



MUNICIPALITY OF

North Perth

www.northperth.ca

A Community of Character

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January 29, 2018

Township of Perth East
25 Mill St E
PO Box 455
Milverton, ON
N0K 1M0

Attention: Wes Kuepfer, Manager of Public Works and Parks

Re: Shakespeare Drinking Water System – 2017 Annual and Summary Reports

Dear Wes,

Please find attached the 2017 Annual Report for the Shakespeare Drinking Water System, in accordance with Section 11(1) of O. Reg. 170/03. This report covers the period from January 1 to December 31 and meets the requirement of being prepared by February 28 of this year.

Please ensure that a copy of this report is given, without charge, to every person who requests a copy. In addition, please make certain that effective steps are taken to advise residents that copies of the report are available and how a copy can be obtained.

Finally, as per Schedule 22 of O. Reg. 170/03, please ensure that a copy of the report is given to the members of municipal council no later than March 31, 2018.

If you have any questions or concerns regarding this report, please do not hesitate to contact myself.

Regards,

Mark Hackett
Manager of Environmental Services
Municipality of North Perth

cc. W. Kuepfer & B. Wilson, Township of Perth East

**Part III Form 2
Section 11. ANNUAL REPORT.**

| | |
|--|-----------------------------------|
| Drinking-Water System Number: | 260002317 |
| Drinking-Water System Name: | Shakespeare Drinking Water System |
| Drinking-Water System Owner: | Township of Perth East |
| Drinking-Water System Category: | Large Municipal Residential |
| Period being reported: | Jan 1, 2017 to Dec 31, 2017 |

| | |
|--|---|
| <p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [] No [X]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No []</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;"> Township of Perth East 25 Mill St PO Box 455 Milverton, ON N0K 1M0 </div> | <p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <div style="border: 1px solid black; width: 100px; text-align: center; margin: 5px;">0</div> </p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No []</p> <p>Number of Interested Authorities you report to: <div style="border: 1px solid black; width: 100px; text-align: center; margin: 5px;">0</div> </p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</p> |
|--|---|

Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

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 |
|----------------------------|------------------------------|
| N/A | |

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?
 Yes [] No []

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

Public access/notice via Public Request

Public access/notice via a Public Library

Public access/notice via other method _____

Describe your Drinking-Water System

The Shakespeare Drinking Water System serves the community of Shakespeare, located in the Township of Perth East. The population served is about 260, based on approximately 127 connections. The Water system has a rated capacity of 545m³/day, and consists of the following:

- well and pumphouse located at 2171 Miller Avenue
- one (1) 85m drilled well equipped with a submersible pump, rated at 410L/min
- raw water flow meter
- a flow restrictor to ensure PTTW is not exceeded
- two Sodium hypochlorite pumps rated at 11L/day, including one backup

There are four (4) 300L pressure tanks. Also, there is a pre-cast concrete chlorine contact tank with baffles.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite

Were any significant expenses incurred to?

Install equipment

Repair required equipment

Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

- New production well drilled, awaiting approvals and well upgrades prior to commissioning - \$100,000
- New started installed on existing well pump - \$2000

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

| Incident Date | Parameter | Result | Unit of Measure | Corrective Action | Corrective Action Date |
|---------------|---|--------|-----------------|--|------------------------|
| June 20/17 | Low Pressure Event: While under temporary water supply during well drilling, the temporary water tank supply ran out of water | 3.8 | psi | Restored supply of water. Flushed distribution, tested distribution residuals. | June 20, 2017 |
| July 4/17 | Total Coliform at Blow Off #1 | 1 | mg/l | Increased chlorine residual, resampled and tested | Jul 4/17 |
| Aug 17/17 | Low Pressure Event: Well pump starter overload trip | 0 | psi | Reset overload breaker, flushed distribution, tested distribution residuals | Aug 17/17 |
| Aug 24/17 | Over-growth on treated sample | 0 | mg/l | Increased chlorine dosage, resampled and tested | Aug 24/17 |

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

| | Number of Samples | Range of E.Coli Or Fecal Results (min #)-(max #) | Range of Total Coliform Results (min #)-(max #) | Range of HPC Results (min #)-(max #) | Range of Background Results (min #)-(max #) |
|-------------------|-------------------|--|---|--------------------------------------|---|
| Raw | 55 | 0-0 | 0-1 | N/A | 0-97 |
| Treated | 56 | 0-0 | 0-0 | 0-1 | 0-0 |
| Fire Department | 56 | 0-0 | 0-0 | 0-0 | 0-0 |
| Sample Station #3 | 57 | 0-0 | 0-1 | 0-1 | 0-4 |

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

| | Number of Grab Samples | Range of Results (min #)-(max #) |
|-----------|------------------------|----------------------------------|
| Turbidity | 12 | 0.12 – 0.53 NTU |

NOTE: For continuous monitors use 8760 as the number of samples.

| | | |
|--|------|----------|
| Chlorine | 8760 | 0 – 3.89 |
| Fluoride (If the DWS provides fluoridation) | N/A | |

NOTE: Record the unit of measure if it is **not** milligrams per litre.

