

ANNUAL REPORT

Drinking-Water System Number: 220002734
Drinking-Water System Name: St. George Drinking Water System
Drinking-Water System Owner: County of Brant
Drinking-Water System Category: Large Municipal - Residential
Period being reported: January 1, 2018 to December 31, 2018

Complete if your Category is Large Municipal Residential or Small Municipal Residential:

Does your Drinking-Water System serve more than 10,000 people? Yes No

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

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection:
County of Brant Administration Office (26 Park Ave., Burford, ON).

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

None

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

- Yes
 No
 Not applicable

Indicate how you notified system users that your 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: Notice in water bill.

Describe your Drinking-Water System

The St. George Drinking Water System consists of:

- a) Three drilled wells completed in the overburden. Two wells are equipped with vertical turbine pumps capable of pumping 45.5 l/s each. The third well is equipped with a submersible pump capable of pumping 24.3 l/s. The total allowable water taking from the well field is not to exceed 9,961,920 l/day, but shall not exceed an annual daily average of 6,030,720 L/day;

- b) A sodium hypochlorite dosing system to provide disinfection via chlorination;
- c) Two 52.2 m³ chlorine contact chambers;
- d) A maximum rated capacity of 7,855 m³/day; and
- e) The distribution system that services approx. 1,278 residences and 109 commercial accounts and a bulk fill station at 245 Prospect St.

Emergency standby power for full capacity of the station is provided by a 120 kw diesel motor power generator.

The water production facilities are located at 20 Church Avenue. The land use in the general area includes residential, commercial and a park.

System storage is provided in the distribution system via a 437 m³ standpipe and 2,876 m³ elevated tank located at 54 Main St.

List all water treatment chemicals used over this reporting period

12 % sodium hypochlorite solution used for disinfection

Were any significant expenses incurred to?

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

Brief description and a breakdown of monetary expenses incurred:

Maintenance work of Well 1 \$13.5k

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
none					

Microbiological testing done under Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period

	# of Samples	Range of E.Coli or Fecal Results (cfu/100ml)	Range of Total Coliform Results (cfu/100ml)	Range of BKG Results (cfu/100ml)	# of HPC Samples	Range of HPC Results (cfu/1 ml)
Raw Well 1	51	0-0	0-0	0-64	51	<10-20
Raw Well 2	52	0-0	0-0	0-0	52	<10-10
Raw Well 3	52	0-0	0-0	0-0	52	<10-90
Treated	52	0-0	0-0	0-0	52	<10-20
Distribution	208	0-0	0-0	0-1	208	<10-1260

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report

	Number of Grab Samples	Range of Results
Turbidity – Raw Manual Well 1	12	0.05NTU-0.17NTU
Turbidity – Raw Manual Well 2	12	0.04NTU-0.19NTU
Turbidity – Raw Manual Well 3	12	0.04NTU-0.15NTU
Free Chlorine – Treated Online	8760	0.39-1.01
Free Chlorine –Daily Distribution Grab & Flushing + Bacti sampling	796	0.40-0.96
Fluoride (If the DWS provides fluoridation)	Not applicable	Not applicable

NOTE: Record the unit of measure if it is not milligrams per litre.
For continuous monitors use 8760 as the number of samples.

Summary of additional testing and sampling carried out in accordance with the requirements of an approval, order or other legal instrument

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
None				

Summary of Inorganic parameters tested during this reporting period or the most recent sample results (POE)

Parameter	Sample Date (mm/dd/yy)	Result Value	Unit of Measure	Exceedance
Antimony	01/02/2018	<0.00050	mg/l	No
Arsenic	01/02/2018	<0.0010	mg/l	No
Barium	01/02/2018	0.076	mg/l	No
Boron	01/02/2018	0.013	mg/l	No
Cadmium	01/02/2018	<0.00010	mg/l	No
Chromium	01/02/2018	<0.0050	mg/l	No
Mercury	01/02/2018	<0.0001	mg/l	No
Selenium	01/02/2018	<0.0020	mg/l	No
Uranium	01/02/2018	0.0010	mg/l	No
Fluoride	01/02/2018	0.19	mg/l	No
Sodium	01/02/2018	10	mg/l	No
Nitrite	02/05/18	<0.010	mg/l	No
	05/10/18	<0.010	mg/l	No
	08/07/18	<0.010	mg/l	No
	11/01/18	<0.010	mg/l	No
Nitrate	02/05/18	4.00	mg/l	No
	05/10/18	4.00	mg/l	No
	08/07/18	3.97	mg/l	No
	11/01/18	3.99	mg/l	No
Nitrate+ Nitrite	02/05/18	4.00	mg/l	No
	05/10/18	4.00	mg/l	No
	08/07/18	3.97	mg/l	No
	11/01/18	3.99	mg/l	No

