



Drinking Water Systems Regulation (O. Reg. 170/03)

2020 Annual Report

Drinking-Water System Number: 260002473
Drinking-Water System Name: City of Waterloo Distribution System
Drinking-Water System Owner: City of Waterloo
Drinking-Water System Category: Large Municipal Residential
Period being reported: January 1, 2020 – December 31, 2020

For Large Municipal Residential Systems:

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

Yes

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

Yes

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

- Available on the City website at www.waterloo.ca or by calling City Utilities, Customer Service at (519) 886-2310 ext.30239

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

Drinking Water System Name	Drinking Water System Number
None	N/A

2. Did you provide a copy of your 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

3. 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

4. Describe your Drinking-Water System:

The City of Waterloo owns the water distribution system; City Utilities Division is responsible for the operation of the Class 1 water distribution system, including pipes, valves, and hydrants. According to the Region of Waterloo's 2019 Year-End Population and Household Estimates report, the City's water distribution system serves a population of 146,010 people, including temporary non-resident students (29,490). The water distribution system consists of the following (2019 data):

- 436.4 kilometres of distribution main
- 31,219 water connections (active accounts)
- 2,523 hydrants (not including private hydrants)
- 4,917 valves (not including curbstop service valves, or control valves)

The City of Waterloo's distribution system dates back to 1899; extensive replacement and extension of the distribution system has occurred since that time. The watermains range in size from 50 mm to 450 mm in diameter; pipe materials include cast iron, ductile iron, asbestos-cement (AC), high-density-polyethylene (HDPE), polyvinyl chloride (PVC) or copper. Any alteration to the City's distribution system requires completion of the Form 1 - Record of Watermains Authorized as a Future Alteration.

There are 7.9 kilometres of dual mains that function as both transmission and distribution. Both the City of Waterloo and the Regional Municipality of Waterloo (RMOW) own these mains, but the City of Waterloo maintains them. Any alterations to dual mains require completion of the Form 1 under the Drinking Water Works Permit by the initiating municipality, and sign off is required by both the City of Waterloo and the RMOW. The role of Overall Responsible Operator for dual mains is the responsibility of the City of Waterloo.

The City of Waterloo's distribution system does not provide treatment to the water; therefore, there is no chlorine boosting, ultraviolet (UV) irradiation, secondary disinfection, and pressure boosting or pressure control within the control of the water distribution system. The Region of Waterloo is responsible for the water supply and water treatment. The City shares responsibility with the Region to regularly test water and ensure that the standards set out by the Ontario Ministry of the Environment, Conservation and Parks (MECP) are met or exceeded.

The water distribution system also provides source distribution to neighbourhoods in three adjacent municipalities: the City of Kitchener's community of River Ridge; the Township of Woolwich's commercial development at the St. Jacobs Outlets; and, the Community of St. Agatha within the Wilmot Township. The City of Waterloo does not provide treatment to the water, boost pressure or operate the distribution systems in these neighbourhoods.

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5. List all water treatment chemicals used over this reporting period:

Water treatment is the responsibility of the Region of Waterloo. The Region of Waterloo reports all the treatment chemicals used via their annual Water Quality Reports for the Integrated Urban System.

The City of Waterloo disinfects all parts, material and pipe during new installation and repair work using NSF 60 rated chlorine solution.

6. Were any significant expenses incurred to:

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

7. Please provide a brief description and a breakdown of monetary expenses incurred:

- Repair and maintenance of the distribution system (operating) = \$1,327,010
- Replacement of watermains and valves (capital) = \$4,054,000

8. 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:

AWQI#	Parameter	Incident Date	Result	Unit of Measure	Corrective Action	Corrective Action Resolution Date
149571	Lead – Private Plumbing	2020-02-07	14.3	µg/L	<ul style="list-style-type: none"> • Notify PHU, SAC, resident, provide ROW FAQ letter 	2020-02-11
149646	Total Coliform	2020-02-25	P	P/A	<ul style="list-style-type: none"> • Flushed and resampled offending site; flush and sample downstream 	2020-02-28
150249	Contractor Error resulting in Watermain Break	2020-06-15	Operator Observation	-	<ul style="list-style-type: none"> • BWA issued to 8 homes; contractor repaired watermain; City operators flushed past break; bacteriological sample taken after repair 	BWA rescinded 2020-06-19
150302	Total Coliform	2020-06-17	P	P/A	<ul style="list-style-type: none"> • Flushed and resampled offending site; flush and sample upstream and downstream 	BWA rescinded 2020-06-19
151042	Total Coliform	2020-07-.30	P	P/A	<ul style="list-style-type: none"> • Flushed and resampled offending site; flush and sample upstream and downstream 	2020-08-04
151233	Total Coliform	2020-08-07	P	P/A	<ul style="list-style-type: none"> • Flushed and resampled offending site; flush and sample upstream and downstream 	2020-08-11