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 |
|---------------------------------|-----------|--------------|--------|-----------------|
| | | | | |
| | | | | |

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

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|-----------------|-------------|---------------|-----------------|------------|
| Antimony | Aug. 9/16 | None Detected | ug/L | No |
| Arsenic | Feb. 8/17 | 9.6 | ug/L | No |
| Arsenic | May 10/17 | 11.0 | ug/L | No |
| Barium | Aug. 9/16 | 90 | ug/L | No |
| Boron | Aug. 9/16 | 25 | ug/L | No |
| Cadmium | Aug. 9/16 | None Detected | ug/L | No |
| Chromium | Aug. 9/16 | None Detected | ug/L | No |
| Mercury | Aug. 9/16 | None Detected | mg/L | No |
| Selenium | Aug. 9/16 | None Detected | ug/L | No |
| Sodium | Feb. 11/15 | 11000 | ug/L | No |
| Uranium | Aug. 9/16 | 0.29 | ug/L | No |
| Fluoride | Feb. 11/15 | 0.8 | mg/L | No |
| Nitrite | Feb. 8/17 | None Detected | mg/L | No |
| Nitrite | May 10/17 | None Detected | mg/L | No |
| Nitrite | Aug 8/17 | None Detected | mg/L | No |
| Nitrite | Nov 14/17 | None Detected | mg/L | No |
| Nitrate | Feb. 8/17 | None Detected | mg/L | No |
| Nitrate | May 10/17 | None Detected | mg/L | No |
| Nitrate | Aug 8/17 | None Detected | mg/L | No |
| Nitrate | Nov 14/17 | None Detected | mg/L | No |

Summary of lead testing under Schedule 15.1 during this reporting period

(Applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems and non-municipal year-round residential systems)

| Location Type | Number of Samples | Range of Lead Results (min#) – (max #) | Number of Exceedances |
|---------------|-------------------|--|-----------------------|
| Plumbing | N/A | | |
| Distribution | 2 | ND | 0 |

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

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|--|-------------|----------------------|-----------------|------------|
| Alachlor | Aug. 9/16 | None Detected | ug/L | No |
| Atrazine + N-dealkylated metabolites | Aug. 9/16 | None Detected | ug/L | No |
| Azinphos-methyl | Aug. 9/16 | None Detected | ug/L | No |
| Benzene | Aug. 9/16 | None Detected | ug/L | No |
| Benzo(a)pyrene | Aug. 9/16 | None Detected | ug/L | No |
| Bromoxynil | Aug. 9/16 | None Detected | ug/L | No |
| Carbaryl | Aug. 9/16 | None Detected | ug/L | No |
| Carbofuran | Aug. 9/16 | None Detected | ug/L | No |
| Carbon Tetrachloride | Aug. 9/16 | None Detected | ug/L | No |
| Chlorpyrifos | Aug. 9/16 | None Detected | ug/L | No |
| Diazinon | Aug. 9/16 | None Detected | ug/L | No |
| Dicamba | Aug. 9/16 | None Detected | ug/L | No |
| 1,2-Dichlorobenzene | Aug. 9/16 | None Detected | ug/L | No |
| 1,4-Dichlorobenzene | Aug. 9/16 | None Detected | ug/L | No |
| 1,2-Dichloroethane | Aug. 9/16 | None Detected | ug/L | No |
| 1,1-Dichloroethylene (vinylidene chloride) | Aug. 9/16 | None Detected | ug/L | No |
| Dichloromethane | Aug. 9/16 | None Detected | ug/L | No |
| 2-4 Dichlorophenol | Aug. 9/16 | None Detected | ug/L | No |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | Aug. 9/16 | None Detected | ug/L | No |
| Diclofop-methyl | Aug. 9/16 | None Detected | ug/L | No |
| Dimethoate | Aug. 9/16 | None Detected | ug/L | No |
| Diquat | Aug. 9/16 | None Detected | ug/L | No |
| Diuron | Aug. 9/16 | None Detected | ug/L | No |
| Glyphosate | Aug. 9/16 | None Detected | ug/L | No |
| HAA's (running annual average) | 2017 | None Detected | ug/L | No |
| Malathion | Aug. 9/16 | None Detected | ug/L | No |
| Metolachlor | Aug. 9/16 | None Detected | ug/L | No |
| Metribuzin | Aug. 9/16 | None Detected | ug/L | No |
| Monochlorobenzene | Aug. 9/16 | None Detected | ug/L | No |
| Paraquat | Aug. 9/16 | None Detected | ug/L | No |
| Pentachlorophenol | Aug. 9/16 | None Detected | ug/L | No |

