

**Schedule B**

**2021 Annual Report, Section 11**

**Ontario Regulation 170/03**



**City of Barrie  
Water Operations Branch**

**Drinking Water System  
2021 Annual Report  
Section 11, O.Reg. 170/03**

For the Period of

**JANUARY 1<sup>ST</sup>, 2021 TO DECEMBER 31<sup>ST</sup>, 2021**

***System Rating:***

Water Treatment Subsystem Class IV  
Water Distribution and Supply Subsystem Class IV  
Water Distribution Subsystem Class II

***Drinking Water System No.:***

220001192

***Municipal Drinking Water Licence No.:***

014-101, Issue No. 6

Effective Date: 2022-02-28

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## **1 Introduction**

The City of Barrie Water Operations Branch (the Branch) prepared this Annual Report (Report) to satisfy the requirements of Section 11 of Ontario Regulation (O.Reg.) 170/03. Section 11 (1) requires that the owner of a drinking water system prepare a report in accordance with subsection (3) and (6) for the preceding calendar year. The annual report must be prepared no later than February 28<sup>th</sup> of each year.

This report covers the period of January 1<sup>st</sup> to December 31<sup>st</sup>, 2021, and the information provided complies with the reporting requirements outlined in Section 11 of O.Reg.170/03.

A summary of the City of Barrie’s Municipal Drinking Water System (the System) description is outlined below:

- Drinking-Water System Number: 220001192
- Drinking-Water System Name: City of Barrie Drinking Water System
- Drinking-Water System Owner: Corporation of the City of Barrie
- Drinking-Water System Category: Large Municipal Residential

## **2 Reporting Requirements under Section 11 - O.Reg.170/03**

Section 11 requires that the Report include the following information relating to the period covered by the report:

- Include a statement of where a Report prepared under Schedule 22 will be available for inspection by any member of the public during normal business hours without charge;
- Contain a brief description of the drinking water system, including a list of water treatment chemicals used by the system;
- Describe any major expenses incurred to install, repair or replace required equipment;
- Summarize any reports made to the Ministry of Environment, Conservation and Parks (MECP) for Adverse Water Quality Incidents (AWQIs);
- Summarize the results of tests required under O.Reg. 170/03, or under an approval; Municipal Drinking Water Licence (MDWL) or order, including an Ontario Water Resources Act order, if tests required under this Regulation in respect of a parameter were not required during that period, summarize the most recent results of tests of that parameter; and
- Describe any corrective actions taken.

## **3 Evidence of Compliance**

### **3.1 Availability of the Annual Report**

In accordance with Section 11 of O.Reg. 170/03, a copy of the Report is available to the public, free of charge from the City of Barrie website and from the Branch by request.

The public will be advised of the Report’s availability and how to obtain a copy, without charge, on the City of Barrie’s website, in a local newspaper and on social media outlets after February 28, 2022.

### **3.2 Description of the Municipal Drinking Water System**

The System consists of a Surface Water Treatment Plant (SWTP) and associated low lift pumping station (LLPS), 12 groundwater wells, 3 in-ground storage facilities, 7 booster stations, and 3 elevated storage towers.

Treatment at the SWTP consists of primary screening, flocculation, membrane filtration, granular activated carbon contactors (for taste and odour control), and disinfection with chlorine gas. Primary disinfection is achieved through chlorine contact time (CT) in the four baffled wall chlorine contact chamber and reservoir. Secondary disinfection is achieved by boosting the chlorine residual of the treated water upon entry into the distribution system from the SWTP’s reservoir. Re-chlorination to maintain the chlorine residual in the distribution system is available at Harvie Road Booster Station/Reservoir and Mapleview Tower.

Treatment at each of the well stations consists of iron sequestration by addition of sodium silicate and disinfection with chlorine gas. Primary disinfection is achieved through CT prior to the first consumer, with the exception of Well 5, which uses ultraviolet disinfection. Secondary disinfection is maintained throughout the distribution system with booster chlorination applied at 7 locations throughout the distribution system.

