



# **Tiverton Drinking Water System**

## **2024 Annual Water Summary Report**

## 1. INTRODUCTION AND BACKGROUND

The municipality owns and operates drinking water systems to provide residents with safe, potable water. These municipal drinking water systems are regulated under various legislation and legal documents including the Safe Drinking Water Act and Ontario Regulation 170/03 Drinking Water Systems. O. Reg. 170 requires that the municipality complete an annual water report (Section 11) and an annual summary report (Schedule 22). The information required for each of these reports has been combined into this one report. This annual water summary report will be made available for inspection as per O. Reg. 170 subsection 12 (4).

The reports are available free of charge on the municipal website at [www.kincardine.ca](http://www.kincardine.ca) or by contacting the Environmental Services Department at [waterservice@kincardine.ca](mailto:waterservice@kincardine.ca). Requests will also be received in person or by telephone at the Municipal Administration Centre (1475 Concession 5, 519-396-3468) or the Environmental Services Office (155 Durham Street, Kincardine, 519-396-4660).

### 1.1. System Description

|                                        |                                |
|----------------------------------------|--------------------------------|
| <b>Drinking-Water System Number:</b>   | 220002609                      |
| <b>Drinking-Water System Name:</b>     | Tiverton Drinking Water System |
| <b>Drinking-Water System Owner:</b>    | Municipality of Kincardine     |
| <b>Drinking-Water System Category:</b> | Large Municipal Residential    |
| <b>Period being reported:</b>          | Year 2024                      |

The Tiverton Drinking Water System (DWS) is a non-GUDI groundwater supply (which means that it is a secure well and not under the influence of surface water) consisting of 3 active wells, Briar Hill Well #1, Briar Hill Well #2 and Dent Well #2. The newest well, Briar Hill Well #2, went on-line August 2007 and is a 220mm diameter 93 m deep drilled well with a maximum water taking of 8.3 L/s or 720 m<sup>3</sup>/d. Briar Hill Well #1 is a 150 mm diameter 93 m deep groundwater well rated at 6.1 L/s or 524.16 m<sup>3</sup>/d. The third active well is Dent Well #2. This well was put in service on July 15, 2005, and replaced the original Dent Well. Dent Well #2 is an approximately 87 m deep drilled well with a 200mm diameter steel casing. The flow rate is restricted to a maximum of 4.6 L/s and a maximum taking of 250.5 m<sup>3</sup>/d. Both pumphouses are equipped with raw and treated flow meters, a disinfection system consisting of 2 sodium hypochlorite metering pumps with auto switchover capabilities and interlocked well shutdown, and a polyphosphate (Carus 1200) iron sequestering system. The sodium hypochlorite and Carus 1200 are NSF certified. Additional contact time is provided at both pumphouses by 600 mm diameter feeder watermain immediately leaving the pumphouse and prior to the first consumer. The water system is equipped with a 1500 m<sup>3</sup> standpipe. Both pumphouses are equipped with a standby generator.

## 1.2. Major Expenses

The system incurred expenses necessary to install, repair or replace required equipment as follows:

|                      |              |
|----------------------|--------------|
| Raw Water upgrades   | \$1,128.08   |
| Treatment Equipment  | \$28,616.07  |
| Distribution Repairs | \$67,318.41  |
| Water Meter Upgrades | \$460,925.88 |
| EA Study             | \$78,415.18  |

## 2. WATER QUALITY MONITORING

Each municipal drinking water system is required to do testing to ensure that the water supplied to consumers is safe for consumption. Some of these tests such as chlorine residuals are done on site while others, like microbiological testing, must be performed by a licenced laboratory.

### 2.1. Microbiological Testing

O. Reg. 170 Schedule 10, requires the Tiverton DWS to take a minimum of one sample per week of raw and treated water from each well. A minimum of one sample must be taken every week of distribution water with a total of eight required every month. All raw, treated and distribution samples must be tested for *Escherichia coli* (*E. coli*) and total coliforms (TC). All the treated samples and twenty five percent of the distribution samples must also be tested for heterotrophic plate count (HPC). Our internal sampling schedule exceeds the minimum requirements by having operations staff collect three raw, three treated and three distribution samples every week and having them tested for *E. coli*, total coliform and HPC.

Any *E. coli* or total coliform results above zero (0) in treated or distribution water must be reported to the Ministry of the Environment, Conservation and Parks (MECP) Spills Action Centre (SAC) and Medical Officer of Health (MOH).

Heterotrophic plate count is a colony count of general bacteria population. There is no adverse limit for HPC samples. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water.

