




Cannington Drinking Water System

# 2019 Annual Water Quality Report

Water is so good for you



Water makes  
me Happy and  
Healthy!

water is so healthy  
for you I like to  
drink 

## The Regional Municipality of Durham

### Cannington Drinking Water System 2019 Annual Report

**Drinking Water System Number:** 220000745

**Municipal Drinking Water Licence Number:** 003-106

**Drinking Water System Owner:** The Regional Municipality of Durham

**Drinking Water System Category:** Large Municipal Residential

This Annual Report for the calendar year 2019 is designed to inform you about your drinking water system. This report has been prepared to satisfy Section 11 of Ontario Regulation (O. Reg.) 170/03. O. Reg. 170/03 sets requirements for drinking water systems with regard to sampling and testing, levels of treatment, certification of staff, and notification of authorities and the public about water quality. Hard copies of this report and the Schedule 22 Summary Report are available at the Regional Municipality of Durham Headquarters office that is located at 605 Rossland Road East, Whitby. The annual report is also available on the [Region of Durham's website](http://www.durham.ca) at www.durham.ca. Further information regarding the Drinking Water Regulations can be found on the [Ministry of the Environment, Conservation and Parks website](http://www.ontario.ca/ministry-environment-conservation-parks) at www.ontario.ca/ministry-environment-conservation-parks.

### Drinking Water System Process Description

#### General

The Cannington Drinking Water System provides potable water to consumers in the Community of Cannington in the Township of Brock. Cannington has five municipal wells designated as Well No. 2, Well No. 3, Well No. 4, Well No. 7 and Well No. 8. Well No. 8 in Cannington is classified as groundwater under direct influence of surface water (GUDI) with effective in-situ filtration. Well No. 8 is equipped with an ultraviolet (UV) system to provide the additional disinfection required for a GUDI well. Well No. 4 resumed normal operations in April of 2019 after installation of a new watermain to provide increased chlorine contact time. Cannington is a Class One Water Treatment Plant with an approved combined capacity of 2,092 cubic metres per day (m<sup>3</sup>/d). The Cannington Drinking Water System feeds a Class One Distribution System and Class One Trunk Distribution System. The treatment and distribution systems are owned and operated by the Regional Municipality of Durham.

The water supply system includes the following processes:

- Disinfection (sodium hypochlorite),
- Ultraviolet (UV) disinfection (Well No. 8 only), and
- Distribution system.

### **Raw Water Supply**

Water is pumped from five municipal wells. Wells No. 2, 3, 4, 7 and 8 are drilled to depths of 16.76 metre (m), 10.70 m, 21.32 m, 12.2 m and 21.3 m, respectively. Water is delivered to the system by the well pumps.

### **Disinfection**

The raw water is disinfected with sodium hypochlorite. UV treatment provides additional disinfection at Well No. 8. The free chlorine residual, turbidity and ultraviolet transmittance are monitored continuously by online analyzers.

### **Distribution System**

The distribution system delivers treated water through approximately 15 kilometres of watermain and includes a 1,391 cubic metre standpipe for storage and pressure equalization.

### **Major Monetary expenses (above \$10,000)**

Under Section 11 of O. Reg. 170/03, a description of any major expenses incurred during this reporting period to install, repair or replace required equipment must be included in the annual report. The details of major expenses for this drinking water system are as follows:

Watermain replacement costs - \$89,714.24

## Tables

For a description of terms and abbreviations in all tables, refer to the glossary at the end of the report.

### Cannington Drinking Water System (DWS) Table 1

Summary of all Adverse Water Quality Incidents in 2019 Reported to Spills Action Centre in Accordance with Schedule 16-3 and 16-4 of O. Reg. 170/03.

No adverse water quality incidents occurred in 2019.

| Incident Date        | Parameter | Result | Corrective Action | Corrective Action Date |
|----------------------|-----------|--------|-------------------|------------------------|
| Not Applicable (N/A) | N/A       | N/A    | N/A               | N/A                    |

### Cannington DWS Table 2

Microbiological Membrane Filtration (MF) Testing Under Schedule 10 of O. Reg. 170/03.

| Type of Sample | Number of Samples | Range of Escherichia Coli MF Colony Forming Units per 100 Millilitres | Range of Total Coliforms MF Colony Forming Units per 100 Millilitres |
|----------------|-------------------|---|--|
| Raw            | 263               | Non-Detect (ND) - 1   | ND - 260   |
| Treated        | 0                 | Not Applicable (N/A)  | N/A  |
| Distribution   | 14                | ND  | ND   |

### Cannington DWS Table 3

Microbiological Presence Absence (P/A) Testing Under Schedule 10 of O. Reg. 170/03.

