

2017 Annual Drinking Water System (DWS) Quality Report for Georgina DWS (Keswick DW Sub-System)

Prepared by The Regional Municipality of York pursuant to Section 11 of O.Reg. 170/03

Drinking Water System Number: 210003280

Drinking Water System Name: Georgina DWS (Keswick DW Sub-System)

Drinking Water System Owner: The Regional Municipality of York

DWS Category: Large Municipal Residential

Drinking Water System Classification: Water Treatment III

Reporting period: Jan 1, 2017 - Dec 31, 2017

The Georgina DWS (Keswick DW Sub-System) serves approximately 32340 people

This annual report is available to the public at no charge on the Region's website (york.ca/drinkingwater) and upon request. Accessible formats or communication supports are also available upon request. Please contact AccessYork@york.ca or call 1-877-464-9675.

Summary report required under O.Reg. 170/03 Schedule 22 will be available for inspection at:

The Regional Municipality of York
Administrative Centre
Environmental Services Department
17250 Yonge Street, Newmarket ON
and online, at york.ca/drinkingwater

List all Drinking Water Systems which receive their drinking water from the Georgina DWS (Keswick DW Sub-System):

Keswick-Sutton Distribution System (260062686)

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)
- Public Requests at any time

Description of the Georgina DWS (Keswick DW Sub-System)

Introduction

The community of Keswick is located on the east shore of Cook's Bay in the Town of Georgina. Surface water from Lake Simcoe and Cook's Bay supplies this community. Algae in the lake can add a harmless but musty taste. York Region operates the water supply, and the Town of Georgina maintains water quality and distributes it to users. The Province governs the Region's operations with Acts and Regulations, a Permit to Take Water, a Municipal Drinking Water License and an operating Permit.

Raw water source

Lake Simcoe

Profile of water in distribution system

Lake Simcoe

Water treatment description

The Keswick DWS includes one Water Treatment Plant and three storage/rechlorination facilities. Lake water is screened and chlorine prevents mussel growth. Filtration removes particles. Granular activated carbon improves water taste, and chlorine disinfects it. Fluoride is added at levels recommended by Ontario's Chief Medical Officer of Health. Operators test the water and inspect the process. Online analyzers continuously monitor the facilities and automatically pause operation if an issue is detected.

List of water treatment chemicals used in this system

Chlorine gas; Carbon Dioxide (pH control); Polyaluminum Chloride (coagulation); Granular activated carbon (filtration); Non water treatment chemical: Hydrofluosilicic Acid applied

Brief description and breakdown of monetary expenses incurred

\$314,973 for general maintenance and repair, SCADA upgrades to one elevated tank and one reservoir.

Notices submitted under Section 18(1) of the Safe Drinking Water Act or Section 16-4 of O.Reg. 170/03 and reported to MOECC Spills Action Centre

Test Parameter	Incident Date	Units	Result	Corrective Action	Corrective Action Date
Chlorine Residual	18-Mar-17	mg/L	5.00	Reported as BMP. Operator attended site. Facility returned to normal operation. Compliant grab sample taken.	18-Mar-17
Fluoride as F	29-Jun-17	mg/L	1.75	Operator attended site, restored facility to normal operation. Compliant grab sample taken.	29-Jun-17
	28-Aug-17	mg/L	1.51	Operator attended site, restored facility to normal operation. Compliant grab sample taken.	28-Aug-17
Primary Disinfection	15-Feb-17	Unitless	NA	Operator attended site, restored facility to normal operation. Compliant grab sample taken.	16-Feb-17
Turbidity	04-Mar-17	NTU	2100	Reported as due diligence. Operator attended site. Facility returned to normal operation. Compliant grab sample taken.	05-Mar-17
	12-Oct-17	NTU	N/A	Reported as due diligence. Operator attended site. Facility returned to normal operation. Compliant grab sample taken.	14-Dec-17

Microbiological testing completed under Schedule 10 of O.Reg. 170/03

*For distribution samples collected under Schedule 10, refer to the local municipality

Parameter	Sample Source	No. of Samples	No. of Detections
E. coli	Raw	58	7
	Treated	55	0
Heterotrophic Plate Count	Treated	55	7
Total Coliforms	Raw	58	45
	Treated	55	0

