



Annual and Summary Report

For the Period of: Jan. 1, 2016 to Dec. 31, 2016

For Arthur and Mount Forest Drinking Water Systems

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Introduction

Purpose

The purpose of this report is to provide information to several stakeholders and to satisfy the regulatory requirements of the Safe Drinking Water Act (SDWA), reporting required under Ontario Regulation 170/03 (Section 11 and Schedule 22). The report is a compilation of information that helps to demonstrate the ongoing provision of safe, consistent supply of high quality drinking water to customers located within the Township of Wellington North (Arthur and Mount Forest).

Scope

This Annual and Summary report includes information from both Mount Forest and Arthur Drinking Water Systems for the period of January 1st to December 31st, 2016 (unless otherwise noted). The report is a collection of information that was previously found in two separate reports (Annual Report and Summary 22 Report to Council). The information is required to be reported to the following:

- the Drinking Water System Owners (Township of Wellington North Council and Chief Administrative Officer (CAO));
- the public and customers

This report satisfies the requirements of both the Safe Drinking Water Act (SDWA) and Ontario Regulation 170/03:

-Section 11, Annual Reports which includes:

- o a brief description of the drinking water systems;
- o a list of water treatment chemicals used;
- o a summary of the most recent water tests results required under O. Reg.170/03 or an approval, Municipal Drinking Water License (MDWL) or order;
- o a summary of adverse test results and other issues reported to the Ministry including corrective action taken;
- o a description of major expenses incurred to install, repair or replace required equipment;
- o the location where this report is available for inspection/review.

And;

-Section 22, Summary Report which includes:

- o list the requirements of the Safe Drinking Water Act, the Regulations, Drinking Water Works Permits (DWWP), Municipal Drinking Water License (MDWL), and any orders applicable to the system that were not met at any time during the period covered by the report;
- o for each requirement that was not met, the duration of the failure and measures that were taken to correct the failure;

- a summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows; and
- a comparison of this information to the rated capacity and flow rates approved in the system's approval, DWWP and/or MDWL.

This report satisfies applicable requirements for both the Arthur and Mount Forest Drinking Water Systems.

A copy of this report is available for viewing at:

-Township of Wellington North Municipal Office, 7490 Sideroad 7W, Kenilworth;

-Township of Wellington North Water Department Office, 160 Preston St, Arthur;

- Online at www.wellington-north.com

Any inquiries can be made by e-mailing mirvine@wellington-north.com or by calling 519.848.5327.

Notice

Please note that every reasonable effort is made to ensure the accuracy of this report. This report is published with the best available information at the time of the publication. In the events that errors or omissions occur, the online report will be updated. Please refer to the online version of the report for the most current version.

Systems Overview

The role of the water department is to provide customers and the community with safe, consistent supply of high quality drinking water while meeting, exceeding, and continually improving on legal, operational, and quality management system requirements.

The Arthur and Mount Forest drinking water systems are Class II Water and Distribution Supply Subsystem and composed of groundwater wells and water distribution system. From January 1st to December 31st, 2016, certified staff of two operators, one foreman, one superintendent and one process compliance analyst operated and maintained the systems.

The water department received full scope reaccreditation to the Drinking Water Quality Management Standard after a successful on-site audit on October 1st and 2nd, 2014 conducted by a third-party accreditation body. This full accreditation satisfies part of the requirements under the Municipal Drinking Water Licensing Program. On October 7th, 2016, a 12 month surveillance audit was completed by a third party auditor and zero non-conformances were found and the auditor recommended maintenance of existing accreditation.

Arthur Drinking Water System

Arthur's municipal drinking water system provides water for a permanent population of approximately 2575, comprised of approximately 784 residential premises and 106 Industrial/Commercial/Institutional (ICI). ICI customers are fully metered and residential units are on a flat rate system. Arthur has approximately 17.9 km of water main.

It is comprised of three drilled wells, two pump houses, diesel generator, two elevated storage tanks and a distribution network. The township uses 12% sodium hypochlorite for disinfection. Sodium silicate is used for iron sequestering at well #7 and Waterworx is used at well #8 for manganese sequestering. The well pumps and associated metering pumps are started and stopped based on the water level in elevated tank number one. Once the low water in the tank has been reached the well pumps are called upon to supply the distribution system with the excess filling the tank to the normal tank level. This is a demand/storage system. All pumps stop at the normal top water level until the water level drops in the tank and pumps are required again.

From January 1st to December 31st, 2016, a total of 353,061.86 cubic meters of water was treated and pumped to the system. The average daily water demand was 971.99 cubic meters. The highest daily use of water occurred on June 23, 2016 when 1458.24 cubic meters of water was pumped, most likely due to consumers running water for outdoor usage.

Mount Forest Drinking Water System

Mount Forest's municipal drinking water system provides water for a permanent population of approximately 4,500 with 2,065 service connections comprised of approximately 1,841 residential premises and 224 ICI premises. Mount Forest distribution system is approximately 30.3 km of water main.