The results from the 2024 sampling program are shown in the following table.

| Water Source | Number of EC/TC Samples | Range of Total Coliform Results (#-#) | Range of <i>E. coli</i> Results (#-#) | Number of HPC Samples | Range of HPC Results (#-#) |
|--------------|-------------------------|---------------------------------------|---------------------------------------|-----------------------|----------------------------|
| Raw          | 158                     | 0 – 0                                 | 0 – 0                                 | 0                     | --                         |
| Treated      | 158                     | 0 – 0                                 | 0 – 0                                 | 158                   | 0 – 10                     |
| Distribution | 161                     | 0 – 0                                 | 0 – 0                                 | 161                   | 0 – 2000                   |

Note: Briar Hill Well #1 raw and treated samples not taken August 12, 19 and 26 as the Tiverton Tower was offline and Briar Hill Well #2 was running on the Variable Frequency Drive (VFD). HPC result of 2000 at Tiverton Tower, sample feed line was replaced and HPC count decreased.

## 2.2. Chemical Testing

The Safe Drinking Water Act Reg 170 Schedule 13 requires periodic testing of the water for chemical parameters. The Tiverton DWS is required to test for nitrite/nitrate, trihalomethanes and haloacetic acids on a quarterly basis. The tables below outline these as well as other inorganic and organic parameters that are required to be tested for every three years and include the date and result of the most recent test. Any result displayed as less than (<) are below the method detection limit of the lab.

Sodium and fluoride levels exceed the Ontario Drinking Water Quality Standards, but they are naturally occurring in the groundwater and do not need to be tested more frequently than every five years.

If the concentration of a parameter is above half of the Maximum Acceptable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by O. Regulation 170. Historically, arsenic levels at Dent Well have been around the half MAC and the frequency has been increased to quarterly.

### Briar Hill Well #1

| Inorganic Parameter | Sample Date                                              | Result Value                           | Unit of Measure | Exceedance |
|---------------------|----------------------------------------------------------|----------------------------------------|-----------------|------------|
| Antimony            | July 8/24                                                | < 0.6                                  | µg/L            | No         |
| Arsenic             | July 8/24                                                | 2.2                                    | µg/L            | No         |
| Barium              | July 8/24                                                | 11.1                                   | µg/L            | No         |
| Boron               | July 8/24                                                | 161                                    | µg/L            | No         |
| Cadmium             | July 8/24                                                | 0.008                                  | µg/L            | No         |
| Chromium            | July 8/24                                                | 0.17                                   | µg/L            | No         |
| Mercury             | July 8/24                                                | < 0.01                                 | µg/L            | No         |
| Selenium            | July 8/24                                                | 0.06                                   | µg/L            | No         |
| Sodium              | October 12/22<br>October 18/22                           | 43.6<br>38.4                           | mg/L            | Yes        |
| Uranium             | July 8/24                                                | 0.572                                  | µg/L            | No         |
| Fluoride            | April 11/23<br>April 17/23                               | 1.97<br>1.90                           | mg/L            | Yes        |
| Nitrite             | January 15/24<br>April 8/24<br>July 8/24<br>October 7/24 | < 0.003<br>0.008<br>< 0.003<br>< 0.003 | mg/L            | No         |
| Nitrate             | January 15/24<br>April 8/24<br>July 8/24<br>October 7/24 | 0.006<br>< 0.006<br>0.006<br>0.006     | mg/L            | No         |

Briar Hill Well #2

| <b>Inorganic Parameter</b> | <b>Sample Date</b>                                       | <b>Result Value</b>                    | <b>Unit of Measure</b> | <b>Exceedance</b> |
|----------------------------|----------------------------------------------------------|----------------------------------------|------------------------|-------------------|
| <b>Antimony</b>            | July 11/22                                               | <0.6                                   | µg/L                   | No                |
| <b>Arsenic</b>             | July 11/22                                               | 2.3                                    | µg/L                   | No                |
| <b>Barium</b>              | July 11/22                                               | 11.2                                   | µg/L                   | No                |
| <b>Boron</b>               | July 11/22                                               | 159                                    | µg/L                   | No                |
| <b>Cadmium</b>             | July 11/22                                               | 0.030                                  | µg/L                   | No                |
| <b>Chromium</b>            | July 11/22                                               | 0.22                                   | µg/L                   | No                |
| <b>Mercury</b>             | July 11/22                                               | <0.01                                  | µg/L                   | No                |
| <b>Selenium</b>            | July 11/22                                               | < 0.04                                 | µg/L                   | No                |
| <b>Sodium</b>              | October 12/22<br>October 18/22                           | 44<br>36.3                             | mg/L                   | Yes               |
| <b>Uranium</b>             | July 11/22                                               | 0.551                                  | µg/L                   | No                |
| <b>Fluoride</b>            | April 11/23<br>April 17/23                               | 1.96<br>1.83                           | mg/L                   | Yes               |
| <b>Nitrite</b>             | January 15/24<br>April 8/24<br>July 8/24<br>October 7/24 | < 0.003<br>0.009<br>< 0.003<br>< 0.003 | mg/L                   | No                |
| <b>Nitrate</b>             | January 15/24<br>April 8/24<br>July 8/24<br>October 7/24 | 0.006<br>0.006<br>< 0.006<br>< 0.006   | mg/L                   | No                |