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	Date (mm/dd/yy)	Number of Samples	Range of Lead Results (min#) – (max#)	Number of Exceedances
Plumbing	Not required			
Distribution	Not required			

Summary of Organic parameters sampled during this reporting period or the most recent sample results (POE)

Parameter	Sample Date (mm/dd/yy)	Result Value	Unit of Measure	Exceedance
1,1-Dichloroethylene	01/02/2018	<0.10	µg/l	No
1,2-Dichlorobenzene	01/02/2018	<0.20	µg/l	No
1,2-Dichloroethane	01/02/2018	<0.20	µg/l	No
1,4-Dichlorobenzene	01/02/2018	<0.20	µg/l	No
2,3,4,6-Tetrachlorophenol	01/02/2018	<0.50	µg/l	No
2,4,6-Trichlorophenol	01/02/2018	<0.50	µg/l	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	01/02/2018	<1.0	µg/l	No
2,4-Dichlorophenol	01/02/2018	<0.25	µg/l	No
Alachlor	01/02/2018	<0.50	µg/l	No
Aroclor 1016	01/02/2018	<0.05	µg/l	No
Aroclor 1221	01/02/2018	<0.05	µg/l	No
Aroclor 1232	01/02/2018	<0.05	µg/l	No
Aroclor 1242	01/02/2018	<0.05	µg/l	No
Aroclor 1248	01/02/2018	<0.05	µg/l	No
Aroclor 1254	01/02/2018	<0.05	µg/l	No
Aroclor 1260	01/02/2018	<0.05	µg/l	No
Atrazine	01/02/2018	<0.50	µg/l	No
Atrazine + N-dealkylated metabolites (Atrazine+Desethyl-atrazine)	01/02/2018	<1.0	µg/l	No
Benzene	01/02/2018	<0.10	µg/l	No

Parameter	Sample Date (mm/dd/yy)	Result Value	Unit of Measure	Exceedance
Benzo(a)pyrene	01/02/2018	<0.0090	µg/l	No
Bromoxynil	01/02/2018	<0.50	µg/l	No
Carbaryl	01/02/2018	<5.0	µg/l	No
Carbofuran	01/02/2018	<5.0	µg/l	No
Carbon Tetrachloride	01/02/2018	<0.10	µg/l	No
Chlorobenzene	01/02/2018	<0.10	µg/l	No
Chlorpyrifos	01/02/2018	<1.0	µg/l	No
Desethyl-atrazine	01/02/2018	<0.50	µg/l	No
Diazinon	01/02/2018	<1.0	µg/l	No
Dicamba	01/02/2018	<1.0	µg/l	No
Diclofop-methyl	01/02/2018	<0.90	µg/l	No
Dimethoate	01/02/2018	<2.5	µg/l	No
Diquat	01/02/2018	<7	µg/l	No
Diuron	01/02/2018	<10	µg/l	No
Glyphosate	01/02/2018	<10	µg/l	No
Guthion	01/02/2018	<2.0	µg/l	No
Malathion	01/02/2018	<5.0	µg/l	No
MCPA	01/02/2018	<10	µg/l	No
Methylene Chloride	01/02/2018	<0.50	µg/l	No
Metolachlor	01/02/2018	<0.50	µg/l	No
Metribuzin	01/02/2018	<5.0	µg/l	No
Paraquat	01/02/2018	<1.0	µg/l	No
Pentachlorophenol	01/02/2018	<0.50	µg/l	No
Phorate	01/02/2018	<0.50	µg/l	No
Picloram	01/02/2018	<5.0	µg/l	No
Total PCB	01/02/2018	<0.05	µg/l	No
Prometryne	01/02/2018	<0.25	µg/l	No

Parameter	Sample Date (mm/dd/yy)	Result Value	Unit of Measure	Exceedance
Simazine	01/02/2018	<1.0	µg/l	No
Terbufos	01/02/2018	<0.50	µg/l	No
Tetrachloroethylene	01/02/2018	<0.10	µg/l	No
THM Total (distribution)				
7 Gaukel Dr.	02/05/18	1.69	µg/l	No
312 German School Rd.	05/10/18	4.18	µg/l	No
245 Prospect St.	08/07/18	2.17	µg/l	No
82 Willits Cres.	11/01/18	2.10	µg/l	No
Total Haloacetic Acids (distribution)				
HYD 2-029 Lillian St.	02/05/18	<5.0	µg/l	No
HYD 2-029 Lillian St.	05/10/18	<5.0	µg/l	No
HYD 2-065 Main St.	08/13/18	<5.0	µg/l	No
HYD 2-029 Lillian St.	11/01/18	<5.0	µg/l	No
HYD 2-065 Main St.	11/13/18	<5.0	µg/l	No
Toluene	01/02/2018	<0.20	µg/l	No
Triallate	01/02/2018	<1.0	µg/l	No
Trichloroethylene	01/02/2018	<0.10	µg/l	No
Trifluralin	01/02/2018	<1.0	µg/l	No
Vinyl Chloride	01/02/2018	<0.20	µg/l	No