The distribution system consists of approximately 3,948 hydrants and approximately 660.40 kilometers of watermain and transmission main ranging in sizes from 32mm to 1200mm and as of January 2022, delivering drinking water to a population of approximately 152,959 residents.

### 3.3 Water Treatment Chemicals

The following water treatment chemicals were used during the reporting period:

- Polyaluminum Chloride – Pre-filtration Coagulant – SWTP
- Chlorine – Primary and Secondary Disinfection – SWTP and Wells
- Sodium Silicate – Iron and Manganese Sequestration – Wells

### 3.4 Significant Expenses Incurred

A summary of the major expenses incurred during the reporting period to install, repair or replace required equipment, and value of each, is included in Table 1.

Table 1 – Summary of Expenses Incurred

<i>Activity</i>	<b>Costs Incurred (2021)</b>
Reservoir repairs (Harvie Rd. Reservoir)	\$125,000
Valve replacements (Innisfil Booster Pumping Station)	\$45,000
Pump #1 bowl replacement (Innisfil Booster Pumping Station)	\$22,600
Variable frequency drive replacements	\$60,000
Primary membrane permeate pump replacement	\$63,000
Watermain break repairs (34)	\$209,474
Hydro excavation contractors for water infrastructure repairs	\$33,064
Advanced Metering Infrastructure (AMI) Service Agreement	\$111,373
Meter replacement program	\$338,666

### 3.5 Operational Checks, Sampling and Testing

In general, during the reporting period, operational checks were completed and drinking water samples were collected in accordance with O.Reg. 170/03 and the MDWL, with one exception of Well 3A which was not in service; therefore, only sodium samples were collected at that location. The laboratory results for all analyzed samples regulated by O.Reg. 170/03 and the MDWL are summarized in Table 2 through Table 10, included in Appendix A for reference. All results from samples collected and analyzed during the reporting period met the regulatory requirements with the exception of those indicated in Table 11 of Appendix A.

Details of the sampling and testing conducted in 2021 are discussed below in Section 3.5.1 through 3.5.4, inclusive.

#### 3.5.1 Schedule 7 – Operational Checks – O.Reg. 170/03

Operational checks including free chlorine in treated water and free chlorine in distribution water, and raw water and treated water turbidity were conducted in accordance with Schedule 7 of O.Reg.170/03, except

for Well 3A which was not in service. The data summarized in the table contains numbers reflective of analyzer calibration and maintenance activities and are not an indication of improperly treated water.

The operational checks conducted during this reporting period are summarized in Table 2, included in Appendix A for reference.

### 3.5.2 Schedule 10 – Microbiological Sampling and Testing – O.Reg. 170/03

Raw, treated, and distribution water samples were analyzed for microbiological parameters specified in Schedule 10-2, 10-3 and 10-4 of O.Reg. 170/03 and Heterotrophic Plate Count (HPC), and Background bacteria (Background) pursuant to the Ontario Public Health Inspector's Guide (OPHIG), dated 2013.

Laboratory results for most samples analyzed for *E.coli*, Total Coliforms and Background met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03 and the OPHIG. There were several raw water samples collected before treatment that indicated the presence of bacteria. On occasion raw water samples yielded a NDOGT (No Data Overgrown with Target) result. A NDOGT result indicates that the test has a large number of bacteria present and Total Coliform and/or E. Coli are visible to the analyst, but it is difficult to determine exactly how much is present. Three (3) treated distribution samples yielded Total Coliform counts. Total Coliforms are an indicator bacteria where their presence may indicate that disease-causing organisms (bacteria) may be present in the water. All treated water samples that had a Total Coliform count, had no E. Coli present. All adverse results were reported as AWQIs as discussed in Section 3.6.

The samples analyzed for microbiological and bacteriological parameters during this reporting period are summarized in Table 3, included in Appendix A for reference.