Operational testing completed under Schedule 7 of Regulation 170/03 during this reporting period

*8,760 is used as the number of samples for continuous analyzers

Parameter	Units	No. of Samples	Average	Minimum	Maximum
Fluoride	mg/L	8,760	0.64	0.20	1.41
Free Chlorine	mg/L	8,760	1.17	0.00	2.93
Turbidity (Raw)	NTU	8,760	0.80	0.14	24.99
Turbidity (Treated)	NTU	8,760	0.09	0.03	3.00

Summary of testing pursuant to Schedule 13 of O. Reg. 170/03 and sampling carried out in accordance with the requirement of an approval, order or other legal instrument

Values with a less than sign (" $<$ ") indicate that the test result is below the method detection limit from the accredited laboratory (i.e. non-detect). Average results include values which were returned as non-detect and are rounded to four decimals. For a complete set of results, see the open dataset available at york.ca/drinkingwater

Parameter	Units	No. of Samples	Average	Minimum	Maximum
Haloacetic Acids	mg/L	8	0.044	0.033	0.06
Nitrate	mg/L	6	1.072	<1.25	<2.5
Nitrate + Nitrite	mg/L	6	1.072	<1.25	<2.5
Nitrite	mg/L	6	0.107	<0.008	<0.25
Sodium	mg/L	3	33.475	28.9	37.8
Total Suspended Solids Backwash	mg/L	12	7.867	1.3	20.1
Trihalomethanes	mg/L	35	0.039	0.0092	0.0704

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

Organic and inorganic parameter(s) that exceeded half the standard prescribed in Schedule 2 of O.Reg. 169/03 Ontario Drinking Water Quality Standards

Test Parameter	Sample Facility	Sample Date	Units	Test Result	ODWS Limit
Trihalomethanes	Keswick West Park Heights Reservoir	06-Feb-17	mg/L	0.0525	0.1
		03-Apr-17	mg/L	0.0601	0.1
		01-May-17	mg/L	0.0616	0.1
		10-Jul-17	mg/L	0.0605	0.1
		07-Aug-17	mg/L	0.0692	0.1
		04-Sep-17	mg/L	0.0659	0.1
		09-Oct-17	mg/L	0.0704	0.1
		06-Nov-17	mg/L	0.0621	0.1
	04-Dec-17	mg/L	0.0525	0.1	
	Keswick Woodbine Elevated Tank	01-May-17	mg/L	0.0512	0.1
		07-Aug-17	mg/L	0.0507	0.1
		04-Sep-17	mg/L	0.0527	0.1
	Keswick WTP Clearwell	09-Oct-17	mg/L	0.0564	0.1
		10-Jul-17	mg/L	0.0526	0.1

Summary of inorganic parameters teste pursuant to Schedule 23 of O.Reg. 170/03

Values with a less than sign (" $<$ ") indicate that the test result is below the method detection limit from the accredited laboratory (i.e. non-detect). Average results include values which were returned as non-detect and are rounded to four decimals. For a complete set of results, see the open dataset available at york.ca/drinkingwater

Test Parameter	Units	No. of Samples	Average	Minimum	Maximum	ODWS Limit
Antimony	mg/L	3	0.0007	0.0007	0.0008	0.006
Arsenic	mg/L	3	0.0005	0.0005	0.0006	0.025
Barium	mg/L	3	0.0265	0.0243	0.0304	1
Boron	mg/L	3	0.0297	0.0279	0.0308	5
Cadmium	mg/L	3	0.0005	<0.0005	<0.0005	0.005
Chromium	mg/L	3	0.0016	<0.0005	0.0037	0.05
Mercury	mg/L	3	0.0001	<0.00005	<0.00005	0.001
Selenium	mg/L	3	0.0005	<0.0005	<0.0005	0.01
Uranium	mg/L	3	0.0005	<0.0005	<0.0005	0.02

Summary of organic parameters tested pursuant to Schedule 24 of O.Reg. 170/03

Values with a less than sign (" $<$ ") indicate that the test result is below the method detection limit from the accredited laboratory (i.e. non-detect). Average results include values which were returned as non-detect and are rounded to four decimals. For a complete set of results, see the open dataset available at york.ca/drinkingwater

