



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

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March 1, 2012

Larry Allison, CAO
Town of Saugeen Shores
600 Tomlinson Dr.
Box 820
Port Elgin, Ontario
N0H 2C0

Re: Requirement under O. Reg. 170/03 Annual and Summary Reports

Attached are the 2011 Annual and Summary Reports for the Southampton Water Treatment Plant. These reports are completed in accordance with Section 11 and Schedule 22 of O. Reg. 170/03, which require an Annual Report to be prepared not later than February 28th of each year for the preceding calendar year and a Summary Report to be prepared not later than March 31st of the year for the preceding calendar year.

The Summary Report is to be provided to the members of the municipal council. Please ensure this distribution.

Section 12 of O. Reg. 170/03, requires both the Summary Reports and the Annual Reports be made available for inspection by any member of the public during normal business hours, without charge. The reports should be made available for inspection at the office of the municipality, or at a location that is reasonably convenient to the users of the water system.

Please acknowledge receipt of this document.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Laliberte".

Richard Laliberte, Senior Operations Manager
Ontario Clean Water Agency
West Highlands Hub

O.Reg 170 SECTION 11 ANNUAL REPORT

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, 2011 to December 31, 2011

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

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[] Public access/notice via other method _____

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 m³ 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 m³/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 m³/hr
- two air blowers (one duty and one standby) each rated at 4.4 m³/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

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- sodium bisulfate 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

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 m³, 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 m³ 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 m³. 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:

- three vertical turbine pumps (two duty, one standby), two pumps rated at 60 L/s at a TDH of 50 m and one pump rated at 50 L/s at a TDH of 49.7 m
- 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 Hypochlorite 12%
- Polyaluminumchloride
- Citric Acid
- Sodium Hydroxide
- Sodium Bisulfate

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Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

Describe

- Low lift drive replacement
- Turbidity and chlorine analyzer repairs
- Rotary screen valve replacement
- Low Lift Diesel generator radiator repairs
- High lift pump and control valve installation
- Water treatment plant diesel generator controls repair

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

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 or Fecal Results (min #) - (max #)	Range of Total Coliform Results (min #) - (max #)	Number of HPC Samples	Range of HPC Results (min #) - (max #)
Raw - RW	52	0 - 76	0 - 840		
Treated - TW	52	0 - 0	0 - 0	52	0 - 1
Distribution - DW	313	0 - 0	0 - 0	157	0 - 4

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

	Number of Grab Samples	Range of Results (#-#)	<i>NOTE: For continuous monitors use 8760 as the number of samples.</i>
Turbidity	8760	#1 0 – 0.997 NTU #2 0 – 0.957 NTU #3 0 – 1.000 NTU #4 0 – 0.890 NTU	
Chlorine	8760	0.40 – 3.63	
Chlorine Residual Distribution System	365	0.89 – 2.00	

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

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

Parameter	Sample Date	Sample Result	Exceedance
Antimony: Sb (ug/L) - TW	2011/01/11	0.06	No
Arsenic: As (ug/L) - TW	2011/01/11	0.50	No
Barium: Ba (ug/L) - TW	2011/01/11	14.90	No
Boron: B (ug/L) - TW	2011/01/11	14.00	No
Cadmium: Cd (ug/L) - TW	2011/01/11	< 0.0030	No
Chromium: Cr (ug/L) - TW	2011/01/11	0.60	No
Lead: Pb (ug/L) - DW	2011/01/11	1.20	No
Mercury: Hg (ug/L) - TW	2011/01/11	< 0.020	No
Selenium: Se (ug/L) - TW	2011/01/11	< 1.00	No
Sodium: Na (mg/L) - TW	2010/01/18	6.18	No
Uranium: U (ug/L) - TW	2011/01/11	0.22	No
Fluoride Residual: Mean (mg/L) - TW	2011/01/11	0.10	No
Nitrite (mg/L) - TW	2011/01/11	< 0.0050	No
Nitrite (mg/L) - TW	2011/04/04	0.0080	No
Nitrite (mg/L) - TW	2011/07/04	< 0.0050	No
Nitrite (mg/L) - TW	2011/10/03	< 0.0050	No
Nitrate (mg/L) - TW	2011/01/11	0.787	No
Nitrate (mg/L) - TW	2011/04/04	0.817	No
Nitrate (mg/L) - TW	2011/07/04	0.324	No
Nitrate (mg/L) - TW	2011/10/03	0.310	No

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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
C of A 2084-6UNL4F	Suspended Solids (composite)	Monthly	Annual Average < 2.0	15	mg/L