### 3.5.3 Schedule 13 – Chemical Testing – O.Reg. 170/03

Treated water samples collected from the Water Distribution and Supply Subsystem were analyzed for organic and inorganic chemical parameters in accordance with O.Reg. 170/03, Schedule 13, Section 13.2 (Schedule 23), Section 13.4 (Schedule 24), Section 13.8, and Section 13.9. Analytical results for all samples analyzed for organic and inorganic chemical parameters met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03.

Treated water samples collected from the distribution system were analyzed for Trihalomethanes (THMs) and Haloacetic Acids in accordance with O.Reg. 170/03, Schedule 13.6 and 13.6.1. Treated water samples collected from the well stations were analyzed for nitrates and nitrites in accordance with 13.7 of O.Reg.170/03. Laboratory results for all samples analyzed for THM, nitrate and nitrite parameters met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03.

The above noted results are summarized in Tables 4, 5, and 6 in Appendix A for reference.

If analysis required under O.Reg. 170/03 with respect to an analytical parameter was not required during the reporting period; the most recent analytical results for that parameter was included in this report, in accordance with O.Reg. 170/03, s.11 (6) (b).

### 3.5.4 Schedule 15.1 – Lead – O.Reg. 170/03

Lead samples are collected from the plumbing at industrial and commercial locations and several hydrants within the distribution system during the winter and summer sampling period in accordance with Schedule 15.1. Amendments made under the MDWL requires the collection of five (5) Industrial, Commercial & Institutional (ICI) samples and ten (10) Distribution samples to be collected during the reporting periods of December 15<sup>th</sup>, 2020 to April 15<sup>th</sup>, 2021 and June 15<sup>th</sup>, 2021 to October 15<sup>th</sup>, 2021.

Pandemic related temporary Lead Sampling Regulatory Relief was requested and granted for the five (5) ICI samples for both sampling periods during 2021. Lead sampling from the five (5) ICI locations was not required, and samples were only collected from the ten (10) distribution locations.

Analytical results indicated lead concentrations below the established limit of 10ug/L for all the locations sampled.

The samples analyzed for lead during this reporting period are summarized in Table 7 and included in Appendix A for reference.

### 3.5.5 Municipal Drinking Water Licence

In addition to the sampling and monitoring required by O.Reg. 170/03, specific conditions within the City's MDWL required additional sampling and monitoring at select locations for select Volatile Organic Compounds (VOC), sodium, and UV disinfection at Well 5. Analytical results for all samples analyzed for select VOCs and sodium were below the applicable standards stipulated in O.Reg. 169/03.

The samples analyzed for select VOCs and sodium during the reporting period are summarized in Table 8 and Table 9, respectively, and included in Appendix A for reference. UV monitoring documented during this reporting period is summarized in Table 10 and included in Appendix A for reference.

### 3.6 Reporting and Corrective Actions

#### 3.6.1 Schedule 16 – Reporting of Adverse Test Results and Other Problems

Seven (7) AWQIs were reported during the 2021 reporting period in accordance with Schedule 16 of O.Reg. 170/03.

#### 3.6.2 Schedule 17 – Corrective Actions

Corrective actions related to each of the reported AWQIs, as noted above, were completed in accordance with O.Reg. 170/03, Schedule 17. The Branch resolved the AWQIs in consultation with the Simcoe Muskoka District Health Unit (SMDHU) and the MECP in a timely manner.

The AWQIs and associated corrective actions that occurred during this reporting period are summarized in Table 11, included in Appendix A for reference.

## **4 Closure**

It is the belief of the Branch that this report satisfies the requirements of Section 11 of O.Reg. 170/03. If you have any questions concerning the contents of this report, please contact the Supervisor of Compliance and Technical Support at the Branch.