Dent Well #2

| Inorganic Parameter | Sample Date   | Result Value | Unit of Measure | Exceedance |
|---------------------|---------------|--------------|-----------------|------------|
| Antimony            | July 10/23    | <0.6         | µg/L            | No         |
| Arsenic             | January 15/24 | 4.2          | µg/L            | No         |
|                     | April 8/24    | 4.5          |                 |            |
|                     | July 8/24     | 4.4          |                 |            |
|                     | October 7/24  | 4.5          |                 |            |
| Barium              | July 10/23    | 9.55         | µg/L            | No         |
| Boron               | July 10/23    | 188          | µg/L            | No         |
| Cadmium             | July 10/23    | <0.003       | µg/L            | No         |
| Chromium            | July 10/23    | 0.11         | µg/L            | No         |
| Mercury             | July 10/23    | <0.01        | µg/L            | No         |
| Selenium            | July 10/23    | 0.09         | µg/L            | No         |
| Sodium              | Oct 12/22     | 42.3         | mg/L            | Yes        |
|                     | Oct 18/22     | 36.4         |                 |            |
| Uranium             | July 10/23    | 0.806        | µg/L            | No         |
| Fluoride            | April 11/23   | 2.13         | mg/L            | Yes        |
|                     | April 17/23   | 1.93         |                 |            |
| Nitrite             | January 15/24 | 0.003        | mg/L            | No         |
|                     | April 8/24    | 0.009        |                 |            |
|                     | July 8/24     | < 0.003      |                 |            |
|                     | October 7/24  | < 0.003      |                 |            |
| Nitrate             | January 15/24 | < 0.006      | mg/L            | No         |
|                     | April 8/24    | < 0.006      |                 |            |
|                     | July 8/24     | < 0.006      |                 |            |
|                     | October 7/24  | < 0.006      |                 |            |

Briar Hill Well #1

| Organic Parameter                       | Sample Date | Result Value | Unit of Measure | Exceedance |
|-----------------------------------------|-------------|--------------|-----------------|------------|
| Alachlor                                | July 8/24   | < 0.02       | µg/L            | No         |
| Atrazine + N-dealkylated metabolites    | July 8/24   | < 0.01       | µg/L            | No         |
| Azinphos-methyl                         | July 8/24   | < 0.05       | µg/L            | No         |
| Benzene                                 | July 8/24   | < 0.32       | µg/L            | No         |
| Benzo(a)pyrene                          | July 8/24   | < 0.004      | µg/L            | No         |
| Bromoxynil                              | July 8/24   | < 0.33       | µg/L            | No         |
| Carbaryl                                | July 8/24   | < 0.05       | µg/L            | No         |
| Carbofuran                              | July 8/24   | < 0.01       | µg/L            | No         |
| Carbon Tetrachloride                    | July 8/24   | < 0.17       | µg/L            | No         |
| Chlorpyrifos                            | July 8/24   | < 0.02       | µg/L            | No         |
| Diazinon                                | July 8/24   | < 0.02       | µg/L            | No         |
| Dicamba                                 | July 8/24   | < 0.20       | µg/L            | No         |
| 1,4-Dichlorobenzene                     | July 8/24   | < 0.36       | µg/L            | No         |
| 1,2-Dichlorobenzene                     | July 8/24   | < 0.41       | µg/L            | No         |
| 1,2-Dichloroethane                      | July 8/24   | < 0.35       | µg/L            | No         |
| 1,1-Dichloroethylene                    | July 8/24   | < 0.33       | µg/L            | No         |
| Dichloromethane                         | July 8/24   | < 0.35       | µg/L            | No         |
| 2-4 Dichlorophenol                      | July 8/24   | < 0.15       | µg/L            | No         |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | July 8/24   | < 0.19       | µg/L            | No         |
| Diclofop-methyl                         | July 8/24   | < 0.40       | µg/L            | No         |
| Dimethoate                              | July 8/24   | < 0.06       | µg/L            | No         |
| Diquat                                  | July 8/24   | < 1          | µg/L            | No         |
| Diuron                                  | July 8/24   | < 0.03       | µg/L            | No         |
| Glyphosate                              | July 8/24   | < 1          | µg/L            | No         |
| Malathion                               | July 8/24   | < 0.02       | µg/L            | No         |
| 2 methyl-4-chlorophenoxyacetic acid     | July 8/24   | < 0.00012    | µg/L            | No         |
| Metolachlor                             | July 8/24   | < 0.01       | µg/L            | No         |
| Metribuzin                              | July 8/24   | < 0.02       | µg/L            | No         |
| Monochlorobenzene                       | July 8/24   | < 0.3        | µg/L            | No         |
| Paraquat                                | July 8/24   | < 1          | µg/L            | No         |
| Pentachlorophenol                       | July 8/24   | < 0.15       | µg/L            | No         |
| Phorate                                 | July 8/24   | < 0.01       | µg/L            | No         |
| Picloram                                | July 8/24   | < 1          | µg/L            | No         |
| Polychlorinated Biphenyls (PCB)         | July 8/24   | < 0.04       | µg/L            | No         |
| Prometryne                              | July 8/24   | < 0.03       | µg/L            | No         |
| Simazine                                | July 8/24   | < 0.01       | µg/L            | No         |
| Terbufos                                | July 8/24   | < 0.01       | µg/L            | No         |
| Tetrachloroethylene                     | July 8/24   | < 0.35       | µg/L            | No         |
| 2,3,4,6-Tetrachlorophenol               | July 8/24   | < 0.20       | µg/L            | No         |
| Triallate                               | July 8/24   | < 0.01       | µg/L            | No         |
| Trichloroethylene                       | July 8/24   | < 0.44       | µg/L            | No         |
| 2,4,6-Trichlorophenol                   | July 8/24   | < 0.25       | µg/L            | No         |
| Trifluralin                             | July 8/24   | < 0.02       | µg/L            | No         |
| Vinyl Chloride                          | July 8/24   | < 0.17       | µg/L            | No         |

