York Region Environmental Services – Stouffville DWS
Drinking Water Systems Regulation O. Reg. 170/03 Section 11 Reporting

***MODIFIED* OPTIONAL ANNUAL REPORT TEMPLATE**
Accessible formats or communication supports are available upon request.
Please contact AccessYork@york.ca or call 1-877-464-9675.

Drinking-Water System Number:	**220002333**
Drinking-Water System Name:	**Stouffville Drinking Water Sub-System**
Drinking-Water System Owner:	The Regional Municipality of York (York Region)
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2016 to December 31, 2016

York Region's drinking water systems are registered as Large Municipal Residential Systems

The Stouffville Drinking Water System serves more than 10,000 people.

This annual report is available to the public at no charge on the Region's web site and upon request.

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection:
The Regional Municipality of York
Administrative Centre
Environmental Services Department
17250 Yonge Street
Newmarket, Ontario
www.york.ca/drinkingwater

List all Drinking Water Systems which receive their drinking water from York Region's system:

Drinking Water System Name	Drinking Water System Number
Stouffville Distribution System	260003162 (partial, receives continuously)

A copy of York Region's annual report was provided to all Drinking Water System owners that are connected to and receive drinking water from York Region.

System users were notified that York Region's annual report is available free of charge by public access and notice through:

- Media (Internet, social media, print)
- Municipal Government Office (Administrative Centre)
- Public Request at any time

Description of the Stouffville Drinking Water System

About Stouffville

Stouffville is a community located in the Town of Whitchurch-Stouffville. York Region manages the water supply of five wells, two elevated storage tanks, one underground reservoir and three booster pumping stations. Lake Ontario water is also supplied by the York Drinking Water System (York DWS). The Town of Whitchurch-Stouffville maintains and distributes the water to consumers from the Regional Supply. Connection to the York DWS reduces demand on the aquifers and provides a secure secondary source of drinking water.

Raw Water Source Description

Groundwater taking is regulated by a Permit to Take Water issued by the Ministry of the Environment and Climate Change. The City of Toronto and Peel Region have permits for taking Lake Ontario water. Supply agreements govern the purchase of water from the City of Toronto and Peel Region. Wells 1 and 2 extract groundwater from a deep aquifer. Wells 3, 5 and 6 extract water from a shallow aquifer. Elevated chloride, sulphate and sodium concentrations are found in the shallow aquifer. Iron, manganese and hardness levels are naturally elevated in the deep aquifer.

Water Treatment and Supply

Water is disinfected with chlorine. Water from the York DWS is treated to convert chloramine to free chlorine. Wells 1 and 2 are treated with sodium hypochlorite. Wells 3, 5 and 6 are treated with chlorine gas. Wells 5 and 6 are first treated with ultraviolet light because they are classified as Groundwater Under Direct Influence of surface water (GUDI). Sodium silicate is added to manage iron and manganese in the distribution system. Storage facilities hold water and maintain pressure in the system. The three booster pumping stations also maintain pressure and control disinfection.

In addition to routine water testing and facility inspections by Operators, online analyzers continuously monitor the treatment and delivery processes. These analyzers trigger alarms and automatically shut down and lockout pumps to notify Operators when immediate attention is needed on site.

List all water treatment chemicals used over this reporting period

Chlorine (gas and sodium hypochlorite)
Sodium silicate

Were any significant expenses incurred to?

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

Brief description and breakdown of monetary expenses incurred

$1,276,463 for general maintenance and repair, SCADA upgrades for five wells, one reservoir and two elevated tanks