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AWQI#	Parameter	Incident Date	Result	Unit of Measure	Corrective Action	Corrective Action Resolution Date
152376	Chlorine Residual	2020-10-01	TCR=0.22 FCR=0.02 CCR=0.20	mg/L	• Flushed and resampled offending site; flush and sample upstream	2020-10-01
152390	Lead – Private Plumbing	2020-10-02	14.5	µg/L	• Notify PHU, SAC, resident, provide ROW FAQ letter	2020-10-02
152565	Lead – Private Plumbing	2020-10-13	20.1	µg/L	• Notify PHU, SAC, resident, provide ROW FAQ letter	2020-10-13

A=Absent
P=Present

TCR=Total Chlorine Residual
FCR=Free Chlorine Residual

CCR=Combine Chlorine Residual
PHU = Region of Waterloo Public Health Unit

BWA = Boil Water Advisory
SAC = Spills Action Centre

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

Sample Source	Number of Samples	Range of E.Coli or Fecal Results (min - max)	Range of Total Coliform Results (min - max)	Number of HPC Samples	Range of HPC Results (min - max)
Distribution	1695	Absent - Present 0	Absent - Present 0	532	0 - 501 CFU/mL

CFU=Colony forming units

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

Parameter	Number of Grab Samples	Range of Results (min - max)	Unit
Total Chlorine	3142	0.22 - 1.88	mg/L
Free Chlorine	3142	0 - 1.28	mg/L
Turbidity	4	0.21 - 0.44	NTU

NTU= Nephelometric Turbidity Units

11. 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
Precautionary Boil Water Advisory	Total Coliforms	2020-06-17	P	P/A

12. Summary of Inorganic parameters tested during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value Range (min - max)	Unit of Measure	Number of Exceedances
Alkalinity	57 Samples between January 1 and December 31, 2020	198 - 350	mg/L	0
Aluminum	July 30, 2020	1.97	mg/L	0
Calcium	July 30, 2020 and August 28, 2020	86.3 - 150	mg/L	0
Copper	July 30, 2020	0.0299	mg/L	0
Fluoride	July 30, 2020	0.155	mg/L	0
Hardness	July 30, 2020	327	mg/L	0
Iron	July 30, 2020 and August 28, 2020	0.104 - 3.69	mg/L	0
Magnesium	July 30, 2020	27.1	mg/L	0
Manganese	July 30, 2020 and August 28, 2020	0.04 - 0.67	mg/L	0
Nitrate-N	July 30, 2020	2.74	mg/L	0
Nitrite-N	July 30, 2020	0.014	mg/L	0
pH	121 Samples between January 1 and December 31, 2020	7.1 - 7.88	pH	0
Zinc	July 30, 2020	0.096	mg/L	0

13. Summary of lead testing under Schedule 15.1 during this reporting period:**

Location Type	Number of Samples	Range of Lead Results (min#) - (max #)	Unit of Measure	Number of Exceedances
Plumbing	130	ND – 20.1	µg/L	3
Distribution	56	ND – 0.949	µg/L	0

** Schedule 15.1 samples taken December 15 to April 15 and June 15 to October 15. Lead samples taken outside these mandated timeframes are reported in section 12 above

14. Summary of Organic parameters sampled during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
HAA (NOTE: year-end running average)	January 28, 2020 April 28, 2020 July 28, 2020 October 21, 2020	5.2	µg/L	0
THM (NOTE: year-end running average)	January 28, 2020 April 28, 2020 July 28, 2020 October 21, 2020	15.5	µg/L	0

15. 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
Lead – Private Plumbing	5.11	µg/L	2020-02-06
Lead – Private Plumbing	14.3	µg/L	2020-02-14
Lead – Private Plumbing	7.23	µg/L	2020-09-30
Lead – Private Plumbing	14.5	µg/L	2020-09-30
Lead – Private Plumbing	20.1	µg/L	2020-10-05