| Type of Sample | Number of Samples | Escherichia Coli P/A per 100 Millilitres | Total Coliforms P/A per 100 Millilitres |
|----------------|-------------------|--|---|
| Treated        | 198               | Absence (A)                              | A                                       |
| Distribution   | 205               | A  | A                                       |

#### Cannington DWS Table 4

#### Microbiological Heterotrophic Plate Count (HPC) Testing Under Schedule 10 of O. Reg. 170/03.

| Type of Sample | Number of Samples | Range of HPC Samples Colony Forming Units per Millilitre |
|----------------|-------------------|--|
| Treated        | 198               | Non-Detect (ND) - 4                                      |
| Distribution   | 120               | ND - 130   |

#### Cannington DWS Table 5

#### Operational Testing Done Under Schedule 7 of O. Reg. 170/03.

| Test                         | Number of Samples | Range of Results | Unit of Measure                     | Parameter Description   |
|------------------------------|-------------------|------------------|-------------------------------------|---|
| Turbidity - Raw Water        | 263               | 0.06 - 0.37      | Nephelometric Turbidity Units (NTU) | Turbidity is a measure of particles in water.   |
| Free Chlorine - Plant        | Continuous        | 0.67 - 1.92*     | Milligram per Litre (mg/L)          | Must be sufficient to ensure disinfection has been achieved.  |
| Free Chlorine - Distribution | Continuous        | 0.30 - 1.56*     | mg/L                                | Recommended level of at least 0.20 mg/L in the distribution system to maintain secondary disinfection, 0.05 mg/L is the minimum required. |

\*Results include all analyzers and grab samples.

## Cannington DWS Table 6

### Summary of Treated Water Chemical Parameters Tested Under Schedules 13 and 23 of O. Reg. 170/03.

| Parameter  | Number of Samples | Results Range            | MAC                         | Unit of Measure            | MAC Exceedance       | Potential Sources <sup>1</sup>                          |
|--|-------------------|--------------------------|-----------------------------|----------------------------|----------------------|---|
| Antimony   | 21                | Non-Detect (ND) - 0.0008 | 0.006                       | Milligram per Litre (mg/L) | No                   | Fire retardants, ceramics, electronics, solder.         |
| Arsenic  | 21                | ND                       | 0.01                        | mg/L                       | No                   | Mining.   |
| Barium   | 5                 | 0.0316 - 0.0643          | 1.0                         | mg/L                       | No                   | Metal refineries, oil drilling.                         |
| Boron  | 5                 | 0.0083 - 0.0511          | 5.0                         | mg/L                       | No                   | Industrial.   |
| Cadmium  | 21                | ND                       | 0.005                       | mg/L                       | No                   | Industrial.   |
| Chromium   | 21                | ND – 0.0011              | 0.05                        | mg/L                       | No                   | Industrial.   |
| Total Haloacetic acids - Distribution (annual average) | 5                 | ND                       | 80                          | Microgram per Litre (ug/L) | No                   | By-product of chlorination of drinking water.           |
| Mercury  | 5                 | ND                       | 0.001                       | mg/L                       | No                   | Industrial.   |
| Selenium   | 21                | ND - 0.0007              | 0.05                        | mg/L                       | No                   | Refineries, mines, chemical manufacturing.              |
| Sodium   | 16                | 4.36 - 46.1              | Not Applicable <sup>2</sup> | mg/L                       | Yes (9) <sup>3</sup> | Storm water runoff including road salt.                 |
| Total Trihalomethanes - Distribution (annual average)  | 5                 | 13.3                     | 100                         | ug/L                       | No                   | By-product of chlorination of drinking water.           |
| Uranium  | 5                 | ND - 0.001               | 0.02                        | mg/L                       | No                   | Power generation.                                       |
| Fluoride   | 16                | ND                       | 1.5                         | mg/L                       | No                   | Mining  |
| Nitrite  | 16                | ND                       | 1.0                         | mg/L                       | No                   | Agriculture runoff, landfill leachate and animal waste. |
| Nitrate  | 16                | 1.78 – 5.19              | 10.0                        | mg/L                       | No                   | Fertilizer.   |

1 Parameters may occur naturally in the environment.

2 Sodium does not have a Maximum Acceptable Concentration (MAC); only an aesthetic objective of 200 mg/L. Sodium results exceeding 20 mg/L are to be reported to the Medical Officer of Health as per Schedule 16-3 (8) of O. Reg. 170/03.

3 Number in parenthesis represents number of exceedance(s). For Sodium, regulations require reporting when results exceed 20 mg/L if it has not been reported in the preceding 57 months.