## **Appendix A - Tables**



Table 2 – Schedule 7 Operational Checks\*

Sample Location	Sample Count	Free Chlorine		Turbidity			
		(min)	(max)	(min)	(max)	(min)	(max)
		Treated Water		Raw Water		Treated Water	
Well 5	**8760	0.10	3.54	0.00	6.84	--	--
Well 7	**8760	0.37	1.84	0.00	10.00	--	--
Well 9	**8760	0.32	2.74	0.00	10.00	--	--
Well 11	**8760	0.62	1.64	0.00	2.76	--	--
Well 12	**8760	0.11	4.15	0.00	2.00	--	--
Well 13	**8760	0.51	2.74	0.00	8.27	--	--
Well 14	**8760	0.22	3.31	0.00	10.00	--	--
Well 15	**8760	0.00	3.05	0.00	7.60	--	--
Well 16	**8760	0.35	2.78	0.00	10.00	--	--
Well 17	**8760	0.07	4.40	0.00	8.43	--	--
Well 18	**8760	0.27	3.53	0.00	5.74	--	--
Surface Water Treatment Plant	**8760	0.00	5.00	0.00	354.15	0.01	7.62
Bayfield Tower	**8760	0.00	5.00	--	--	--	--
Ferndale Tower	**8760	0.00	3.88	--	--	--	--
Mapleview Tower	**8760	0.00	3.29	--	--	--	--
Anne Reservoir	**8760	0.02	3.01	--	--	--	--
Harvie Reservoir	**8760	0.46	2.66	--	--	--	--
Sunnidale Reservoir	**8760	0.00	2.80	--	--	--	--

Notes:

\*\* 8760 - Represents continuous monitoring

-- - Analysis not required

NTU - Turbidity measured in Nephelometric Turbidity Units

mg/L - Free Chlorine measured in milligrams per litre

\* Data used to populate this table contains numbers reflective of analyzer calibration and maintenance activities and are not an indication of improperly treated water

Table 3 – Schedule 10 Microbiological Sampling and Testing

Sample Location	E.Coli		Total Coliform		Background		HPC		Sample Count
	(min)	(max)	(min)	(max)	(min)	(max)	(min)	(max)	
<b>Distribution</b>									
North Sampling Points	0	0	0	0	--	--	<10	370	727
South Sampling Points	0	0	0	1	--	--	<10	130	680
Other (i.e., main breaks, maintenance)	0	0	0	0	0	6	--	--	31
Sub-Total Distribution Samples									1438
<b>Treated Water</b>									
Well 5	0	0	0	1	0	0	10	40	55
Well 7	0	0	0	0	0	4	10	80	52
Well 9	0	0	0	0	0	1	10	30	50
Well 11	0	0	0	0	0	4	10	220	47
Well 12	0	0	0	0	0	0	10	50	52
Well 13	0	0	0	0	0	1	10	40	36
Well 14	0	0	0	0	0	1	10	150	52
Well 15	0	0	0	0	0	1	10	40	49
Well 16	0	0	0	0	0	2	10	50	52
Well 17	0	0	0	0	0	1	10	290	51
Well 18	0	0	0	0	0	4	10	120	52
Surface Water Treatment Plant	0	0	0	0	0	2	10	1290	53
Sub-Total Treated Samples									601
<b>Raw Water</b>									
Well 5	0	0	0	0	0	1	--	--	52
Well 7	0	0	0	0	0	34	--	--	52
Well 9	0	0	0	0	0	60	--	--	50
Well 11	0	0	0	0	0	5	--	--	47
Well 12	0	0	0	0	0	3	--	--	52
Well 13	0	0	0	11	0	>200	--	--	35
Well 14	0	0	0	0	0	7	--	--	52
Well 15	0	0	0	2	0	>200	--	--	49
Well 16	0	0	0	0	0	76	--	--	52
Well 17	0	0	0	0	0	5	--	--	51
Well 18	0	0	0	0	0	1	--	--	52
Surface Water Treatment Plant	0	NDOGT	0	NDOGT	6	NDOGT	--	--	52
Sub-Total Raw Samples									596

Notes:

- CFU/100mL - E. coli, Total Coliform and Background results are expressed as Colony Forming Units (CFU)/100mL
- CFU/1mL - Heterotrophic Plate Count (HPC) results are expressed as CFU/1mL
- - Analysis not required