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 and Location	Parameter	Result	Unit of Measure	Corrective Action and Result	Corrective Action Date
April 13, 2016 Distribution	Sodium	52.0	mg/L	Operator attended site, resample taken.	April 21, 2016
April 13, 2016 Supply	Sodium	55.0	mg/L	Operator attended site, resample taken.	April 21, 2016
April 13, 2016 Distribution	Sodium	39.6	mg/L	Operator attended site, resample taken.	April 21, 2016
April 14, 2016 Supply	Sodium	28.5	mg/L	Operator attended site, resample taken.	April 21, 2016
May 24, 2016 Distribution	Schedule 2 Exceedance (Lead as Pb)	0.0343	mg/L	Operator attended site, resample taken; resample result was non-detectable. Original sample taken from indoor non-potable plumbing for MOECC study and does not represent potable supply.	June 2, 2016
May 26, 2016 Supply	Free Chlorine Residual	4.69	mg/L	Operator attended site, facility returned to normal operation. Compliant grab sample taken.	May 26, 2016
July 4, 2016 Distribution	Free Chlorine Residual	0.00	mg/L	Operator attended site, facility returned to normal operation after pressure to facility restored. Compliant grab sample taken.	July 4, 2016
September 4, 2016 Supply	Free Chlorine Residual	4.83	mg/L	Operator attended site, facility returned to normal operation. Compliant grab sample taken.	September 4, 2016
November 18, 2016 Supply	Free Chlorine Residual	5.00	mg/L	Operator attended site, facility returned to normal operation. Compliant grab sample taken.	November 18, 2016

Microbiological testing done under the Schedule 10 of Regulation 170/03 during this reporting period

	Number of Raw Samples	Detections (Raw)	Number of Treated Samples	Detections (Treated)
E. coli	247	0	142	0
Total Coliforms	247	1 (Range not indicated)	142	0
HPC	Not applicable	Not applicable	142	22 (Range 0 to 11 CFU/100 mL)
Distribution	For distribution samples collected under Schedule 10, refer to the local municipality.			

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

	Number of Grab Samples	Range of Results (min #)-(max #)	Unit of Measure	***NOTE**: For continuous monitors use 8760 as the number of samples.*
Turbidity (treated)	8760	0.002-5.003	NTU	
Chlorine (free)	8760	0.00-3.00	mg/L	
Fluoride (If the DWS provides fluoridation)	Not applicable			

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

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
Not applicable				

For **Summary of Organic and Inorganic parameters** tested during this reporting period or the most recent sample results, please **see attached results.**

Lead testing under Schedule 15.1 is conducted by the Local Municipality – refer to the Local Municipality reports for results. York Region occasionally collects samples tested for lead for non-regulatory research purposes.

Summary of calculated running annual average Trihalomethane (THM) during this reporting period

Facility monitored for THM	Stouffville ET	Stouffville Zone 1 ET
Annual Average Q1-Q4 2016	0.016 mg/L	0.026 mg/L
Does result exceed Standard of 0.100 mg/L?	No	No

York Region monitors another group of disinfection by-products called Total Haloacetic Acids (HAAs).

Facility monitored for HAAs	Stouffville ET	Stouffville Zone 1 ET
Annual Average (mg/L)	< 0.02 mg/L	< 0.02 mg/L

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
Not applicable			

Stouffville Water Supply System
Stouffville Wells 1 and 2 Treated
WW220002333

Inorganics Test Results

Reading	Units	ODWS		4/14/2016
Antimony as Sb	mg/L	0.006	IMAC	0.0007
Arsenic as As	mg/L	0.025	IMAC	< 0.0005
Barium as Ba	mg/L	1	MAC	0.124
Boron as B	mg/L	5	IMAC	0.0401
Cadmium as Cd	mg/L	0.005	MAC	< 0.0005
Chromium as Cr	mg/L	0.05	MAC	< 0.0005
Mercury as Hg	mg/L	0.001	MAC	< 0.00001
Selenium as Se	mg/L	0.01	MAC	< 0.0005
Uranium as U	mg/L	0.02	MAC	< 0.0005

"<": indicates the result is below Method Detection Limit
ODWS: Ontario Drinking Water Standard
MAC: Ontario Drinking Water Standard - Health Related (Maximum Acceptable Concentration)
AO: Ontario Drinking Water Standard - Non Health Related (Aesthetic Objective)
mg/L: milligrams per litre, parts per million (ppm)