### Cannington DWS Table 7

#### Summary of Lead Testing Under Schedule 15.1 of O. Reg. 170/03.

No plumbing samples were required to be taken in 2019.

| Location Type | Number of Samples | Range of Lead Results Milligram per Litre | MAC  | Number of Exceedences | pH          | Alkalinity Milligram per Litre |
|---------------|-------------------|---|------|-----------------------|-------------|--------------------------------|
| Plumbing      | 0                 | Not Applicable (N/A)                      | 0.01 | 0                     | N/A         | N/A                            |
| Distribution  | 4                 | Non-Detect                                | 0.01 | 0                     | 7.20 - 7.40 | 211 - 306                      |

### Cannington DWS Table 8

#### Summary of Treated Water Organic Parameters Tested Under Schedule 24 of O. Reg. 170/03.

| Parameter                            | Number of Samples | Results Range   | MAC  | Unit of Measure            | MAC Exceedance | Potential Sources                                     |
|--------------------------------------|-------------------|-----------------|------|----------------------------|----------------|---|
| Alachlor                             | 5                 | Non-Detect (ND) | 5    | Microgram per Litre (ug/L) | No             | Agricultural herbicide.                               |
| Atrazine + N-dealkylated metabolites | 5                 | ND              | 5    | ug/L                       | No             | Agricultural herbicide.                               |
| Azinphos-methyl                      | 5                 | ND              | 20   | ug/L                       | No             | Insecticide.  |
| Benzene                              | 26                | ND              | 1    | ug/L                       | No             | Plastics manufacturing, leaking fuel tanks.           |
| Benzo(a)pyrene                       | 5                 | ND              | 0.01 | ug/L                       | No             | Formed from the incomplete burning of organic matter. |
| Bromoxynil                           | 5                 | ND              | 5    | ug/L                       | No             | Agricultural herbicide.                               |
| Carbaryl                             | 5                 | ND              | 90   | ug/L                       | No             | Agricultural, forestry, household insecticide.        |

**Cannington DWS Table 8 continued**

| <b>Parameter</b>                                  | <b>Number of Samples</b> | <b>Results Range</b> | <b>MAC</b> | <b>Unit of Measure</b>     | <b>MAC Exceedance</b> | <b>Potential Sources</b>                                     |
|---|--------------------------|----------------------|------------|----------------------------|-----------------------|--|
| <b>Carbofuran</b>                                 | 5                        | Non-Detect (ND)      | 90         | Microgram per Litre (ug/L) | No                    | Agricultural insecticide.                                    |
| <b>Carbon Tetrachloride</b>                       | 26                       | ND                   | 2          | ug/L                       | No                    | Chemical and industrial activities.                          |
| <b>Chlorpyrifos</b>                               | 5                        | ND                   | 90         | ug/L                       | No                    | Agricultural, household insecticide.                         |
| <b>Diazinon</b>                                   | 5                        | ND                   | 20         | ug/L                       | No                    | Agricultural, livestock, operation, residential insecticide. |
| <b>Dicamba</b>                                    | 5                        | ND                   | 120        | ug/L                       | No                    | Agricultural herbicide                                       |
| <b>1,2-Dichlorobenzene</b>                        | 26                       | ND                   | 200        | ug/L                       | No                    | Chemical and industrial factories.                           |
| <b>1,4-Dichlorobenzene</b>                        | 26                       | ND                   | 5          | ug/L                       | No                    | Chemical and industrial factories.                           |
| <b>1,2-Dichloroethane</b>                         | 26                       | ND                   | 5          | ug/L                       | No                    | Industrial chemical factories.                               |
| <b>1,1-Dichloroethylene (vinylidene chloride)</b> | 26                       | ND                   | 14         | ug/L                       | No                    | Industrial chemical factories.                               |
| <b>Dichloromethane</b>                            | 26                       | ND                   | 50         | ug/L                       | No                    | Pharmaceutical and chemical factories.                       |
| <b>2,4-dichlorophenol</b>                         | 5                        | ND                   | 900        | ug/L                       | No                    | Industrial contamination, reaction with chlorine.            |
| <b>2,4-Dichlorophenoxy acetic acid (2,4-D)</b>    | 5                        | ND                   | 100        | ug/L                       | No                    | Agricultural, residential herbicide.                         |



