



ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

CHATSWORTH
DRINKING WATER SYSTEM

Large Municipal Residential

SECTION 11
ANNUAL REPORT

For the period of
JANUARY 1, 2021 TO DECEMBER 31, 2021

Prepared by the Ontario Clean Water Agency
For The Township of Chatsworth

Drinking Water System Number:	210003011
Drinking Water System Name:	Chatsworth Drinking Water System
Drinking Water System Owner:	Township of Chatsworth
Drinking Water System Category:	Large Municipal Residential
Reporting Period:	January 1, 2021 to December 31, 2021

Does the Drinking Water System serve more than 10,000 people?

No.

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

Yes.

Location where the Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection:

Township of Chatsworth Municipal Office
 Rural Route, No. 1
 Chatsworth, Ontario
 N0H 1G0

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

n/a.

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

n/a

How system users are notified that the 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: _____

Description of Drinking Water System:

The Chatsworth Drinking Water System is owned by The Corporation of the Township of Chatsworth and is operated by the Ontario Clean Water Agency.

The Chatsworth Drinking Water System is a large municipal water system which draws its raw water from two (2) municipally owned wells. Each well is equipped with pumping equipment capable of pumping at 529.8 L/min at 105 m total dynamic head. Well No. 1 and Well No. 2 are equally rated at 569.0 L/min and are not meant to run simultaneously. Both wells are located within the same pumphouse. The pumphouse is located in Part Lot 5, Concession 1 East, Toronto Sydenham Road, former Township of Holland. Well #1 is a 33.6 meter deep drilled well. Well #2 is a 20.9 meter deep drilled well.

The wells are approximately 130 m from the Spey River, and have been determined by Henderson, Paddon & Associates Ltd. as being groundwater under some influence of surface water. When the wells were constructed, approximately 1.6 m of fill was added to the site to ensure good drainage around and away from the site, and as a safety measure to protect against flooding from the Spey River. Henderson, Paddon & Associates Ltd. also concluded that both Well No. 1 and Well No. 2 draw from the same aquifer.

The Chatsworth Drinking Water System's source water has been categorized as Groundwater Under the Direct Influence of Surface Water (GUDI). As such, the minimum log removal/inactivation required is 2 log for Cryptosporidium Oocysts, 3 log for Giardia Cysts and 4 log for viruses. The Chatsworth Drinking Water System achieves these credits from UV and chlorine disinfection.

Raw water is pumped from either Well No. 1 or Well No. 2 into a common discharge header. It then passes through a 5 micron nominal size cartridge filter with a filtration capacity of 8.9 L/s. The filtered water is monitored by an online turbidity analyzer and then directed through one of two ultraviolet disinfection reactors; one (1) duty, and one (1) standby. Each UV reactor has the capacity to provide a minimum dosage of 40 mJ/cm². Water is then directed past a flow meter before it is treated with sodium hypochlorite for primary and secondary disinfection. Treated water free chlorine residual is monitored by an online analyzer prior to being directed into the distribution system.

The Chatsworth Drinking Water System was established in 1984. The standpipe situated on side road #1 was replaced with a glass-fused-to-steel standpipe in 2018. The Water Distribution system consists of Polyvinyl Chloride (PVC) pipes that range in size from 150 mm to 200 mm in diameter. There are approximately 37 fire hydrants, 1 blow off, 1 hydrant flusher, 4 sampling stations and 242 service connections in the Chatsworth distribution system.