Stouffville Water Supply System
Stouffville Well 3 Treated
WW220002333

Inorganics Test Results

Reading	Units	ODWS		4/13/2016
Antimony as Sb	mg/L	0.006	IMAC	0.0005
Arsenic as As	mg/L	0.025	IMAC	< 0.0005
Barium as Ba	mg/L	1	MAC	0.114
Boron as B	mg/L	5	IMAC	0.0101
Cadmium as Cd	mg/L	0.005	MAC	< 0.0005
Chromium as Cr	mg/L	0.05	MAC	< 0.0005
Mercury as Hg	mg/L	0.001	MAC	< 0.00001
Selenium as Se	mg/L	0.01	MAC	< 0.0005
Uranium as U	mg/L	0.02	MAC	0.0029

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Stouffville Water Supply System
Stouffville Wells 5 and 6 Treated
WW220002333

Inorganics Test Results

Reading	Units	ODWS		4/13/2016
Antimony as Sb	mg/L	0.006	IMAC	< 0.0005
Arsenic as As	mg/L	0.025	IMAC	< 0.0005
Barium as Ba	mg/L	1	MAC	0.0766
Boron as B	mg/L	5	IMAC	0.0078
Cadmium as Cd	mg/L	0.005	MAC	< 0.0005
Chromium as Cr	mg/L	0.05	MAC	< 0.0005
Mercury as Hg	mg/L	0.001	MAC	< 0.00001
Selenium as Se	mg/L	0.01	MAC	< 0.0005
Uranium as U	mg/L	0.02	MAC	0.0018

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Stouffville Water Supply System
Stouffville Wells 1 and 2 Treated
WW220002333

Organics Test Results

Reading	Units	ODWS		4/14/2016
1,1-dichloroethylene (vinylidene chloride)	mg/L	0.014	MAC	< 0.0003
1,2-(o-dcb) Dichlorobenzene	mg/L	0.2	MAC	< 0.0001
1,2-Dichloroethane	mg/L	0.005	IMAC	< 0.0001
1,4-(p-dcb) Dichlorobenzene	mg/L	0.005	MAC	< 0.0001
2,3,4,6-Tetrachlorophenol	mg/L	0.1	MAC	< 0.0005
2,4,6-Trichlorophenol	mg/L	0.005	MAC	< 0.0005
2,4-Dichlorophenol	mg/L	0.9	MAC	< 0.0007
2,4-dichlorophenoxyacetic acid (2,4-D)	mg/L	0.1	IMAC	< 0.0008
2-methyl-4-chlorophenoxyacetic acid	mg/L	0.1	MAC	< 0.005
Alachlor	mg/L	0.005	IMAC	< 0.0004
Atrazine + N-dealkylated metabolites	mg/L	0.005	MAC	< 0.0002
Azinphos-methyl	mg/L	0.02	MAC	< 0.0003
Benzene	mg/L	0.005	MAC	< 0.0001
Benzo(a)pyrene	mg/L	0.00001	MAC	< 0.00001
Bromoxynil	mg/L	0.005	IMAC	< 0.0004
Carbon Tetrachloride	mg/L	0.005	MAC	< 0.0002
Chlorpyrifos	mg/L	0.09	MAC	< 0.0002
Diazinon	mg/L	0.02	MAC	< 0.0002
Dicamba	mg/L	0.12	MAC	< 0.0004
Dichloromethane	mg/L	0.05	MAC	< 0.001
Diclofop-methyl	mg/L	0.009	MAC	< 0.0004
Dimethoate	mg/L	0.02	IMAC	< 0.0003
Diquat	mg/L	0.07	MAC	< 0.001
Glyphosate	mg/L	0.28	IMAC	< 0.025
Malathion	mg/L	0.19	MAC	< 0.0002
Metolachlor	mg/L	0.05	IMAC	< 0.0002
Metribuzin	mg/L	0.08	MAC	< 0.0003
Monochlorobenzene	mg/L	0.08	MAC	< 0.0001
Paraquat	mg/L	0.01	IMAC	< 0.001
Pentachlorophenol	mg/L	0.06	MAC	< 0.0004
Phorate	mg/L	0.002	IMAC	< 0.0002
Picloram	mg/L	0.19	IMAC	< 0.0007
Polychlorinated Biphenyls (PCBs)	mg/L	0.003	IMAC	< 0.00002
Prometryne	mg/L	0.001	IMAC	< 0.0002
Simazine	mg/L	0.01	IMAC	< 0.0002
Terbufos	mg/L	0.001	IMAC	< 0.0002
Tetrachloroethylene (perchloroethylene)	mg/L	0.03	MAC	< 0.0003
Trichloroethylene	mg/L	0.005	MAC	< 0.0001
Trifluralin	mg/L	0.045	IMAC	< 0.000006
Vinyl Chloride	mg/L	0.002	MAC	< 0.0002

