# Drinking-Water Systems Regulation O. Reg. 170/03

## SECTION 11 ANNUAL REPORT

**Drinking Water System Number:** 220006437
**Drinking Water System Name:** Buckhorn Lake Estates
**Drinking Water System Owner:** Municipality of Trent Lakes
**Drinking Water System Category:** Small Municipal Residential
**Period Being Reported:** January 1, 2017 to December 31, 2017

**Does the Drinking Water System serve more than 10,000 people?** No

**Is the 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:**

Municipality of Trent Lakes
760 Peterborough County Road 36
Trent Lakes ON K0M 1A0

http://www.trentlakes.ca/

**Describe the Drinking-Water System**
The Buckhorn Lake Eststes Drinking Water System includes the following:
- One groundwater production well with pump
- Sodium hypochlorite feed system (Pre and Post) with metering pumps
- Sodium permanganate feed system with metering pumps (if required)
- Polymer (SternPAC) feed system with metering pumps
- Four 1750L Oxidation retention tanks for manganese removal
- Two continuous treated water free chlorine residual analyzers
- Two continuous filter turbidity analyzers
- Dual media granular filters in parallel
- Two 15.9 $m^3$ inter connected backwash wastewater settling tanks
- Clearwell consisting of two 35 $m^3$ interconnected underground tanks
- Two flow meters: raw and treated water
- Two High Lift Centrifugal Pumps
- Four Hydropneumatic Pressure Vessels, each 450 L nominal volume
- Standby power generator on site

**List all water treatment chemicals used over this reporting period:**
Sodium Hypochlorite, Polymer (SternPAC), Sodium Permanganate

**Summary of significant expenses incurred to install, repair or replace equipment:**

- Install guards on highlift pumps
- Install two distribution sample taps
- Replace alarm dialer
- Replace SternPAC pump UPS
- Replace chlorine back pressure valve

Equipment was maintained in a fit state of repair as per legislation.

**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 |
|---|---|---|---|---|---|
| March 15, 2017 | Total Coliform | 9 | cfu/100mL | Flushed system and collect two sets of distribution samples. | March 20, 2017 |
| April 18, 2017 | Turbidity | >1 | NTU | Calibrated turbidity analyzer. Backwash filters. | April 18, 2017 |
| June 18, 2017 | Pressure | <20 | psi | Restore pressure by putting highlift pump in 'hand'. Flushed sample tap and collected treated and distribution samples. | June 20, 2017 |
| August 23, 2017 | Total Coliform (Distribution) | 880 | cfu/100mL | Boil Water Advisory issued. Increased chlorine dosage, flush system and collect two sets of distribution samples. | August 25, 2017 |
| | E.Coli (Distribution) | 3 | cfu/100mL | | |

**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 Results (min - max) | Range of Total Coliform Results (min - max) | Number of HPC Samples | Range of HPC Results (min -max) |
|---|---|---|---|---|---|
| **Raw** | 52 | 0 - 0 | 0 - 1 | 1 | 11 |
| **Treated** | 52 | 0 - 0 | 0 - 0 | 53 | 0 - 2 |
| **Distribution** | 172 | 0 - 3 | 0 - 880 | 160 | 0 - 640 |

**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 Filter 1 (NTU)** | 8760 | 0.00 – 2.00 |
| **Turbidity Filter 2 (NTU)** | 8760 | 0.00 – 2.08 |
| **Chlorine Treated (mg/L)** | 8760 | 0.00 – 2.66 |
| **Fluoride** (If the DWS provides fluoridation) | N/A | N/A |

**Note:** For continuous monitors 8760 is used as the number of samples**.** Equipment maintenance data is included in range of results.

**Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.**

| Legal Instrument | Parameter | Date Sampled | Result | Unit of Measure |
|---|---|---|---|---|
| Not Required | Iron -Raw | Monthly | <MDL 7 - 310 | mg/L |
| Not Required | Iron - Treated | Monthly | <MDL 7 – 16.0 | mg/L |
| Not Required | Manganese - Raw | Monthly | 3.14 – 91.3 | mg/L |
| Not Required | Manganese - Treated | Monthly | 0.06 – 5.31 | mg/L |
| Not Required | Cyanobacteria (ELISA for microcystins) - Raw | Weekly June to November | <MDL 0.01 – <MDL 0.01 | ug/L |