Table 4 – Schedule 13 Chemical Sampling and Testing – Inorganics and Organics

Sample Location	Well 5	Well 7	Well 9	Well 11	Well 12	Well 13	Well 14	Well 15	Well 16	Well 17	Well 18	SWTP
Date Sampled	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-08-30
MDL	Analytical Result											
<b>Treated Water - Inorganic Parameters</b>												
Antimony	0.0001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Arsenic	0.0001	0.0003	0.0003	<MDL	0.0001	0.0002	0.0002	0.0001	0.0004	0.0003	0.0003	0.0004
Barium	0.001	0.179	0.27	0.104	0.235	0.401	0.267	0.108	0.281	0.105	0.294	0.255
Boron	0.005	0.021	0.013	0.010	0.016	0.025	0.018	0.014	0.012	0.013	0.015	0.017
Cadmium	0.000015	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Chromium	0.002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Mercury	0.00002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Selenium	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Uranium	0.00005	0.00039	0.00028	0.00099	0.00086	0.00036	0.00146	0.00090	0.00015	0.00100	0.00033	0.0002
<b>Treated Water - Organic Parameters</b>												
Alachlor	0.0003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Atrazine+metabolites	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Azinphos-methyl	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Benzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Benzo(a)pyrene	0.000006	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Bromoxynil	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Carbaryl	0.003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Carbofuran	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Carbon Tetrachloride	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Chlorpyrifos	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Diazinon	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Dicamba	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,2-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,4-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,2-dichloroethane	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1-Dichloroethylene (vinylidene chloride)	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Dichloromethane	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
2,4-Dichlorophenol	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
2,4-Dichlorophenoxy acetic acid (2,4-D)	0.0100	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Diclofop-methyl	0.0009	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Dimethoate	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Diquat	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Diuron	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Glyphosate	0.025	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Malathion	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
MCPA	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Metolachlor	0.003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Metribuzin	0.003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Monochlorobenzene	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Paraquat	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Pentachlorophenol	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Phorate	0.0003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Picloram	0.015	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Polychlorinated Biphenyls (PCB)	0.00005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Prometryne	0.0001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Simazine	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Terbufos	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Tetrachloroethylene (perchloroethylene)	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
2,3,4,6-Tetrachlorophenol	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Triallate	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Trichloroethylene	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	0.0014	<MDL	<MDL	<MDL	<MDL	<MDL
2,4,6-Trichlorophenol	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Trifluralin	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Vinyl Chloride	0.002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL

Notes:

- mg/L - All units presented in milligrams per litre
- MDL - Method Detection Limit for laboratory analysis
- <MDL - Analytical Result did not exceed the laboratory Method Detection Limit (MDL)
- SWTP - Surface Water Treatment Plant

Table 5 – Schedule 13 Chemical Sampling and Testing – Trihalomethanes & Haloacetic Acids

Parameter	Running Annual Average
	2021
Trihalomethanes	0.0466
Haloacetic Acids	0.0273

Notes:

mg/L - Reported in milligrams per litre

Table 6 – Schedule 13 Chemical Sampling and Testing – Sodium, Fluoride, Nitrite and Nitrate