Organics Test Results

Reading	Units	ODWS	4/14/2016

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Stouffville Water Supply System
Stouffville Well 3 Treated
WW220002333

Organics Test Results

Reading	Units	ODWS		4/13/2016	5/4/2016
1,1-dichloroethylene (vinylidene chloride)	mg/L	0.014	MAC	< 0.0003	
1,2-(o-dcb) Dichlorobenzene	mg/L	0.2	MAC	< 0.0001	
1,2-Dichloroethane	mg/L	0.005	IMAC	< 0.0001	
1,4-(p-dcb) Dichlorobenzene	mg/L	0.005	MAC	< 0.0001	
2,3,4,6-Tetrachlorophenol	mg/L	0.1	MAC	< 0.0005	
2,4,6-Trichlorophenol	mg/L	0.005	MAC	< 0.0005	
2,4-Dichlorophenol	mg/L	0.9	MAC	< 0.0007	
2,4-dichlorophenoxyacetic acid (2,4-D)	mg/L	0.1	IMAC	< 0.0008	
2-methyl-4-chlorophenoxyacetic acid	mg/L	0.1	MAC	< 0.005	
Alachlor	mg/L	0.005	IMAC	< 0.0004	
Atrazine + N-dealkylated metabolites	mg/L	0.005	MAC	< 0.0002	
Azinphos-methyl	mg/L	0.02	MAC	< 0.0003	
Benzene	mg/L	0.005	MAC	< 0.0001	
Benzo(a)pyrene	mg/L	0.00001	MAC	< 0.00001	
Bromoxynil	mg/L	0.005	IMAC	< 0.0004	
Carbaryl	mg/L	0.09	MAC		< 0.003
Carbofuran	mg/L	0.09	MAC		< 0.003
Carbon Tetrachloride	mg/L	0.005	MAC	< 0.0002	
Chlorpyrifos	mg/L	0.09	MAC	< 0.0002	
Diazinon	mg/L	0.02	MAC	< 0.0002	
Dicamba	mg/L	0.12	MAC	< 0.0004	
Dichloromethane	mg/L	0.05	MAC	< 0.001	
Diclofop-methyl	mg/L	0.009	MAC	< 0.0004	
Dimethoate	mg/L	0.02	IMAC	< 0.0003	
Diquat	mg/L	0.07	MAC	< 0.001	
Diuron	mg/L	0.15	MAC		< 0.003
Glyphosate	mg/L	0.28	IMAC	< 0.025	
Malathion	mg/L	0.19	MAC	< 0.0002	
Metolachlor	mg/L	0.05	IMAC	< 0.0002	
Metribuzin	mg/L	0.08	MAC	< 0.0003	
Monochlorobenzene	mg/L	0.08	MAC	< 0.0001	
Paraquat	mg/L	0.01	IMAC	< 0.001	
Pentachlorophenol	mg/L	0.06	MAC	< 0.0004	
Phorate	mg/L	0.002	IMAC	< 0.0002	
Picloram	mg/L	0.19	IMAC	< 0.0007	
Polychlorinated Biphenyls (PCBs)	mg/L	0.003	IMAC	< 0.00002	
Prometryne	mg/L	0.001	IMAC	< 0.0002	
Simazine	mg/L	0.01	IMAC	< 0.0002	
Terbufos	mg/L	0.001	IMAC	< 0.0002	
Tetrachloroethylene (perchloroethylene)	mg/L	0.03	MAC	< 0.0003	
Triallate	mg/L	0.23	MAC		< 0.004