There is known to be soil contaminated with gasoline and diesel oil products located in the vicinity of the St. George Municipal Well Supply. As part of the monitoring program the County of Brant has undertaken to sample the raw water supply for the municipal drinking water system to monitor the situation. Sampling is carried out twice per year on a rotating basis as the wells are drilled within 5 meters of each other and are also of similar depth. Below is a table of the 2018 sampling results.

The results have generally been below the detection limit of the tests indicating the surface contamination is not entering the drinking water. Test results of October 16, 2018 for Total Animal/Vegetable Oil & Grease and Total Oil & Grease were above the detection limit but resampling and testing initiated October 30, 2018 did not reproduce the results. This suggests the first test results were due to sampling or laboratory error. In 2019 staff will be reviewing the sampling program in conjunction with the results of soil and air monitoring by the legacy property owners. It is anticipated that this review will result in decreased frequency of monitoring.

Parameter	Sample Frequency	Sample Date (mm/dd/yy)	Well 1 (PW1)	Well 2 (PW2)	Well 3 (TW1-68)
Benzene	Minimum twice per year from aquifer	04/05/18 10/16/18	<0.20		<0.20
Ethylbenzene	Minimum twice per year from aquifer	04/05/18 10/16/18	<0.20		<0.20
p+m- Xylene	Minimum twice per year from aquifer	04/05/18 10/16/18	<0.40		<0.40
o- Xylene	Minimum twice per year from aquifer	04/05/18 10/16/18	<0.20		<0.20
Toluene	Minimum twice per year from aquifer	04/05/18 10/16/18	<0.20		<0.20
Xylene (total)	Minimum twice per year from aquifer	04/05/18 10/16/18	<0.20		<0.40
F1 (C6-C10)	Minimum twice per year from aquifer	04/05/18 10/16/18	<25		<25
F1 (C6-C10) - BTEX	Minimum twice per year from aquifer	04/05/18 10/16/18	<25		<25
F2 (C10 – C16 Hydrocarbons)	Minimum twice per year from aquifer	04/05/18 10/16/18	<100		<100
F3 (C16 – C34 Hydrocarbons)	Minimum twice per year from aquifer	04/05/18 10/16/18	<200		<200
F4 (C34 – C50 Hydrocarbons)	Minimum twice per year from aquifer	04/05/18 10/16/18	<200		<200
Diesel (C10-C24)	Minimum twice per year from aquifer	04/05/18 10/16/18	<200		<200
Diesel (C11-C32)	Minimum twice per year from aquifer	04/05/18 10/16/18	<200		<200
Total Animal/Vegetable Oil and Grease (mg/l)	Minimum twice per year from aquifer	04/05/18 10/16/18 10/30/18	1.2 <0.50		<0.50
Total Oil & Grease Mineral/Synthetic (mg/l)	Minimum twice per year from aquifer	04/05/18 10/16/18 10/30/18	<0.50 <0.50		<0.50

Parameter	Sample Frequency	Sample Date (mm/dd/yy)	Well 1 (PW1)	Well 2 (PW2)	Well 3 (TW1-68)
Total Oil & Grease (mg/l)	Minimum twice per year from aquifer	04/05/18 10/16/18 10/30/18	1.2 <0.50		<0.50

Non regulatory RAW WATER samples were taken from Wells 1, 2 and 3. The samples were taken to gain operational information and were analyzed for the parameters listed in the table below:

Parameter	Sample Date (mm/dd/yy)	Result Well 1	Result Well 2	Result Well 3	Unit of Measure
Chloride	02/01/18	22	21	22	mg/l
	05/08/18	22	21	22	mg/l
	08/01/18	21	22	20	mg/l
	11/02/18	22	22	22	mg/l
Nitrate	02/01/18	3.90	3.99	4.09	mg/l
	05/08/18	3.62	3.72	3.92	mg/l
	08/01/18	3.92	4.47	4.46	mg/l
	11/02/18	3.93	4.46	4.65	mg/l
Sulphate	02/01/18	46	45	45	mg/l
	05/08/18	47	46	45	mg/l
	08/01/18	49	47	45	mg/l
	11/02/18	52	49	48	mg/l

List any Inorganic or Organic (treated water) 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 (mm/dd/yy)
None			