List of water treatment chemicals used during the reporting period:

- Sodium Hypochlorite 6%

Significant expenses were incurred to:

- Install required equipment
- Repair required equipment
- Replace required equipment
- No significant expenses were incurred

Description of expenses:

- Replaced lamp holders on UV Systems
- Replaced analog output on UV System no. 2
- Replaced 2 battery backup units
- Multiple distribution system parts
- Replaced control relays on MCC Panel
- Replaced contactors for motor control panels

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:

Date of Incident	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
n/a	n/a	n/a	n/a	n/a	n/a

Table 1. 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		Range of Total Coliforms Results		Number of HPC Samples	Range of HPC Samples	
		Minimum	Maximum	Minimum	Maximum		Minimum	Maximum
Raw (Well 1)	52	0	74	0	88	n/a	n/a	n/a
Raw (Well 2)	51*	0	76	0	90	n/a	n/a	n/a
Treated (TW)	52	0	0	0	0	52	0	1
Distribution (DW)	104	0	0	0	0	52	0	4

*Well 2 pump failure. Sample received before being put back in service.

Table 2. Operational testing done under Schedule 7, 8 or 9 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) – Well #1	12	0.19	1.36
Turbidity, In-House (NTU) – Well #2	12	0.15	0.83
Turbidity, On-Line (NTU) – Filter	8760	0.02	0.83
Free Chlorine Residual, On-Line (mg/L) – TW	8760	0.72*	1.99
Free Chlorine Residual, In-House (mg/L) – DW	416	0.41	1.78

NOTE: For continuous monitors 8760 is used as the number of samples

*Chlorine residual dropped to 0.72 mg/L for a short duration of 41 seconds on January 14, 2021. CT still achieved, no adverse.

Table 3. Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of Order of MDWL	Parameter	Date Sampled	Min	Max	Unit of Measure
n/a	n/a	n/a	n/a	n/a	n/a

Table 4. Summary of Inorganic parameters tested during this reporting period or most recent sample results

Parameter	Sample Date (yyyy/mm/dd)	Sample Result	Maximum Allowable Concentration (MAC)	Exceedance	
				MAC	½ MAC
Antimony: Sb (µg/L) - TW1	2021/01/11	<MDL 0.9	6.0	No	No
Antimony: Sb (µg/L) - TW2	2021/01/11	<MDL 0.9	6.0	No	No
Arsenic: As (µg/L) - TW1	2021/01/11	<MDL 0.2	10.0	No	No
Arsenic: As (µg/L) - TW2	2021/01/11	<MDL 0.2	10.0	No	No
Barium: Ba (µg/L) - TW1	2021/01/11	9.14	1000.0	No	No
Barium: Ba (µg/L) - TW2	2021/01/11	8.58	1000.0	No	No
Boron: B (µg/L) - TW1	2021/01/11	10.0	5000.0	No	No
Boron: B (µg/L) - TW2	2021/01/11	16.0	5000.0	No	No
Cadmium: Cd (µg/L) - TW1	2021/01/11	<MDL 0.003	5.0	No	No
Cadmium: Cd (µg/L) - TW2	2021/01/11	0.004	5.0	No	No
Chromium: Cr (µg/L) - TW1	2021/01/11	0.46	50.0	No	No
Chromium: Cr (µg/L) - TW2	2021/01/11	0.47	50.0	No	No
Mercury: Hg (µg/L) - TW1	2021/01/11	<MDL 0.01	1.0	No	No
Mercury: Hg (µg/L) - TW2	2021/01/11	<MDL 0.01	1.0	No	No
Selenium: Se (µg/L) - TW1	2021/01/11	0.19	50.0	No	No
Selenium: Se (µg/L) - TW2	2021/01/11	0.22	50.0	No	No
Uranium: U (µg/L) - TW1	2021/01/11	0.500	20.0	No	No
Uranium: U (µg/L) - TW2	2021/01/11	0.548	20.0	No	No
Fluoride (mg/L) - TW1	2017/01/11	0.06	1.5	No	No
Fluoride (mg/L) - TW2	2017/01/11	0.06	1.5	No	No
Nitrite (mg/L) - TW1	2021/01/04	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW1	2021/04/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW1	2021/07/05	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW1	2021/10/12	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW2	2021/01/04	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW2	2021/04/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW2	2021/07/05	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW2	2021/10/12	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW1	2021/01/04	1.02	10.0	No	No
Nitrate (mg/L) - TW1	2021/04/06	0.586	10.0	No	No
Nitrate (mg/L) - TW1	2021/07/05	1.29	10.0	No	No
Nitrate (mg/L) - TW1	2021/10/12	1.37	10.0	No	No
Nitrate (mg/L) - TW2	2021/01/04	1.14	10.0	No	No
Nitrate (mg/L) - TW2	2021/04/06	0.753	10.0	No	No
Nitrate (mg/L) - TW2	2021/07/05	1.30	10.0	No	No
Nitrate (mg/L) - TW2	2021/10/12	1.52	10.0	No	No
Sodium: Na (mg/L) - TW1	2019/01/08	3.72	20*	No	No
Sodium: Na (mg/L) - TW2	2019/01/08	3.04	20*	No	No