Organics Test Results

Reading	Units	ODWS		4/13/2016	5/4/2016
Trichloroethylene	mg/L	0.005	MAC	< 0.0001	
Trifluralin	mg/L	0.045	IMAC	< 0.000006	
Vinyl Chloride	mg/L	0.002	MAC	< 0.0002	

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Stouffville Water Supply System
Stouffville Wells 5 and 6 Treated
WW220002333

Organics Test Results

Reading	Units	ODWS		4/13/2016	5/4/2016
1,1-dichloroethylene (vinylidene chloride)	mg/L	0.014	MAC	< 0.0003	
1,2-(o-dcb) Dichlorobenzene	mg/L	0.2	MAC	< 0.0001	
1,2-Dichloroethane	mg/L	0.005	IMAC	< 0.0001	
1,4-(p-dcb) Dichlorobenzene	mg/L	0.005	MAC	< 0.0001	
2,3,4,6-Tetrachlorophenol	mg/L	0.1	MAC	< 0.0005	
2,4,6-Trichlorophenol	mg/L	0.005	MAC	< 0.0005	
2,4-Dichlorophenol	mg/L	0.9	MAC	< 0.0007	
2,4-dichlorophenoxyacetic acid (2,4-D)	mg/L	0.1	IMAC	< 0.0008	
2-methyl-4-chlorophenoxyacetic acid	mg/L	0.1	MAC	< 0.005	
Alachlor	mg/L	0.005	IMAC	< 0.0004	
Atrazine + N-dealkylated metabolites	mg/L	0.005	MAC	< 0.0002	
Azinphos-methyl	mg/L	0.02	MAC	< 0.0003	
Benzene	mg/L	0.005	MAC	< 0.0001	
Benzo(a)pyrene	mg/L	0.00001	MAC	< 0.00001	
Bromoxynil	mg/L	0.005	IMAC	< 0.0004	
Carbaryl	mg/L	0.09	MAC		< 0.003
Carbofuran	mg/L	0.09	MAC		< 0.003
Carbon Tetrachloride	mg/L	0.005	MAC	< 0.0002	
Chlorpyrifos	mg/L	0.09	MAC	< 0.0002	
Diazinon	mg/L	0.02	MAC	< 0.0002	
Dicamba	mg/L	0.12	MAC	< 0.0004	
Dichloromethane	mg/L	0.05	MAC	< 0.001	
Diclofop-methyl	mg/L	0.009	MAC	< 0.0004	
Dimethoate	mg/L	0.02	IMAC	< 0.0003	
Diquat	mg/L	0.07	MAC	< 0.001	
Diuron	mg/L	0.15	MAC		< 0.003
Glyphosate	mg/L	0.28	IMAC	< 0.025	
Malathion	mg/L	0.19	MAC	< 0.0002	
Metolachlor	mg/L	0.05	IMAC	< 0.0002	
Metribuzin	mg/L	0.08	MAC	< 0.0003	
Monochlorobenzene	mg/L	0.08	MAC	< 0.0001	
Paraquat	mg/L	0.01	IMAC	< 0.001	
Pentachlorophenol	mg/L	0.06	MAC	< 0.0004	
Phorate	mg/L	0.002	IMAC	< 0.0002	
Picloram	mg/L	0.19	IMAC	< 0.0007	
Polychlorinated Biphenyls (PCBs)	mg/L	0.003	IMAC	< 0.00002	
Prometryne	mg/L	0.001	IMAC	< 0.0002	
Simazine	mg/L	0.01	IMAC	< 0.0002	
Terbufos	mg/L	0.001	IMAC	< 0.0002	
Tetrachloroethylene (perchloroethylene)	mg/L	0.03	MAC	< 0.0003	
Triallate	mg/L	0.23	MAC		< 0.004

Organics Test Results

Reading	Units	ODWS		4/13/2016	5/4/2016
Trichloroethylene	mg/L	0.005	MAC	< 0.0001	
Trifluralin	mg/L	0.045	IMAC	< 0.000006	
Vinyl Chloride	mg/L	0.002	MAC	< 0.0002	

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