Briar Hill Well #2

| Organic Parameter                       | Sample Date | Result Value | Unit of Measure | Exceedance |
|-----------------------------------------|-------------|--------------|-----------------|------------|
| Alachlor                                | July 11/22  | < 0.02       | µg/L            | No         |
| Atrazine + N-dealkylated metabolites    | July 11/22  | < 0.01       | µg/L            | No         |
| Azinphos-methyl                         | July 11/22  | < 0.05       | µg/L            | No         |
| Benzene                                 | July 11/22  | < 0.32       | µg/L            | No         |
| Benzo(a)pyrene                          | July 11/22  | < 0.004      | µg/L            | No         |
| Bromoxynil                              | July 11/22  | < 0.33       | µg/L            | No         |
| Carbaryl                                | July 11/22  | < 0.05       | µg/L            | No         |
| Carbofuran                              | July 11/22  | < 0.01       | µg/L            | No         |
| Carbon Tetrachloride                    | July 11/22  | < 0.17       | µg/L            | No         |
| Chlorpyrifos                            | July 11/22  | < 0.02       | µg/L            | No         |
| Diazinon                                | July 11/22  | < 0.02       | µg/L            | No         |
| Dicamba                                 | July 11/22  | < 0.20       | µg/L            | No         |
| 1,2-Dichlorobenzene                     | July 11/22  | < 0.41       | µg/L            | No         |
| 1,4-Dichlorobenzene                     | July 11/22  | < 0.36       | µg/L            | No         |
| 1,2-Dichloroethane                      | July 11/22  | < 0.35       | µg/L            | No         |
| 1,1-Dichloroethylene                    | July 11/22  | < 0.33       | µg/L            | No         |
| Dichloromethane                         | July 11/22  | < 0.35       | µg/L            | No         |
| 2-4 Dichlorophenol                      | July 11/22  | < 0.15       | µg/L            | No         |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | July 11/22  | < 0.19       | µg/L            | No         |
| Diclofop-methyl                         | July 11/22  | < 0.40       | µg/L            | No         |
| Dimethoate                              | July 11/22  | < 0.06       | µg/L            | No         |
| Diquat                                  | July 11/22  | < 1          | µg/L            | No         |
| Diuron                                  | July 11/22  | < 0.03       | µg/L            | No         |
| Glyphosate                              | July 11/22  | < 1          | µg/L            | No         |
| Malathion                               | July 11/22  | < 0.02       | µg/L            | No         |
| 2 methyl-4-chlorophenoxyacetic acid     | July 11/22  | < 0.00012    | µg/L            | No         |
| Metolachlor                             | July 11/22  | < 0.01       | µg/L            | No         |
| Metribuzin                              | July 11/22  | < 0.02       | µg/L            | No         |
| Monochlorobenzene                       | July 11/22  | < 0.3        | µg/L            | No         |
| Paraquat                                | July 11/22  | < 1          | µg/L            | No         |
| Pentachlorophenol                       | July 11/22  | < 0.15       | µg/L            | No         |
| Phorate                                 | July 11/22  | < 0.01       | µg/L            | No         |
| Picloram                                | July 11/22  | < 1          | µg/L            | No         |
| Polychlorinated Biphenyls (PCB)         | July 11/22  | < 0.04       | µg/L            | No         |
| Prometryne                              | July 11/22  | < 0.03       | µg/L            | No         |
| Simazine                                | July 11/22  | < 0.01       | µg/L            | No         |
| Terbufos                                | July 11/22  | < 0.01       | µg/L            | No         |
| Tetrachloroethylene                     | July 11/22  | < 0.35       | µg/L            | No         |
| 2,3,4,6-Tetrachlorophenol               | July 11/22  | < 0.20       | µg/L            | No         |
| Triallate                               | July 11/22  | < 0.01       | µg/L            | No         |
| Trichloroethylene                       | July 11/22  | < 0.44       | µg/L            | No         |
| 2,4,6-Trichlorophenol                   | July 11/22  | < 0.25       | µg/L            | No         |
| Trifluralin                             | July 11/22  | < 0.02       | µg/L            | No         |
| Vinyl Chloride                          | July 11/22  | < 0.17       | µg/L            | No         |