Test Parameter	Units	No. of Samples	Average	Minimum	Maximum	ODWS Limit
1,1-dichloroethylene (vinylidene chloride)	mg/L	3	0.0003	<0.0003	<0.0003	0.014
1,2-(o-dcb) Dichlorobenzene	mg/L	3	0.0001	<0.0001	<0.0001	0.2
1,2-Dichloroethane	mg/L	3	0.0001	<0.0001	<0.0001	0.005
1,4-(p-dcb) Dichlorobenzene	mg/L	3	0.0001	<0.0001	<0.0001	0.005
2-methyl-4-chlorophenoxyacetic acid	mg/L	1	0.0050	<0.005	<0.005	0.1
2,3,4,6-Tetrachlorophenol	mg/L	1	0.0005	<0.0005	<0.0005	0.1
2,4-Dichlorophenol	mg/L	1	0.0007	<0.0007	<0.0007	0.9
2,4-dichlorophenoxyacetic acid (2,4-D)	mg/L	1	0.0008	<0.0008	<0.0008	0.1
2,4,6-Trichlorophenol	mg/L	1	0.0005	<0.0005	<0.0005	0.005
Alachlor	mg/L	1	0.0004	<0.0004	<0.0004	0.005
Atrazine + N-dealkylated metabolites	mg/L	1	0.0002	<0.0002	<0.0002	0.005
Azinphos-methyl	mg/L	1	0.0003	<0.0003	<0.0003	0.02
Benzene	mg/L	3	0.0001	<0.0001	<0.0001	0.005
Benzo(a)pyrene	mg/L	1	0.0000	<0.00001	<0.00001	0.00001
Bromoxynil	mg/L	1	0.0004	<0.0004	<0.0004	0.005
Carbaryl	mg/L	1	0.0030	<0.003	<0.003	0.09
Carbofuran	mg/L	1	0.0030	<0.003	<0.003	0.09
Carbon Tetrachloride	mg/L	3	0.0002	<0.0002	<0.0002	0.005
Chlorpyrifos	mg/L	1	0.0002	<0.0002	<0.0002	0.09
Diazinon	mg/L	1	0.0002	<0.0002	<0.0002	0.02
Dicamba	mg/L	1	0.0004	<0.0004	<0.0004	0.12
Dichloromethane	mg/L	3	0.0010	<0.001	<0.001	0.05
Diclofop-methyl	mg/L	1	0.0004	<0.0004	<0.0004	0.009
Dimethoate	mg/L	1	0.0003	<0.0003	<0.0003	0.02
Diquat	mg/L	1	0.0010	<0.001	<0.001	0.07
Diuron	mg/L	1	0.0030	<0.003	<0.003	0.15
Glyphosate	mg/L	1	0.0250	<0.025	<0.025	0.28
Malathion	mg/L	1	0.0002	<0.0002	<0.0002	0.19
Metolachlor	mg/L	1	0.0002	<0.0002	<0.0002	0.05
Metribuzin	mg/L	1	0.0003	<0.0003	<0.0003	0.08
Monochlorobenzene	mg/L	3	0.0001	<0.0001	<0.0001	0.08
Paraquat	mg/L	1	0.0010	<0.001	<0.001	0.01
Pentachlorophenol	mg/L	1	0.0004	<0.0004	<0.0004	0.06
Phorate	mg/L	1	0.0002	<0.0002	<0.0002	0.002
Picloram	mg/L	1	0.0007	<0.0007	<0.0007	0.19
Polychlorinated Biphenyls (PCBs)	mg/L	1	0.0000	<0.00002	<0.00002	0.003
Prometryne	mg/L	1	0.0002	<0.0002	<0.0002	0.001
Simazine	mg/L	1	0.0002	<0.0002	<0.0002	0.01
Terbufos	mg/L	1	0.0002	<0.0002	<0.0002	0.001
Tetrachloroethylene (perchloroethylene)	mg/L	3	0.0003	<0.0003	<0.0003	0.03
Triallate	mg/L	1	0.0040	<0.004	<0.004	0.23
Trichloroethylene	mg/L	3	0.0001	<0.0001	<0.0001	0.005
Trifluralin	mg/L	1	0.0000	<0.000006	<0.000006	0.045
Vinyl Chloride	mg/L	3	0.0002	<0.0002	<0.0002	0.002