NOTE: There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets. NOTE: Sodium and Fluoride samples are to be taken every 60 months. The most current sampling session was in January 2019 for Sodium; the next sampling is scheduled for January 2024. The most current sampling session was in January 2017 for Fluoride; the next sampling is scheduled for January 2022.

Table 5. Summary of lead testing under Schedule 15.1 during this reporting period.

Location Type	Number of Samples	Range of Lead Results		Number of Exceedances
		Minimum	Maximum	
Plumbing	n/a	n/a	n/a	n/a
Distribution (µg/L)	3	0.08	0.16	0
Alkalinity (mg/L)	4	291	303	0
pH	4	7.20	7.50	n/a

NOTE: This system qualifies for the plumbing exemption as per Ontario Regulation 170/03 Schedule 15.1-5 (9) (10). This system also qualifies for reduced distribution sampling. Every 36 months, starting in the second sampling period of 2021 due to a population increase, 4 distribution samples will be taken during each sampling period and sampled for lead (2 per period). The most recent lead sampling session was in 2021. The next sampling session will be 2024.

Table 6. Summary of Organic parameters sampled during this reporting period or most recent sample results.

Parameter	Sample Date	Result Value	MAC	Exceedance	
				MAC	½ MAC
Alachlor (µg/L) - TW1	2021/01/11	<MDL 0.02	5.0	No	No
Alachlor (µg/L) - TW2	2021/01/11	<MDL 0.02	5.0	No	No
Atrazine + N-dealkylated metabolites (µg/L) - TW1	2021/01/11	<MDL 0.01	5.0	No	No
Atrazine + N-dealkylated metabolites (µg/L) - TW2	2021/01/11	<MDL 0.01	5.0	No	No
Azinphos-methyl (µg/L) - TW1	2021/01/11	<MDL 0.05	20.0	No	No
Azinphos-methyl (µg/L) - TW2	2021/01/11	<MDL 0.05	20.0	No	No
Benzene (µg/L) - TW1	2021/01/11	<MDL 0.32	1.0	No	No
Benzene (µg/L) - TW2	2021/01/11	<MDL 0.32	1.0	No	No
Benzo(a)pyrene (µg/L) - TW1	2021/01/11	<MDL 0.004	0.01	No	No
Benzo(a)pyrene (µg/L) - TW2	2021/01/11	<MDL 0.004	0.01	No	No
Bromoxynil (µg/L) - TW1	2021/01/11	<MDL 0.33	5.0	No	No
Bromoxynil (µg/L) - TW2	2021/01/11	<MDL 0.33	5.0	No	No
Carbaryl (µg/L) - TW1	2021/01/11	<MDL 0.05	90.0	No	No
Carbaryl (µg/L) - TW2	2021/01/11	<MDL 0.05	90.0	No	No
Carbofuran (µg/L) - TW1	2021/01/11	<MDL 0.01	90.0	No	No
Carbofuran (µg/L) - TW2	2021/01/11	<MDL 0.01	90.0	No	No
Carbon Tetrachloride (µg/L) - TW1	2021/01/11	<MDL 0.17	2.0	No	No