Dent Well #2

| Organic Parameter                       | Sample Date | Result Value | Unit of Measure | Exceedance |
|-----------------------------------------|-------------|--------------|-----------------|------------|
| Alachlor                                | July 10/23  | < 0.02       | µg/L            | No         |
| Atrazine + N-dealkylated metabolites    | July 10/23  | < 0.01       | µg/L            | No         |
| Azinphos-methyl                         | July 10/23  | < 0.05       | µg/L            | No         |
| Benzene                                 | July 10/23  | < 0.32       | µg/L            | No         |
| Benzo(a)pyrene                          | July 10/23  | < 0.004      | µg/L            | No         |
| Bromoxynil                              | July 10/23  | < 0.33       | µg/L            | No         |
| Carbaryl                                | July 10/23  | < 0.05       | µg/L            | No         |
| Carbofuran                              | July 10/23  | < 0.01       | µg/L            | No         |
| Carbon Tetrachloride                    | July 10/23  | < 0.17       | µg/L            | No         |
| Chlorpyrifos                            | July 10/23  | < 0.02       | µg/L            | No         |
| Diazinon                                | July 10/23  | < 0.02       | µg/L            | No         |
| Dicamba                                 | July 10/23  | < 0.20       | µg/L            | No         |
| 1,2-Dichlorobenzene                     | July 10/23  | < 0.41       | µg/L            | No         |
| 1,4-Dichlorobenzene                     | July 10/23  | < 0.36       | µg/L            | No         |
| 1,2-Dichloroethane                      | July 10/23  | < 0.35       | µg/L            | No         |
| 1,1-Dichloroethylene                    | July 10/23  | < 0.33       | µg/L            | No         |
| Dichloromethane                         | July 10/23  | < 0.35       | µg/L            | No         |
| 2,4-Dichlorophenol                      | July 10/23  | < 0.15       | µg/L            | No         |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | July 10/23  | < 0.19       | µg/L            | No         |
| Diclofop-methyl                         | July 10/23  | < 0.40       | µg/L            | No         |
| Dimethoate                              | July 10/23  | < 0.06       | µg/L            | No         |
| Diquat                                  | July 10/23  | < 1          | µg/L            | No         |
| Diuron                                  | July 10/23  | < 0.03       | µg/L            | No         |
| Glyphosate                              | July 10/23  | < 1          | µg/L            | No         |
| Malathion                               | July 10/23  | < 0.02       | µg/L            | No         |
| 2 methyl-4-chlorophenoxyacetic acid     | July 10/23  | < 0.00012    | µg/L            | No         |
| Metolachlor                             | July 10/23  | < 0.01       | µg/L            | No         |
| Metribuzin                              | July 10/23  | < 0.02       | µg/L            | No         |
| Monochlorobenzene                       | July 10/23  | < 0.3        | µg/L            | No         |
| Paraquat                                | July 10/23  | < 1          | µg/L            | No         |
| Pentachlorophenol                       | July 10/23  | < 0.15       | µg/L            | No         |
| Phorate                                 | July 10/23  | < 0.01       | µg/L            | No         |
| Picloram                                | July 10/23  | < 1          | µg/L            | No         |
| Polychlorinated Biphenyls (PCB)         | July 10/23  | < 0.04       | µg/L            | No         |
| Prometryne                              | July 10/23  | < 0.03       | µg/L            | No         |
| Simazine                                | July 10/23  | < 0.01       | µg/L            | No         |
| Terbufos                                | July 10/23  | < 0.01       | µg/L            | No         |
| Tetrachloroethylene                     | July 10/23  | < 0.35       | µg/L            | No         |
| 2,3,4,6-Tetrachlorophenol               | July 10/23  | < 0.20       | µg/L            | No         |
| Triallate                               | July 10/23  | < 0.01       | µg/L            | No         |
| Trichloroethylene                       | July 10/23  | < 0.44       | µg/L            | No         |
| 2,4,6-Trichlorophenol                   | July 10/23  | < 0.25       | µg/L            | No         |
| Trifluralin                             | July 10/23  | < 0.02       | µg/L            | No         |
| Vinyl Chloride                          | July 10/23  | < 0.17       | µg/L            | No         |