**Summary of Inorganic parameters tested during this reporting period (2017) or the most recent sample results.**

**Treated Water**

| Parameter | Sample Date | Result Value | MAC | Exceedance | |
|---|---|---|---|---|---|
| | | | | MAC | ½ MAC |
| **Antimony (ug/L)** | January 3, 2017 | 0.03 | 6.0 | No | No |
| **Arsenic (ug/L)** | January 3, 2017 | <MDL 0.2 | 25.0 | No | No |
| **Barium (ug/L)** | January 3, 2017 | 126.0 | 1000.0 | No | No |
| **Boron (ug/L)** | January 3, 2017 | 15.0 | 5000.0 | No | No |
| **Cadmium (ug/L)** | January 3, 2017 | <MDL 0.003 | 5.0 | No | No |
| **Chromium (ug/L)** | January 3, 2017 | 0.87 | 50.0 | No | No |
| **Mercury (ug/L)** | January 3, 2017 | <MDL 0.01 | 1.0 | No | No |
| **Selenium (ug/L)** | January 3, 2017 | 0.18 | 50.0 | No | No |
| **Uranium (ug/L)** | January 3, 2017 | 0.132 | 20.0 | No | No |
| **Fluoride (mg/L)** | 2015/01/19 | < 0.06 | 1.5 | No | No |
| **Nitrite (mg/L)** | January 3, 2017 | <MDL 0.003 | 1.0 | No | No |
| **Nitrite (mg/L)** | April 3, 2017 | <MDL 0.003 | 1.0 | No | No |
| **Nitrite (mg/L)** | July 4, 2017 | <MDL 0.003 | 1.0 | No | No |
| **Nitrite (mg/L)** | October 10, 2017 | <MDL 0.003 | 1.0 | No | No |
| **Nitrate (mg/L)** | January 3, 2017 | 3.11 | 10.0 | No | No |
| **Nitrate (mg/L)** | April 3, 2017 | 3.08 | 10.0 | No | No |
| **Nitrate (mg/L)** | July 4, 2017 | 2.97 | 10.0 | No | No |
| **Nitrate (mg/L)** | October 10, 2017 | 2.05 | 10.0 | No | No |
| **Sodium (mg/L)** | January 19, 2015 | 32.0 | 20* | Yes | Yes |

*There is no Maximum Acceptable Concentration for sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets

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

* 2 rounds completed (distribution)
* Under plumbing exemption

Location Type:

Plumbing – zero samples completed because the system has plumbing exemption
Distribution – two samples completed with zero exceedances, results ranging from 0.54 ug/L to 2.31 ug/L.

**Summary of Organic parameters sampled during this reporting period (2017) or the most recent sample results.**

**Treated**

| Parameter | Sample Date | Result Value | MAC | Exceedence | |
|---|---|---|---|---|---|
| | | | | MAC | ½ MAC |
| **Alachlor (ug/L)** | January 3, 2017 | <MDL 0.02 | 5.00 | No | No |
| **Atrazine + N-dealkylated metabolites (ug/L)** | January 3, 2017 | <MDL 0.01 | 5.00 | No | No |
| **Azinphos-methyl (ug/L)** | January 3, 2017 | <MDL 0.05 | 20.00 | No | No |
| **Benzene (ug/L)** | January 3, 2017 | <MDL 0.32 | 1.00 | No | No |
| **Benzo(a)pyrene (ug/L)** | January 3, 2017 | <MDL 0.004 | 0.01 | No | No |
| **Bromoxynil (ug/L)** | January 3, 2017 | <MDL 0.33 | 5.00 | No | No |
| **Carbaryl (ug/L)** | January 3, 2017 | <MDL 0.05 | 90.00 | No | No |
| **Carbofuran (ug/L)** | January 3, 2017 | <MDL 0.01 | 90.00 | No | No |
| **Carbon Tetrachloride (ug/L)** | January 3, 2017 | <MDL 0.16 | 2.00 | No | No |
| **Chlorpyrifos (ug/L)** | January 3, 2017 | <MDL 0.02 | 90.00 | No | No |
| **Diazinon (ug/L)** | January 3, 2017 | <MDL 0.02 | 20.00 | No | No |
| **Dicamba (ug/L)** | January 3, 2017 | <MDL 0.2 | 120.00 | No | No |
| **1,2-Dichlorobenzene (ug/L)** | January 3, 2017 | <MDL 0.41 | 200.00 | No | No |
| **1,4-Dichlorobenzene (ug/L)** | January 3, 2017 | <MDL 0.36 | 5.00 | No | No |
| **1,2-Dichloroethane (ug/L)** | January 3, 2017 | <MDL 0.35 | 5.00 | No | No |
| **1,1-Dichloroethylene (ug/L)** | January 3, 2017 | <MDL 0.33 | 14.00 | No | No |
| **Dichloromethane (Methylene Chloride) (ug/L)** | January 3, 2017 | <MDL 0.35 | 50.00 | No | No |
| **2,4-Dichlorophenol (ug/L)** | January 3, 2017 | <MDL 0.15 | 900.00 | No | No |
| **2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)** | January 3, 2017 | <MDL 0.19 | 100.00 | No | No |
| **Diclofop-methyl (ug/L)** | January 3, 2017 | <MDL 0.4 | 9.00 | No | No |
| **Dimethoate (ug/L)** | January 3, 2017 | <MDL 0.03 | 20.00 | No | No |
| **Diquat (ug/L)** | January 3, 2017 | <MDL 1.0 | 70.00 | No | No |