Carbon Tetrachloride (µg/L) - TW2	2021/01/11	<MDL 0.17	2.0	No	No
Chlorpyrifos (µg/L) - TW1	2021/01/11	<MDL 0.02	90.0	No	No
Chlorpyrifos (µg/L) - TW2	2021/01/11	<MDL 0.02	90.0	No	No
Diazinon (µg/L) - TW1	2021/01/11	<MDL 0.02	20.0	No	No
Diazinon (µg/L) - TW2	2021/01/11	<MDL 0.02	20.0	No	No
Dicamba (µg/L) - TW1	2021/01/11	<MDL 0.2	120.0	No	No
Dicamba (µg/L) - TW2	2021/01/11	<MDL 0.2	120.0	No	No
1,2-Dichlorobenzene (µg/L) - TW1	2021/01/11	<MDL 0.41	200.0	No	No
1,2-Dichlorobenzene (µg/L) - TW2	2021/01/11	<MDL 0.41	200.0	No	No
1,4-Dichlorobenzene (µg/L) - TW1	2021/01/11	<MDL 0.36	5.0	No	No
1,4-Dichlorobenzene (µg/L) - TW2	2021/01/11	<MDL 0.36	5.0	No	No
1,2-Dichloroethane (µg/L) - TW1	2021/01/11	<MDL 0.35	5.0	No	No
1,2-Dichloroethane (µg/L) - TW2	2021/01/11	<MDL 0.35	5.0	No	No
1,1-Dichloroethylene (µg/L) - TW1	2021/01/11	<MDL 0.33	14.0	No	No
1,1-Dichloroethylene (µg/L) - TW2	2021/01/11	<MDL 0.33	14.0	No	No
Dichloromethane (Methylene Chloride) (µg/L) - TW1	2021/01/11	<MDL 0.35	50.0	No	No
Dichloromethane (Methylene Chloride) (µg/L) - TW2	2021/01/11	<MDL 0.35	50.0	No	No
2,4-Dichlorophenol (µg/L) - TW1	2021/01/11	<MDL 0.15	900.0	No	No
2,4-Dichlorophenol (µg/L) - TW2	2021/01/11	<MDL 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (µg/L) - TW1	2021/01/11	<MDL 0.19	100.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (µg/L) - TW2	2021/01/11	<MDL 0.19	100.0	No	No
Diclofop-methyl (µg/L) - TW2	2021/01/11	<MDL 0.4	9.0	No	No
Diclofop-methyl (µg/L) - TW1	2021/01/11	<MDL 0.4	9.0	No	No
Dimethoate (µg/L) - TW1	2021/01/11	<MDL 0.06	20.0	No	No
Dimethoate (µg/L) - TW2	2021/01/11	<MDL 0.06	20.0	No	No
Diquat (µg/L) - TW1	2021/01/11	<MDL 1.0	70.0	No	No
Diquat (µg/L) - TW2	2021/01/11	<MDL 1.0	70.0	No	No
Diuron (µg/L) - TW1	2021/01/11	<MDL 0.03	150.0	No	No
Diuron (µg/L) - TW2	2021/01/11	<MDL 0.03	150.0	No	No
Glyphosate (µg/L) - TW1	2021/01/11	<MDL 1.0	280.0	No	No
Glyphosate (µg/L) - TW2	2021/01/11	<MDL 1.0	280.0	No	No
Malathion (µg/L) - TW1	2021/01/11	<MDL 0.02	190.0	No	No
Malathion (µg/L) - TW2	2021/01/11	<MDL 0.02	190.0	No	No
Metolachlor (µg/L) - TW1	2021/01/11	<MDL 0.01	50.0	No	No
Metolachlor (µg/L) - TW2	2021/01/11	<MDL 0.01	50.0	No	No
Metribuzin (µg/L) - TW1	2021/01/11	<MDL 0.02	80.0	No	No
Metribuzin (µg/L) - TW2	2021/01/11	<MDL 0.02	80.0	No	No
Monochlorobenzene (Chlorobenzene) (µg/L) - TW1	2021/01/11	<MDL 0.3	80.0	No	No