| | | | | |
|---------------------------------------|-----------|---------------|------|----|
| Phorate | Aug. 9/16 | None Detected | ug/L | No |
| Picloram | Aug. 9/16 | None Detected | ug/L | No |
| Polychlorinated Biphenyls(PCB) | Aug. 9/16 | None Detected | ug/L | No |
| Prometryne | Aug. 9/16 | None Detected | ug/L | No |
| Simazine | Aug. 9/16 | None Detected | ug/L | No |
| THM (running annual average) | 2017 | 10.29 | ug/L | No |
| Terbufos | Aug. 9/16 | None Detected | ug/L | No |
| Tetrachloroethylene | Aug. 9/16 | None Detected | ug/L | No |
| 2,3,4,6-Tetrachlorophenol | Aug. 9/16 | None Detected | ug/L | No |
| Triallate | Aug. 9/16 | None Detected | ug/L | No |
| Trichloroethylene | Aug. 9/16 | None Detected | ug/L | No |
| 2,4,6-Trichlorophenol | Aug. 9/16 | None Detected | ug/L | No |
| Trifluralin | Aug. 9/16 | None Detected | ug/L | No |
| Vinyl Chloride | Aug. 9/16 | None Detected | ug/L | No |
| MCPA | Aug. 9/16 | 0.00012 | mg/L | No |

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 |
|-----------------|--------------|-----------------|------------------|
| Fluoride | 0.8 | mg/L | Feb 11/15 |
| | | | |

(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential)

Part Two – SUMMARY REPORT (as required by O. Reg. 170/03, Schedule 22)

System Description

The Shakespeare Drinking Water System serves the community of Shakespeare, located in the Township of Perth East. The population served is about 260, based on approximately 127 connections. The water system has a rated capacity of 545m³/day, and consists of the following:

- Well and pumphouse located at 2171 Miller Avenue
- One (1) 85m drilled well equipped with a submersible pump, rated at 410L/min
- Raw water flow meter and treated flow meter
- A flow restrictor to ensure PTTW is not exceeded
- Two sodium hypochlorite pumps rated at 11L/day, including one backup

There are four (4) 300L pressure tanks. Also, there is a pre-cast concrete chlorine contact tank with baffles.

Non-Compliance with Legislations, Regulations, Approvals & Orders

During this period, the Facility was operated in full compliance with the Act, the regulations and the Facility's approval, save and except for the following:

| Requirement | Duration of Failure | Measures to Correct the Failure |
|---|----------------------------|--|
| <p>There were no non compliances in 2017.</p> | | |

System Capability
Comparison of Flow Rates

| Month | Average Flow (m ³ /d) | Maximum Flow (m ³ /d) | Total Monthly Flow (m ³) | Maximum Flow Rate (L/min) | System Capacity | Approved Flow Rate |
|---------------|----------------------------------|----------------------------------|--------------------------------------|---------------------------|-----------------------------|--------------------|
| January | 43.83 | 60.97 | 1358.85 | 319 | 545.760 m ³ /day | 379 L/min |
| February | 41.97 | 52.05 | 1175.10 | 319 | | |
| March | 41.16 | 51.07 | 1275.85 | 318 | | |
| April | 48.27 | 64.93 | 1447.98 | 322 | | |
| May | 47.94 | 64.06 | 1486.23 | 321 | | |
| June | 60.47 | 79.15 | 1813.96 | 320 | | |
| July | 62.16 | 87.98 | 1926.89 | 320 | | |
| August | 59.67 | 73.90 | 1849.90 | 320 | | |
| September | 59.14 | 75.10 | 1774.26 | 320 | | |
| October | 58.06 | 75.86 | 1799.81 | 320 | | |
| November | 52.10 | 85.12 | 1563.11 | 318 | | |
| December | 55.42 | 91.00 | 1717.92 | 318 | | |
| Average | 52.52 | | 1599.16 | 319.6 | | |
| Maximum | | 91.00 | 1926.89 | 322 | | |
| % of Capacity | 9.62 | 16.67 | | | | |