| Parameter | Sample Date | Result Value | MAC | Exceedence | |
|---|---|---|---|---|---|
| | | | | MAC | ½ MAC |
| **Diuron (ug/L)** | January 3, 2017 | <MDL 0.03 | 150.00 | No | No |
| **Glyphosate (ug/L)** | January 3, 2017 | <MDL 1.0 | 280.00 | No | No |
| **Malathion (ug/L)** | January 3, 2017 | <MDL 0.02 | 190.00 | No | No |
| **Metolachlor (ug/L)** | January 3, 2017 | <MDL 0.01 | 50.00 | No | No |
| **Metribuzin (ug/L)** | January 3, 2017 | <MDL 0.02 | 80.00 | No | No |
| **Monochlorobenzene (Chlorobenzene) (ug/L)** | January 3, 2017 | <MDL 0.3 | 80.00 | No | No |
| **Paraquat (ug/L)** | January 3, 2017 | <MDL 1.0 | 10.00 | No | No |
| **PCB (ug/L)** | January 3, 2017 | <MDL 0.04 | 3.00 | No | No |
| **Pentachlorophenol (ug/L)** | January 3, 2017 | <MDL 0.15 | 60.00 | No | No |
| **Phorate (ug/L)** | January 3, 2017 | <MDL 0.01 | 2.00 | No | No |
| **Picloram (ug/L)** | January 3, 2017 | <MDL 1.0 | 190.00 | No | No |
| **Prometryne (ug/L)** | January 3, 2017 | <MDL 0.03 | 1.00 | No | No |
| **Simazine (ug/L)** | January 3, 2017 | <MDL 0.01 | 10.00 | No | No |
| **Terbufos (ug/L)** | January 3, 2017 | <MDL 0.01 | 1.00 | No | No |
| **Tetrachloroethylene (ug/L)** | January 3, 2017 | <MDL 0.35 | 10.00 | No | No |
| **2,3,4,6-Tetrachlorophenol (ug/L)** | January 3, 2017 | <MDL 0.2 | 100.00 | No | No |
| **Triallate (ug/L)** | January 3, 2017 | <MDL 0.01 | 230.00 | No | No |
| **Trichloroethylene (ug/L)** | January 3, 2017 | <MDL 0.44 | 5.00 | No | No |
| **2,4,6-Trichlorophenol (ug/L)** | January 3, 2017 | <MDL 0.25 | 5.00 | No | No |
| **2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L)** | January 3, 2017 | <MDL 0.12 | 100.00 | No | No |
| **Trifluralin (ug/L)** | January 3, 2017 | <MDL 0.02 | 45.00 | No | No |
| **Vinyl Chloride (ug/L)** | January 3, 2017 | <MDL 0.17 | 1.00 | No | No |

**Distribution**

| Parameter | | | | | |
|---|---|---|---|---|---|
| | | | | MAC | ½ MAC |
| **Trihalomethane (ug/L)** | January 3, 2017 | 31.00 | 100.00 | No | No |
| **Trihalomethane (ug/L)** | April 3, 2017 | 27.00 | 100.00 | No | No |
| **Trihalomethane (ug/L)** | July 4, 2017 | 27.00 | 100.00 | No | No |
| **Trihalomethane (ug/L)** | October 10, 2017 | 30.00 | 100.00 | No | No |
| **Trihalomethane: Total Annual Average (ug/L)** | 2017 | 28.75 | 100.00 | No | No |
| **HAA Total** | January 3, 2017 | <MDL 5.30 | N/A | N/A | N/A |

| Parameter | Sample Date | Result Value | MAC | Exceedence | |
|---|---|---|---|---|---|
| | | | | MAC | ½ MAC |
| **HAA Total** | April 3, 2017 | <MDL 5.30 | N/A | N/A | N/A |
| **HAA Total** | July 4, 2017 | <MDL 5.30 | N/A | N/A | N/A |
| **HAA Total** | October 10, 2017 | <MDL 5.30 | N/A | N/A | N/A |
| **HAA Total Annual Average (ug/L)** | 2017 | <MDL 5.30 | N/A | N/A | N/A |

**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 |
|---|---|---|---|
| **Sodium** | 32.0 | mg/L | January 19, 2015 |

Note: Sodium is not in Schedule 2 of the Ontario Drinking Water Quality Standards but is being included in this section as results over 20 mg/L are required to be reported to the local Medical Officer of Health and the Ministry of the Environment and Climate Change (Spills Action Centre).

The Ontario Clean Water Agency aims to strictly adhere to operational and compliance limits, however certain operational circumstances may cause results to be temporarily outside of the limits. Limits that are momentarily surpassed as a result of pump start-ups, power outages/generator tests, pump rotation, calibrations, alarm verification, etc are a normal part of operations and do not indicate a true exceedance. A true exceedance will be noted and documented within the report.