Cannington DWS Table 8 continued

| Parameter                                  | Number of Samples | Results Range   | MAC | Unit of Measure            | MAC Exceedance | Potential Sources   |
|--|-------------------|-----------------|-----|----------------------------|----------------|---|
| Diclofop-methyl                            | 5                 | Non-Detect (ND) | 9   | Microgram per Litre (ug/L) | No             | Agricultural herbicide.   |
| Dimethoate                                 | 5                 | ND              | 20  | ug/L                       | No             | Agricultural, livestock, operation, residential insecticide.                |
| Diquat                                     | 5                 | ND              | 70  | ug/L                       | No             | Agricultural, aquatic herbicide.  |
| Diuron                                     | 5                 | ND              | 150 | ug/L                       | No             | Agricultural, industrial herbicide.   |
| Glyphosate                                 | 5                 | ND              | 280 | ug/L                       | No             | Agricultural, forestry, household herbicide.                                |
| Malathion                                  | 5                 | ND              | 190 | ug/L                       | No             | Pest control insecticide.   |
| 2-Methyl-4-chlorophenoxyacetic acid (MCPA) | 5                 | ND              | 100 | ug/L                       | No             | Agricultural herbicide.   |
| Metolachlor                                | 5                 | ND              | 50  | ug/L                       | No             | Agricultural herbicide.   |
| Metribuzin                                 | 5                 | ND              | 80  | ug/L                       | No             | Agricultural herbicide.   |
| Monochlorobenzene                          | 26                | ND              | 80  | ug/L                       | No             | Industrial and agricultural chemical factories and dry cleaning facilities. |
| Paraquat                                   | 5                 | ND              | 10  | ug/L                       | No             | Agricultural, aquatic herbicide.  |

**Cannington DWS Table 8 continued**

| <b>Parameter</b>                               | <b>Number of Samples</b> | <b>Results Range</b> | <b>MAC</b> | <b>Unit of Measure</b>     | <b>MAC Exceedance</b> | <b>Potential Sources</b>  |
|--|--------------------------|----------------------|------------|----------------------------|-----------------------|---|
| <b>Pentachlorophenol</b>                       | 5                        | Non-Detect (ND)      | 60         | Microgram per Litre (ug/L) | No                    | Pesticide, wood preservative residue.   |
| <b>Phorate</b>                                 | 5                        | ND                   | 2          | ug/L                       | No                    | Agricultural insecticide.   |
| <b>Picloram</b>                                | 5                        | ND                   | 190        | ug/L                       | No                    | Industrial herbicide.   |
| <b>Polychlorinated Biphenyls(PCB)</b>          | 5                        | ND                   | 3          | ug/L                       | No                    | Residue from various industrial uses.   |
| <b>Prometryne</b>                              | 5                        | ND                   | 1          | ug/L                       | No                    | Agricultural herbicide.   |
| <b>Simazine</b>                                | 5                        | ND                   | 10         | ug/L                       | No                    | Agricultural herbicide.   |
| <b>Terbufos</b>                                | 5                        | ND                   | 1          | ug/L                       | No                    | Agricultural insecticide.   |
| <b>Tetrachloroethylene (perchloroethylene)</b> | 26                       | ND                   | 10         | ug/L                       | No                    | Leaching from PVC pipes; discharge from factories; dry cleaners and auto shops (metal degreaser). |
| <b>2,3,4,6 - Tetrachlorophenol</b>             | 5                        | ND                   | 100        | ug/L                       | No                    | Wood preservative.  |
| <b>Triallate</b>                               | 5                        | ND                   | 230        | ug/L                       | No                    | Agricultural herbicide.   |
| <b>Trichloroethylene</b>                       | 26                       | ND – 0.8             | 5          | ug/L                       | No                    | Metal degreasing sites and other factories.   |

**Cannington DWS Table 8 continued**

| Parameter                    | Number of Samples | Results Range   | MAC | Unit of Measure            | MAC Exceedance | Potential Sources   |
|------------------------------|-------------------|-----------------|-----|----------------------------|----------------|---|
| <b>2,4,6-Trichlorophenol</b> | 5                 | Non-Detect (ND) | 5   | Microgram per Litre (ug/L) | No             | Pesticide manufacturing.                                    |
| <b>Trifluralin</b>           | 5                 | ND              | 45  | ug/L                       | No             | Agricultural herbicide.                                     |
| <b>Vinyl Chloride</b>        | 26                | ND              | 1   | ug/L                       | No             | Leaching from PVC pipes; discharge from plastics factories. |

**Cannington DWS Table 9**

**Inorganic or Organic Parameter(s) that Exceed Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.**

No inorganic or organic parameters exceeded half the maximum allowable concentration in 2019.

| Parameter                   | Result | Unit of Measure | Date of Sample |
|-----------------------------|--------|-----------------|----------------|
| <b>Not Applicable (N/A)</b> | N/A    | N/A             | N/A            |