Parameter	MDL	Date Sampled	Analytical Results											
			Sample Location	Well 5	Well 7	Well 9	Well 11	Well 12	Well 13	Well 14	Well 15	Well 16	Well 17	Well 18
Sodium	0.1	2019-09-16	17.8	10	43.7	94.2	140	54.2	61.9	22.7	--	--	9.9	--
		2019-12-09	--	--	--	--	--	--	--	--	10.4	--	--	--
		2020-03-02	--	--	--	--	--	--	--	--	--	9.9	--	--
		2021-08-30	--	--	--	--	--	--	--	--	--	--	--	32.0
Fluoride	0.2	2019-09-16	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	--	<MDL	--
		2019-12-09	--	--	--	--	--	--	--	--	<MDL	--	--	--
		2020-03-02	--	--	--	--	--	--	--	--	--	<MDL	--	--
		2021-08-30	--	--	--	--	--	--	--	--	--	--	--	<MDL
Nitrite	0.1	2021-03-01	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2021-03-08	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
		2021-05-25	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2021-06-07	<MDL	<MDL	<MDL	<MDL	<MDL	--	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
		2021-07-22	--	--	--	--	--	<MDL	--	--	--	--	--	--
		2021-08-23	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2021-09-07	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
		2021-10-04	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2021-11-22	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2021-12-06	<MDL	<MDL	<MDL	--	0.1	--	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Nitrate	0.1	2021-01-14	--	<MDL	--	--	--	--	--	--	--	--	--	--
		2021-03-01	--	--	--	--	--	--	--	--	--	--	--	0.2
		2021-03-08	<MDL	<MDL	3.7	0.6	<MDL	1.7	<MDL	<MDL	1.2	<MDL	<MDL	--
		2021-05-25	--	--	--	--	--	--	--	--	--	--	--	0.1
		2021-06-07	<MDL	<MDL	3.0	0.6	<MDL	--	<MDL	<MDL	1.3	<MDL	<MDL	--
		2021-07-22	--	--	--	--	--	1.0	--	--	--	--	--	--
		2021-08-23	--	--	--	--	--	--	--	--	--	--	--	0.2
		2021-09-07	<MDL	<MDL	3.8	0.7	<MDL	1.8	0.2	<MDL	1.2	<MDL	<MDL	--
		2021-10-04	--	--	--	--	--	--	--	--	--	--	--	0.2
		2021-11-22	--	--	--	--	--	--	--	--	--	--	--	0.2
2021-12-06	<MDL	<MDL	3.6	--	<MDL	--	0.1	<MDL	1.2	<MDL	<MDL	--		
2021-12-15	--	--	--	--	--	2.6	--	--	--	--	--	--		

Notes:

- - Analysis not required
- MDL - Method Detection Limit for laboratory analysis
- <MDL - Analytical Result did not exceed the laboratory Method Detection Limit (MDL)
- mg/L - All units reported in milligrams per litre
- SWTP - Surface Water Treatment Plant

Table 7 – Schedule 15.1 – Lead

Parameter	MDL	Sample Count	Range of Results	
			(min)	(max)
Lead (Plumbing)**	0.00002	0	--	--
Lead (Distribution System)		20	<MDL	0.00383

Notes:

mg/L - All units reported in milligrams per litre

MDL - Method Detection Limit for laboratory analysis

\*\* - Regulatory Relief for lead plumbing samples was granted by the MECF during 2021

Table 8 – Municipal Drinking Water Licence – Raw Water Sampling and Testing – Volatile Organic Compound

Parameter	MDL	Analytical Results							
		(min)	(max)	(min)	(max)	(min)	(max)	(min)	(max)
Sample Location		Well 11		Well 12		Well 14		Well 15	
Benzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Carbon Tetrachloride	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,2-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,4-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,2-Dichloroethane	0.0005	<MDL	<MDL	<MDL	0.00108	<MDL	<MDL	<MDL	<MDL
1,1-Dichloroethene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Cis-1,2-Dichloroethene	0.0005	<MDL	0.00059	<MDL	0.00135	<MDL	0.00135	<MDL	0.00145
Dichloromethane	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Monochlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Tetrachloroethylene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Trichloroethylene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	0.000810	<MDL	0.000820
Vinyl Chloride	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL

Notes: mg/L - All units reported in milligrams per litre  
 MDL - Method Detection Limit for laboratory analysis  
 <MDL - Analytical result did not exceed the laboratory Method Detection Limit (MDL)

Table 9 – Municipal Drinking Water Licence – Raw Water Sampling and Testing - Sodium

Sample Location	Sodium	
	(min)	(max)
*Well 3A	41.7	55.6
Well 9	44.7	65.0
Well 11	99.5	104.0
Well 12	141.0	170.0
Well 13	25.7	58.9
Well 14	50.9	65.1