Trihalomethane (THM) distribution sampling is required quarterly and must also be expressed as a running annual average. The limit as set in the Ontario Drinking Water Quality Standards is 100 ug/L. Trihalomethanes are a by-product of the disinfection process. The THM results for 2024 are as follows:

| Date Sampled  | THM Result Value (µg/L) | Running Annual Average (µg/L) | Exceedance |
|---------------|-------------------------|-------------------------------|------------|
| January 15/24 | 35                      | 41.3                          | No         |
| April 8/24    | 13                      | 41.0                          | No         |
| July 8/24     | 14                      | 29.0                          | No         |
| October 7/24  | 13                      | 18.8                          | No         |

Sampling and testing for haloacetic acids (HAA) in the distribution system is a new requirement in 2017. The limit as set in the Ontario Drinking Water Quality Standards is 80 ug/L and starting in 2020 must also be expressed as a running annual average. Haloacetic acids are a by-product of the disinfection process. The HAA results for 2024 are as follows:

| Date Sampled  | HAA Result Value (µg/L) | Running Annual Average (µg/L) | Exceedance |
|---------------|-------------------------|-------------------------------|------------|
| January 15/24 | < 5.3                   | 5.3                           | No         |
| April 8/24    | < 5.3                   | 5.3                           | No         |
| July 8/24     | 8.5                     | 6.1                           | No         |
| October 7/24  | < 5.3                   | 6.1                           | No         |

The Tiverton DWS does not have significant levels of lead and so is currently under a reduced-sampling program. Under this sampling program, O. Reg 170 Schedule 15.1 requires sampling for lead every three years and lead-related parameters (pH and alkalinity) every year. Lead, PH and Alkalinity sampling was performed in 2024, below are the results.

| Date Sampled    | Location Type | Number of Samples | Parameter         | Range of Results |
|-----------------|---------------|-------------------|-------------------|------------------|
| March 25, 2024  | Distribution  | 2                 | Lead (ug/L)       | 0.09 - 0.10      |
|                 |               |                   | pH                | 8.1 – 8.6        |
|                 |               |                   | Alkalinity (mg/L) | 88 - 100         |
| August 12, 2024 | Distribution  | 2                 | Lead (ug/L)       | 0.09 – 0.92      |
|                 |               |                   | pH                | 7.6 – 7.60       |
|                 |               |                   | Alkalinity (mg/L) | 102 - 102        |

### 2.3. Operational Monitoring

Sodium hypochlorite is used for primary and secondary disinfection. The free chlorine residual is monitored continuously on the treated water and seven grab samples are taken each week in the distribution system. In addition, free chlorine levels are monitored continuously at one location in the distribution system. The Ministry of the Environment, Conservation and Parks *Procedure for Disinfection of Drinking Water in Ontario* outlines the minimum chlorine residual for adequate treatment.

As a target, the free chlorine residual should be above 0.20 mg/L. A distribution free chlorine level lower than 0.05 mg/L must be reported and corrective action taken.

| Free Chlorine Residual                           | Number of Grab Samples | Range of Results (#-#) |
|--------------------------------------------------|------------------------|------------------------|
| <b>Briar Hill Well #1 &amp; #2 Treated Water</b> | Continuous Monitoring  | 0.00 – 10.01           |
| <b>Dent Well #2 Treated Water</b>                | Continuous Monitoring  | 0.00 – 4.10            |
| <b>Distribution Water</b>                        | 366                    | 0.47 – 1.76            |
| <b>Distribution Water</b>                        | Continuous Monitoring  | 0.10 – 2.00            |

Notes:

1. Jan 9-Briar Hill battery changed in backup unit for analyzer caused min 0.05mg/L and max 10.01mg/L readings.
2. Feb 7-Dent Well Low Cl<sub>2</sub> alarm caused min residual of 0.22mg/L to be recorded, well was locked out.
3. Feb 8-Dent Well Low cl<sub>2</sub> alarm caused min residual of 0.01mg/L to be recorded, well was locked out.
4. Feb 21-Alarm testing caused false max cl<sub>2</sub> readings at both Dent and Briar Hill.
5. March 13-Dent Well Low cl<sub>2</sub> cause min reading of 0.17mg/L to be recorded, well was locked out
6. March 21-Dent Well Low cl<sub>2</sub> alarm caused min residual of 0.02mg/L to be recorded, well was locked out
7. March 22-Briar Hill-Alarm testing caused false min residual of 0.22mg/L to be recorded.
8. March 29-Briar Hill Low cl<sub>2</sub> alarm caused min residual of 0.00mg/L to be recorded, well was locked out
9. April 11-Briar Hill Low cl<sub>2</sub> alarm caused min residual of 0.00mg/L to be recorded, well was locked out.
10. April 27-Dent Well Low cl<sub>2</sub> alarm caused min residual of 0.02mg/L to be recorded, well was locked out.
11. April 29-Dent Well Low cl<sub>2</sub> alarm caused min residual of 0.35mg/L to be recorded, well was locked out.
12. June 21-Tiverton Tower Cl<sub>2</sub> analyzer maintenance caused false min reading of 0.10mg/L to be recorded for Distribution Water
13. July 9-Briar Hill cl<sub>2</sub> analyzer maintenance caused false min and max readings of 0.00mg/L and 10.01mg/L.
14. July 10-Dent Well cl<sub>2</sub> analyzer maintenance caused false min and max readings
15. August 1-Briar Hill and Dent well cl<sub>2</sub> alarm testing caused false minimum residuals to be recorded
16. August 22-Dent Well Low cl<sub>2</sub> alarm caused min residual of 0.02mg/L to be recorded, well was locked out.
17. November 19-Dent well low cl<sub>2</sub> alarm testing caused false minimum residual of 0.18mg/L to be recorded.

