	No
Nitrate (mg/L) - TW	2014/01/20	0.339	No
Nitrate (mg/L) - TW	2014/04/07	0.41	No
Nitrate (mg/L) - TW	2014/07/02	0.313	No
Nitrate (mg/L) - TW	2014/10/06	0.267	No

Summary of additional testing and sampling carried out in accordance with the requirement of an approval or order.

Date of order or C of A	Parameter	Date Sampled	Result	C of A Limit	Unit of Measure
MDWL # 093-101 2011/08/01	Suspended Solids (composite)	Monthly	Annual Average < 2.08	15	mg/L

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Summary of Organic parameters sampled during this reporting period or most recent

Parameter	Sample Date	Result Value	Exceedance
Alachlor (ug/L) - TW	2014/01/20	< 0.02	No
Aldicarb (ug/L) - TW	2014/01/20	< 0.01	No
Aldrin + Dieldrin (ug/L) - TW	2014/01/20	< 0.01	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2014/01/20	0.03	No
Azinphos-methyl (ug/L) - TW	2014/01/20	< 0.02	No
Bendiocarb (ug/L) - TW	2014/01/20	< 0.01	No
Benzene (ug/L) - TW	2014/01/20	< 0.32	No
Benzo(a)pyrene (ug/L) -	2014/01/20	< 0.004	No
Bromoxynil (ug/L) - TW	2014/01/20	< 0.33	No
Carbaryl (ug/L) - TW	2014/01/20	< 0.01	No
Carbofuran (ug/L) - TW	2014/01/20	< 0.01	No
Carbon Tetrachloride (ug/L) - TW	2014/01/20	< 0.16	No
Chlordane:Total (ug/L) - TW	2014/01/20	< 0.01	No
Chlorpyrifos (ug/L) - TW	2014/01/20	< 0.02	No
Cyanazine (ug/L) - TW	2014/01/20	< 0.03	No
Diazinon (ug/L) - TW	2014/01/20	< 0.02	No
Dicamba (ug/L) - TW	2014/01/20	< 0.20	No
1,2-Dichlorobenzene (ug/L) - TW	2014/01/20	< 0.41	No
1,4-Dichlorobenzene (ug/L) - TW	2014/01/20	< 0.36	No
Dichlorodiphenyltrichloroethane(DDT) + metabolites (ug/L) - TW	2014/01/20	< 0.01	No
1,2-Dichloroethane (ug/L) - TW	2014/01/20	< 0.35	No
1,1-Dichloroethylene (ug/L) - TW	2014/01/20	< 0.33	No
Dichloromethane (ug/L) - TW	2014/01/20	< 0.35	No
2,4-Dichlorophenol (ug/L) -	2014/01/20	< 0.15	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2014/01/20	< 0.19	No
Diclofop-methyl (ug/L) - TW	2014/01/20	< 0.40	No
Dimethoate (ug/L) - TW	2014/01/20	< 0.03	No
Dinoseb (ug/L) - TW	2014/01/20	< 0.36	No
Diquat (ug/L) -	2014/01/20	< 1.0	no
Diuron (ug/L) - TW	2014/01/20	< 0.03	No

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Glyphosate (ug/L) -	2014/01/20	< 1	No
Heptachlor+Hepachlor Epoxide (ug/L) - TW	2014/01/20	< 0.01	No
Lindane: (ug/L) - TW	2014/01/20	< 0.01	No
Malathion (ug/L) - TW	2014/01/20	< 0.02	No
Methoxychlor (ug/L) - TW	2014/01/20	< 0.01	No
Metolachlor (ug/L) - TW	2014/01/20	< 0.01	No
Metribuzin (ug/L) - TW	2014/01/20	< 0.02	No
Monochlorobenzene (ug/L) - TW	2014/01/20	< 0.30	No
Paraquat (ug/L) -	2014/01/20	< 1	No
Parathion (ug/L) - TW	2014/01/20	< 0.02	No
Pentachlorophenol (ug/L) - TW	2014/01/20	< 0.15	No
Phorate (ug/L) - TW	2014/01/20	< 0.01	No
Picloram (ug/L) - TW	2014/01/20	< 1.00	No
Polychlorinated Bichenysl(PCB) (ug/L) -	2014/01/20	< 0.04	No
Prometryne (ug/L) - TW	2014/01/20	< 0.03	No
Simazine (ug/L) - TW	2014/01/20	< 0.01	No
***THM (ug/L) - DW	2014	17.75	No
Temephos (ug/L) - TW	2014/01/20	< 0.01	No
Terbufos (ug/L) - TW	2014/01/20	< 0.01	No
Tetrachloroethylene (ug/L) - TW	2014/01/20	< 0.35	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2014/01/20	< 0.14	No
Triallate (ug/L) - TW	2014/01/20	< 0.01	No
Trichloroethylene (ug/L) - TW	2014/01/20	< 0.44	No
2,4,6-Trichlorophenol (ug/L) - TW	2014/01/20	< 0.25	No
2,4,5-Trichlorophenoxy acetic acid (ug/L) - TW	2014/01/20	< 0.22	No
Trifluralin (ug/L) - TW	2014/01/20	< 0.02	No
Vinyl Chloride (ug/L) - TW	2014/01/20	< 0.17	No

******* Annual average (THMs)

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

(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, small municipal non residential, large non municipal non residential)

Summary of lead testing under Schedule 15.1 during this reporting period
(applicable to the following drinking water systems; large municipal residential systems**,** small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	**0**		
Distribution	**8**	**0.09 – 16.6**	**1**

This system now qualifies for the plumbing exemption as per Ontario Regulation 170/03 schedule 15.1-5 (9) (10). The next round distribution lead sampling is scheduled for the 2017 winter sampling period.