Notes: mg/L - All units reported in milligrams per litre  
 \* - Although 3A was not in service, analytical results required as a condition of the MDWL

Table 10 – Municipal Drinking Water Licence – Ultra Violet Monitoring

Parameter	Minimum	Well 5	
		(min)	(max)
UV Dosage Monitored Continuously	40	0	83.1
UVT Monitored Weekly	85	85	97.5

Notes: (mJ/cm<sup>2</sup>) - UV Dosage measured in millijoules per centimeter squared  
 % - UVT measured in percent  
 \* Data used to populate this table contains numbers reflective of analyzer calibration and maintenance activities and are not an indication of improperly treated water

Table 11 – Schedule 16 and 17 – Summary of Adverse Water Quality Incidents (AWQIs)

AWQI #	Incident Date	Location	Parameter	Result	Unit of Measure	Summary	Corrective Action Date
153870	2021-04-12	Centennial WPS12 and WPS15	Sodium	25.9 & 157	mg/L	Sodium samples were collected for regulatory purposes. External lab results indicated that the results for sodium exceeded regulatory limits established by the Ministry of the Environment, Conservation and Parks (MECP). The incident was immediately reported to the SMDHU and the MECP. Resamples were collected from the adverse locations.	2021-04-14
153871	2021-04-12	Johnson WPS09 & WPS13, Heritage WPS11 & WPS14	Sodium	44.7, 69.1, 74.1 & 63.8	mg/L	Sodium samples were collected for regulatory purposes. External lab results indicated that the results for sodium exceeded regulatory limits established by the Ministry of the Environment, Conservation and Parks (MECP). The incident was immediately reported to the SMDHU and the MECP. Resamples were collected from the adverse locations.	2021-04-14
154023	2021-05-10	John WPS05	Total Coliform	1	Count/100 mL	A microbiological sample was collected from treated water during routine weekly sampling. External lab results indicated that the results for Total Coliform exceeded regulatory limits. The incident was immediately reported to the SMDHU and the MECP. Chlorine dosage was increased, sample taps were cleaned and bacteriological samples were collected from the adverse location until 2 consecutive samples collected 24 hours apart were acceptable.	2021-05-13
155317	2021-09-01	High lift Discharge (SWTP)	Sodium	32	mg/L	Sodium samples were collected for regulatory purposes. External lab results indicated that the results for sodium exceeded regulatory limits established by the Ministry of the Environment, Conservation and Parks (MECP). The incident was immediately reported to the SMDHU and the MECP. No corrective actions were required.	2021-09-01
155710	2021-09-27	Innisfil BPS03	Total Coliform	1	Count/100 mL	A microbiological sample collected from the distribution system during routine weekly sampling. External lab results indicated that the results for Total Coliform exceeded regulatory limits. The incident was immediately reported to the SMDHU and the MECP. Chlorine dosage was increased, sample taps were cleaned and bacteriological samples were collected from the adverse location, as well as, upstream and downstream of the adverse location until 2 consecutive samples collected 24 hours apart were acceptable.	2021-10-01
155984	2021-10-14	Hydrant #4074 (Muirfield Drive)	Chlorine	0.01	mg/L	Low chlorine residual was detected during dead end maintenance flushing. The incident was immediately reported to the SMDHU and the MECP. The hydrant was flushed and the free chlorine residual continued to be tested until adequate results were achieved.	2021-10-14
156072	2021-10-19	Saunders Road Sample Station	Total Coliform	1	Count/100 mL	A microbiological sample collected from the distribution system during routine weekly sampling. External lab results indicated that the results for Total Coliform exceeded regulatory limits. The incident was immediately reported to the SMDHU and the MECP. Bacteriological samples were collected from the adverse location, as well as, upstream and downstream of the adverse location until 2 consecutive samples collected 24 hours apart were acceptable.	2021-10-22

Notes:

NA - Not applicable