O. Reg 170 Schedule 7 requires that turbidity in the raw water is tested at least once every month. Consistent turbidity results greater than 5 NTU could indicate surface water influence on the well.

| Raw Water Turbidity       | Number of Samples | Range of Results (#-#) |
|---------------------------|-------------------|------------------------|
| <b>Briar Hill Well #1</b> | 46                | 0.16 – 0.50            |
| <b>Briar Hill Well #2</b> | 53                | 0.09 – 0.51            |
| <b>Dent Well #2</b>       | 50                | 0.10 – 0.62            |

Note: Briar Hill Well #1 was offline from Aug 6-30

### 3. WATER QUANTITY

The following tables list the quantities and flow rates of the water supplied to the distribution system during the reporting period covered by this report, including monthly average and maximum daily flows and a comparison to the rated capacity specified in the system Municipal Drinking Water Licence.

#### Briar Hill Wells #1 and #2

The rated capacity from the Briar Hill Pumphouse is 717.12 m<sup>3</sup>/day. There is no maximum flow rate specified for water supplied to the distribution system, however a flow rate of 5.5 L/s should not be exceeded to ensure the required 15 minutes of contact time for CT.

| Month     | Total Treated Flow (m3) | Average Daily Flow (m <sup>3</sup> /day) | % Average Day Flow/ Rated Capacity | Maximum Daily Flow (m <sup>3</sup> /day) | % Maximum Day Flow/ Rated Capacity |
|-----------|-------------------------|------------------------------------------|------------------------------------|------------------------------------------|------------------------------------|
| January   | 3,534                   | 114                                      | 16%                                | 154                                      | 22%                                |
| February  | 3,473                   | 124                                      | 17%                                | 165                                      | 23%                                |
| March     | 3,597                   | 116                                      | 16%                                | 186                                      | 26%                                |
| April     | 3,290                   | 110                                      | 15%                                | 154                                      | 21%                                |
| May       | 4,207                   | 136                                      | 19%                                | 267                                      | 37%                                |
| June      | 4,629                   | 154                                      | 22%                                | 239                                      | 33%                                |
| July      | 5,075                   | 164                                      | 23%                                | 231                                      | 32%                                |
| August    | 8,089                   | 261                                      | 36%                                | 489                                      | 68%                                |
| September | 5,256                   | 175                                      | 24%                                | 293                                      | 41%                                |
| October   | 5,041                   | 163                                      | 23%                                | 237                                      | 33%                                |
| November  | 4,493                   | 150                                      | 21%                                | 275                                      | 38%                                |
| December  | 4,065                   | 131                                      | 18%                                | 181                                      | 25%                                |
| Annual    | 54,748                  | 149.8                                    | 21%                                | 489                                      | 68%                                |

### Briar Hill Wells #1 and #2

| Month     | Average Daily Flow Rate (L/s) | Maximum Daily Flow Rate (L/s) |
|-----------|-------------------------------|-------------------------------|
| January   | 1.3                           | 7.0                           |
| February  | 1.4                           | 10.0                          |
| March     | 1.3                           | 9.9                           |
| April     | 1.3                           | 10.0                          |
| May       | 1.6                           | 9.6                           |
| June      | 1.8                           | 10.2                          |
| July      | 1.9                           | 9.0                           |
| August    | 3.0                           | 9.7                           |
| September | 2.0                           | 10.2                          |
| October   | 1.9                           | 10.0                          |
| November  | 1.7                           | 8.7                           |
| December  | 1.5                           | 9.9                           |
| Annual    | 1.73                          | 10.21                         |

Note: All max flow rates above 5.5 L/s caused by monthly generator testing and power interruptions

