



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

2019 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, 2019 – December 31, 2019

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 2018 Year-End Population and Household Estimates report, the City's water distribution system serves a population of 139,490 people, including temporary non-resident students (26,260). The water distribution system consists of the following (2018 data):

- 435 kilometres of distribution main
- 31,115 water connections (active accounts)
- 2,519 hydrants (not including private hydrants)
- 4,901 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 7.6 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) = \$1,428,689
- Replacement of watermains and valves (capital) = \$3,504,000

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
144815	Lead - Plumbing	2/14/2019	13.8	µg/L	<ul style="list-style-type: none"> • Notify PHU, SAC, resident, provide ROW FAQ letter 	N/A
144832	Lead - Distribution	2/19/2019	10.9	µg/L	<ul style="list-style-type: none"> • Flushed and resampled offending site 	2/28/2019
144907	Lead - Distribution	2/28/2019	23	µg/L	<ul style="list-style-type: none"> • Flushed and resampled offending site 	3/12/2019
146061	Lead - Plumbing	6/28/2019	31.5	µg/L	<ul style="list-style-type: none"> • Notify PHU, SAC, resident, provide ROW FAQ letter 	N/A
146165	Lead - Plumbing	7/3/2019	46.1	µg/L	<ul style="list-style-type: none"> • Notify PHU, SAC, resident, provide ROW FAQ letter; Resampled 	N/A
148254	Total Coliforms	9/26/2019	P	P/A	<ul style="list-style-type: none"> • Flushed and resampled offending site; flush and sample upstream and downstream 	9/30/2019
148254 (same event as above)	E.coli	9/26/2019	P	P/A	<ul style="list-style-type: none"> • Flushed and resampled offending site; • Flush and sample upstream and downstream; • BWA issued by PHU Sept 27/19 	9/30/2019 (BWA rescinded Oct 1/19)

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AWQI#	Parameter	Incident Date	Result	Unit of Measure	Corrective Action	Corrective Action Resolution Date
148379	Total Coliforms	10/3/2019	P	P/A	<ul style="list-style-type: none"> Flushed and resampled offending site; Flush and sample upstream and downstream 	10/4/2019
148672	Lead - Plumbing	10/18/2019	264 and 37.6	µg/L	<ul style="list-style-type: none"> Notify PHU, SAC, resident, provide ROW FAQ letter; Resample scheduled 10/24/2019 	N/A
148764 (resample for 148672)	Lead - Plumbing	10/24/2019	93.1	µg/L	<ul style="list-style-type: none"> Notify PHU, SAC, resident, provide ROW FAQ letter 	N/A
148988	Chlorine Residual	11/13/2019	TCR=0.24 FCR=0.01 CCR=0.23	mg/L	<ul style="list-style-type: none"> Flushed and sampled distribution (Hyd#249); Flushed and resampled offending site 	11/13/2019

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	1611	Absent - Present 0	Absent - Present 0	539	0 - 65 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	2684	0.24 - 1.90	mg/L
Free Chlorine	2684	<0.02 - 1.18	mg/L

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
Boil Water Advisory	E.coli	9/26/2019	Present	P/A

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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	101 Samples between January 1 and December 31, 2019	193 - 347	mg/L	0
Lead – Distribution*	4 Samples between October 18 and December 16, 2019	ND - 0.439	µg/L	0
Lead – Plumbing*	10 Samples between October 18 and December 16, 2019	0.543 - 264	µg/L	3
pH	219 Samples between January 1 and December 31, 2019	7.1 - 7.7	pH	0

* Lead samples taken outside of mandated timeframe as per Schedule 15.1

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	226	ND - 46.1	µg/L	3
Distribution	97	ND - 23	µg/L	2

** 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 16, 2019 January 30, 2019 March 6, 2019 April 23, 2019 July 23, 2019 October 23, 2019	9.44	µg/L	0
THM (NOTE: year-end running average)	February 8, 2019 April 23, 2019 July 23, 2019 October 23, 2019	17.00	µg/L	0

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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 - Distribution	8.84	µg/L	February 11, 2019
Lead - Plumbing	13.8 and 5.63	µg/L	February 14, 2019
Lead - Distribution	10.9	µg/L	February 19, 2019
Lead - Distribution	23	µg/L	February 28, 2019
Lead - Plumbing	31.5	µg/L	June 28, 2019
Lead - Plumbing	46.1	µg/L	July 2, 2019
Lead - Plumbing	8.08 and 5.05	µg/L	September 23, 2019