Parameter	Sample Date	Result Value	MAC	Exceedance	
				MAC	½ MAC
Monochlorobenzene (Chlorobenzene) (µg/L) - TW2	2021/01/11	<MDL 0.3	80.0	No	No
Paraquat (µg/L) - TW1	2021/01/11	<MDL 1.0	10.0	No	No
Paraquat (µg/L) - TW2	2021/01/11	<MDL 1.0	10.0	No	No
PCB (µg/L) - TW1	2021/01/11	<MDL 0.04	3.0	No	No
PCB (µg/L) - TW2	2021/01/11	<MDL 0.04	3.0	No	No
Pentachlorophenol (µg/L) - TW1	2021/01/11	<MDL 0.15	60.0	No	No
Pentachlorophenol (µg/L) - TW2	2021/01/11	<MDL 0.15	60.0	No	No
Phorate (µg/L) - TW1	2021/01/11	<MDL 0.01	2.0	No	No
Phorate (µg/L) - TW2	2021/01/11	<MDL 0.01	2.0	No	No
Picloram (µg/L) - TW1	2021/01/11	<MDL 1.0	190.0	No	No
Picloram (µg/L) - TW2	2021/01/11	<MDL 1.0	190.0	No	No
Prometryne (µg/L) - TW1	2021/01/11	<MDL 0.03	1.0	No	No
Prometryne (µg/L) - TW2	2021/01/11	<MDL 0.03	1.0	No	No
Simazine (µg/L) - TW1	2021/01/11	<MDL 0.01	10.0	No	No
Simazine (µg/L) - TW2	2021/01/11	<MDL 0.01	10.0	No	No
Terbufos (µg/L) - TW1	2021/01/11	<MDL 0.01	1.0	No	No
Terbufos (µg/L) - TW2	2021/01/11	<MDL 0.01	1.0	No	No
Tetrachloroethylene (µg/L) - TW1	2021/01/11	<MDL 0.35	10.0	No	No
Tetrachloroethylene (µg/L) - TW2	2021/01/11	<MDL 0.35	10.0	No	No
2,3,4,6-Tetrachlorophenol (µg/L) - TW1	2021/01/11	<MDL 0.2	100.0	No	No
2,3,4,6-Tetrachlorophenol (µg/L) - TW2	2021/01/11	<MDL 0.2	100.0	No	No
Triallate (µg/L) - TW1	2021/01/11	<MDL 0.01	230.0	No	No
Triallate (µg/L) - TW2	2021/01/11	<MDL 0.01	230.0	No	No
Trichloroethylene (µg/L) - TW1	2021/01/11	<MDL 0.44	5.0	No	No
Trichloroethylene (µg/L) - TW2	2021/01/11	<MDL 0.44	5.0	No	No
2,4,6-Trichlorophenol (µg/L) - TW1	2021/01/11	<MDL 0.25	5.0	No	No
2,4,6-Trichlorophenol (µg/L) - TW2	2021/01/11	<MDL 0.25	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (µg/L) - TW1	2021/01/11	<MDL 0.12	100.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (µg/L) - TW2	2021/01/11	<MDL 0.12	100.0	No	No
Trifluralin (µg/L) - TW1	2021/01/11	<MDL 0.02	45.0	No	No
Trifluralin (µg/L) - TW2	2021/01/11	<MDL 0.02	45.0	No	No
Vinyl Chloride (µg/L) - TW1	2021/01/11	<MDL 0.17	1.0	No	No
Vinyl Chloride (µg/L) - TW2	2021/01/11	<MDL 0.17	1.0	No	No
Trihalomethane: Total (µg/L) Annual Average - DW	2021 (Quarterly)	14.13	100	No	No
HAA Total (µg/L) Annual Average - DW	2021 (Quarterly)	5.3	80	No	No

Table 7. 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
n/a	n/a	n/a	n/a

NOTE: This is required only if DWS category is large municipal residential, small municipal residential, large municipal non-residential, small municipal non-residential, large non municipal non-residential