### Dent Well #2

The rated capacity from the Dent Pumphouse is 397.44 m<sup>3</sup>/day. There is no maximum flow rate specified for water supplied to the distribution system, however the flow rate should not exceed 5.2 L/s to ensure the required 15 minutes of contact time for CT. (It should be noted that the Permit to Take Water limit for water taking from the Dent Well is 250.5 m<sup>3</sup>/d.)

| Month     | Total Treated Flow (m3) | Average Daily Flow (m <sup>3</sup> /day) | % Average Day Flow/ Rated Capacity | Maximum Daily Flow (m <sup>3</sup> /day) | % Maximum Day Flow/ Rated Capacity |
|-----------|-------------------------|------------------------------------------|------------------------------------|------------------------------------------|------------------------------------|
| January   | 2,455                   | 79                                       | 20%                                | 108                                      | 27%                                |
| February  | 2,277                   | 81                                       | 20%                                | 111                                      | 28%                                |
| March     | 2,574                   | 83                                       | 21%                                | 185                                      | 47%                                |
| April     | 2,613                   | 87                                       | 22%                                | 239                                      | 60%                                |
| May       | 2,760                   | 89                                       | 22%                                | 188                                      | 47%                                |
| June      | 2,884                   | 96                                       | 24%                                | 151                                      | 38%                                |
| July      | 3,308                   | 107                                      | 27%                                | 151                                      | 38%                                |
| August    | 3,604                   | 116                                      | 29%                                | 245                                      | 62%                                |
| September | 3,454                   | 115                                      | 29%                                | 194                                      | 49%                                |
| October   | 3,304                   | 107                                      | 27%                                | 156                                      | 39%                                |
| November  | 3,048                   | 102                                      | 26%                                | 213                                      | 53%                                |
| December  | 2,825                   | 91                                       | 23%                                | 127                                      | 32%                                |
| Annual    | 35,106                  | 96.1                                     | 24%                                | 245                                      | 62%                                |

## Dent Well #2

| Month     | Average Daily Flow Rate (L/s) | Maximum Daily Flow Rate (L/s) |
|-----------|-------------------------------|-------------------------------|
| January   | 0.9                           | 10.1                          |
| February  | 0.9                           | 9.6                           |
| March     | 1.0                           | 10.0                          |
| April     | 1.0                           | 10.3                          |
| May       | 1.0                           | 10.1                          |
| June      | 1.1                           | 10.3                          |
| July      | 1.2                           | 10.3                          |
| August    | 1.3                           | 9.4                           |
| September | 1.3                           | 9.8                           |
| October   | 1.2                           | 10.1                          |
| November  | 1.2                           | 10.2                          |
| December  | 1.1                           | 10.2                          |
| Annual    | 1.11                          | 10.3                          |

Note: All max flow rates above 5.2 L/s caused by monthly generator testing and power interruptions

## 4. ADVERSE WATER QUALITY INCIDENTS AND NON-COMPLIANCE FINDINGS

Any adverse results from microbiological samples, chemical samples or observations of operational conditions that indicate adverse water quality are reported to the Spills Action Centre (SAC) of the Ministry of the Environment, Conservation and Parks and the Medical Officer of Health (MOH). All adverse conditions are responded to immediately and corrective actions taken. There were no reportable incidents in 2024.

The annual Ministry of the Environment, Conservation and Parks Inspection took place on June 13, 2024, for the reporting period from May 26, 2023, to June 13, 2024. The inspection report did not identify any non-compliance issues.

O. Reg 170 Schedule 22 requires the municipality to identify any requirements of the Safe Drinking Water Act, Regulations, Drinking Water Works Permit, Municipal Drinking Water Licence and any Order that the system failed to meet during the reporting period. There were three issues identified in 2024.

| <b>Drinking Water Legislation</b>             | <b>Requirements the System Failed to Meet</b>                                                                      | <b>Duration</b>                                                                        | <b>Corrective Actions</b>                                                                                                                                                 |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Permit to Take Water 5581-BVHT5L Sec. 4.2     | Dent Well- Well Depth transducer not recording May 14 to 16. Measurements required at least once every hour.       | 47 hours                                                                               | New well depth transducer installed                                                                                                                                       |
| O. Reg 170/03, Schedule 10, Sec 10-3 and 10-4 | Briar Hill Well #1 raw and treated samples not taken Aug 12, 19 and 26                                             | 3 weeks                                                                                | Well #1 was offline during tower maintenance, sampled before being placed back online.                                                                                    |
| O. Reg. 170, Schedule 6, Section 10. 1. ii    | The continuous monitoring equipment would not signal an alarm to call out to a location where a person is present. | September 26, 2024<br><br>Briar Hill 1035am to 11:22am<br><br>Dent Well 1215 to 1225pm | Bruce Telecom onsite for fibre upgrades. Operator turned wells off during upgrades, all data and sensaphones verified afterwards. No issues, MECF notified as a courtesy. |