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

Parameter	Sample Date	Result Value	Exceedance
Alachlor (ug/L) - TW	2011/01/11	< 0.02	No
Aldicarb (ug/L) - TW	2011/01/11	< 0.01	No
Aldrin + Dieldrin (ug/L) - TW	2011/01/11	< 0.01	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2011/01/11	< 0.02	No
Azinphos-methyl (ug/L) - TW	2011/01/11	< 0.02	No
Bendiocarb (ug/L) - TW	2011/01/11	< 0.01	No
Benzene (ug/L) - TW	2011/01/11	< 0.32	No
Benzo(a)pyrene (ug/L) -	2011/01/11	< 0.004	No
Bromoxynil (ug/L) - TW	2011/01/11	< 0.33	No
Carbaryl (ug/L) - TW	2011/01/11	< 0.01	No
Carbofuran (ug/L) - TW	2011/01/11	< 0.01	No
Carbon Tetrachloride (ug/L) - TW	2011/01/11	< 0.16	No
Chlordane: Total (ug/L) - TW	2011/01/11	< 0.01	No
Chlorpyrifos (ug/L) - TW	2011/01/11	< 0.02	No
Cyanazine (ug/L) - TW	2011/01/11	< 0.03	No
Diazinon (ug/L) - TW	2011/01/11	< 0.02	No
Dicamba (ug/L) - TW	2011/01/11	< 0.20	No
1,2-Dichlorobenzene (ug/L) - TW	2011/01/11	< 0.41	No
1,4-Dichlorobenzene (ug/L) - TW	2011/01/11	< 0.36	No
Dichlorodiphenyltrichloroethane(DDT) + metabolites (ug/L) - TW	2011/01/11	< 0.01	No
1,2-Dichloroethane (ug/L) - TW	2011/01/11	< 0.35	No
1,1-Dichloroethylene (ug/L) - TW	2011/01/11	< 0.33	No
Dichloromethane (ug/L) - TW	2011/01/11	< 0.35	No
2,4-Dichlorophenol (ug/L) -	2011/01/11	< 0.15	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2011/01/11	< 0.19	No

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Diclofop-methyl (ug/L) - TW	2011/01/11	< 0.40	No
Dimethoate (ug/L) - TW	2011/01/11	< 0.03	No
Dinoseb (ug/L) - TW	2011/01/11	< 0.36	No
Diquat (ug/L) -	2011/01/11	<1.0	no
Diuron (ug/L) - TW	2011/01/11	< 0.03	No
Glyphosate (ug/L) -	2011/01/11	<6	No
Heptachlor+Hepachlor Epoxide (ug/L) - TW	2011/01/11	< 0.01	No
Lindane: (ug/L) - TW	2011/01/11	< 0.01	No
Malathion (ug/L) - TW	2011/01/11	< 0.02	No
Methoxychlor (ug/L) - TW	2011/01/11	< 0.01	No
Metolachlor (ug/L) - TW	2011/01/11	< 0.01	No
Metribuzin (ug/L) - TW	2011/01/11	< 0.02	No
Monochlorobenzene (ug/L) - TW	2011/01/11	< 0.30	No
Paraquat (ug/L) -	2011/01/11	<1	No
Parathion (ug/L) - TW	2011/01/11	< 0.02	No
Pentachlorophenol (ug/L) - TW	2011/01/11	< 0.15	No
Phorate (ug/L) - TW	2011/01/11	< 0.01	No
Picloram (ug/L) - TW	2011/01/11	< 0.25	No
Polychlorinated Bichenysl(PCB) (ug/L) -	2011/01/11	<0.04	No
Prometryne (ug/L) - TW	2011/01/11	< 0.03	No
Simazine (ug/L) - TW	2011/01/11	< 0.01	No
***THM (ug/L) - DW	2011	42.5	No
Temephos (ug/L) - TW	2011/01/11	< 0.01	No
Terbufos (ug/L) - TW	2011/01/11	< 0.01	No
Tetrachloroethylene (ug/L) - TW	2011/01/11	< 0.35	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2011/01/11	< 0.14	No
Triallate (ug/L) - TW	2011/01/11	< 0.01	No
Trichloroethylene (ug/L) - TW	2011/01/11	< 0.43	No
2,4,6-Trichlorophenol (ug/L) - TW	2011/01/11	< 0.25	No
2,4,5-Trichlorophenoxy acetic acid (ug/L) - TW	2011/01/11	< 0.22	No
Trifluralin (ug/L) - TW	2011/01/11	< 0.02	No
Vinyl Chloride (ug/L) - TW	2011/01/11	< 0.17	No

*** Annual average (THMs)

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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
THM	69	ug/L	2011/01/11

(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	132	0.02 – 3.59 ug/L	0
Distribution	10	0.03 – 0.54 ug/L	0

This system now qualifies for the plumbing exemption as per Ontario Regulation 170/03 schedule 15.1-5 (9).