The Mount Forest water system is comprised of four groundwater wells, four pump houses, and a standpipe, a water distribution system. Each well is equipped with one well pump, discharge piping, and disinfection equipment. Well #3 is also equipped with a back-up diesel generator and a booster pump. The system's supply for fire protection, peak demands and emergencies, is stored within a 2080 m³ standpipe.

The well pumps and sodium hypochlorite metering pumps are started and stopped based on the standpipe water level. Once the low water level in the tank has been reached, the pump stations are called upon to supply the distribution system with the excess filling the standpipe to the normal top water level. This system is a demand/storage system. When the level drops below the lead pump start level, the lead well pump will start. If the level continues to drop, the first, second and third lag well pumps will be started respectively. All pumps stop at the normal top water level until the water levels drops in the standpipe and the pumps are required again. Whenever all pumps have stopped; the pump sequence changes. Pumps removed from service are automatically skipped.

From January 1st to December 31st, 2016, a total of 521,511.30 cubic meters of water was treated and pumped to the system. The average daily water demand was 1491.50 cubic meters. The highest daily use of water occurred on August 20, 2016 when 2299.03 cubic meters of water was pumped, most likely due to consumers running water for outdoor water usage.

Sampling and Testing

The Township of Wellington North's certified operators regularly test the water within the overall system including the raw water at the well source(s), after treatment, and within the distribution system. From January 1st to December 31st, 2016, all regulatory microbiological and chemical quality samples were taken by certified operators and tests performed by accredited, licensed laboratories on water samples collected throughout the drinking water system. These tests include regulatory testing, and most of those results are included in this report.

Arthur and Mount Forest drinking water systems are defined as large residential systems operated under the regulatory requirements of the Safe Drinking Water Act and the Ontario Water Resources Act (accessed at www.e-laws.gov.on.ca). The Arthur Drinking Water System is operated under Municipal Drinking Water License (MDWL) 113-101 and the Drinking Water Works Permit (DWWP) 113-201. The Mount Forest Drinking Water System is operated under MDWL 113-102 and DWWP 113-202.

The MDWL and the DWWP describe system-specific requirements that are supplementary to provincial regulations and act as a license for water supply and distribution operations. These documents outline specific conditions and requirements regarding operation, maintenance and upgrades that are required by the system and are considered regulatory in nature. These documents are available by request for viewing at 160 Preston Street, Arthur.

Summary Report

a) Incidents of Regulatory Non-Compliance

This section describes all incidents of non-compliance (excluding those defined as “Adverse Water Quality Incidents” (AWQI) reported in Section B of this report). AWQI’s are required to be reported to the Ministry of Environment and Climate Change (MOECC) with respect to the following Acts and related regulations: Ontario Water Resources Act (OWRA), Safe Drinking Water Act (SDWA), the Environmental Protection Act (EPA), and Municipal Drinking Water Licenses (MDWL) and Drinking Water Works Permits (DWWP).

There have been no incidents of non-compliance with either water system in the Township of Wellington North in 2016 (Jan. 01 to Dec. 31st).

The most recent assessment of compliance for Arthur and Mount Forest Drinking Water Systems as determined by the MOECC during the 2016-2017 Annual Inspections resulted in assessment scores of 100% (compliance) for each facility.

b) Adverse Water Quality Incidents

This section describes all “Adverse Water Quality Incidents” (AWQI). This term refers to any unusual test results from treated water that does not meet a provincial water quality standard, or situation where disinfection of the water may be compromised. An adverse water quality incident indicates that on at least one occasion, a water quality standard was not met.

There was one AWQI in Mount Forest and zero AWQI in Arthur in 2016. On September 26, 2016 a treated drinking water sample collected at Mount Forest well #5 and had a result of 1 Total Coliform, this is greater than the Maximum Acceptable Concentration of 0. This adverse was resampled as per regulations, the resample results were received on September 29th and there was zero total coliform present. This issue was resolved on Sept. 30, 2016.

Table 1: Summary of Adverse Drinking Water Quality Incidents

| # | Date | AWQI | Location | Description | Corrective Action | Re-Sample Results Good |
|---|----------|--------|--|------------------------|--|------------------------|
| 1 | Sept. 26 | 131342 | Mount Forest Well #5 (Sligo Rd.) Treated Water | Total Coliform 1/100mL | Wellington-Dufferin-Guelph Public Health, MOECC (SAC) notified and resampled as per regulations. | Yes. |

c) Summaries of Flow Rates and Water Supply Capacities

The Safe Drinking Water Act (SDWA) and the Ontario Water Resources Act (OWRA) each require that operating authority's record and report water takings as governed by the Permits to Take Water (PTTW). The following tables list the quantities and flow rates of the water supplied during this reporting period, including monthly average and maximum daily flows, daily instantaneous peak flow rates and a comparison to the rated capacity and flow rates specified in the system approval:

Table 2: Arthur Well #7b Flows

Approved Volume (m³/day): 1961

Approved Flow Rate (L/sec): 22.7

| | Avg Daily Volume (m ³) | % of Approved Volume | Max Daily Volume (m ³) | % of Approved Volume | Peak Flow Rate (L/sec) | % of Approved Flow Rate |
|------------------|------------------------------------|----------------------|------------------------------------|----------------------|------------------------|-------------------------|
| January | 329.90 | 16.8 | 644.12 | 32.8 | 21.88 | 96.4 |
| February | 300.42 | 15.3 | 570.36 | 29.1 | 21.13 | 93.0 |
| March | 285.64 | 14.6 | 521.11 | 26.5 | 20.87 | 91.9 |
| April | 334.27 | 17.0 | 562.18 | 26.9 | 20.86 | 91.8 |
| May | 447.72 | 22.8 | 892.62 | 45.5 | 20.98 | 92.4 |
| June | 389.99 | 19.9 | 726.33 | 37.0 | 21.08 | 92.9 |
| July | 348.23 | 17.8 | 585.60 | 29.8 | 21.01 | 92.5 |
| August | 325.50 | 16.6 | 750.16 | 38.3 | 21.79 | 95.9 |
| September | 353.75 | 18.0 | 658.46 | 33.6 | 22.12 | 97.3 |
| October | 279.50 | 14.3 | 579.57 | 29.6 | 21.79 | 95.9 |
| November | 327.83 | 16.7 | 651.90 | 33.2 | 20.98 | 92.4 |
| December | 301.79 | 15.4 | 563.97 | 28.7 | 21.62 | 95.2 |

14.9 Table 3: Arthur Well #8a Flows

Approved Volume (m³/day): 2255

Approved Flow Rate (L/sec): 26.09

| | Avg Daily Volume (m ³) | % of Approved Volume | Max Daily Volume (m ³) | % of Approved Volume | Peak Flow Rate (L/sec) | % of Approved Flow Rate |
|-----------|------------------------------------|----------------------|------------------------------------|----------------------|------------------------|-------------------------|
| January | 280.12 | 12.4 | 604.68 | 26.8 | 22.70 | 87.0 |
| February | 298.44 | 13.2 | 644.17 | 28.6 | 25.56 | 97.9 |
| March | 312.08 | 13.8 | 601.70 | 26.7 | 22.89 | 87.7 |
| April | 264.45 | 11.9 | 572.46 | 25.4 | 22.93 | 87.8 |
| May | 253.52 | 11.2 | 721.47 | 31.9 | 23.29 | 89.3 |
| June | 389.99 | 17.3 | 726.33 | 32.2 | 21.08 | 80.8 |
| July | 358.87 | 15.9 | 621.25 | 27.5 | 22.87 | 87.6 |
| August | 347.37 | 15.4 | 579.93 | 26.5 | 22.33 | 85.6 |
| September | 311.77 | 13.8 | 693.28 | 30.7 | 23.40 | 89.7 |
| October | 355.21 | 15.8 | 538.66 | 23.8 | 22.91 | 87.8 |
| November | 327.83 | 14.5 | 651.60 | 28.8 | 20.98 | 80.4 |
| December | 291.89 | 12.9 | 492.24 | 21.8 | 21.98 | 84.2 |

Table 4: Arthur Well #8b Flows

Approved Volume (m³/day): 2255

Approved Flow Rate (L/sec): 26.09

| | Avg Daily Volume (m ³) | % of Approved Volume | Max Daily Volume (m ³) | % of Approved Volume | Peak Flow Rate (L/sec) | % of Approved Flow Rate |
|-----------|------------------------------------|----------------------|------------------------------------|----------------------|------------------------|-------------------------|
| January | 265.08 | 11.7 | 495.90 | 21.9 | 22.43 | 85.9 |
| February | 292.74 | 12.9 | 520.82 | 23.1 | 22.59 | 86.5 |
| March | 284.17 | 12.6 | 454.14 | 20.1 | 22.66 | 86.8 |
| April | 269.45 | 11.9 | 522.85 | 23.1 | 22.77 | 87.2 |
| May | 299.51 | 13.3 | 517.93 | 22.9 | 22.94 | 87.9 |
| June | 368.67 | 16.3 | 530.45 | 23.5 | 24.68 | 94.5 |
| July | 342.67 | 15.1 | 649.26 | 28.8 | 22.36 | 85.7 |
| August | 357.43 | 15.9 | 693.57 | 30.7 | 22.56 | 86.5 |
| September | 352.82 | 15.6 | 644.54 | 28.5 | 22.50 | 86.2 |
| October | 362.24 | 16.1 | 637.41 | 28.3 | 22.10 | 84.7 |
| November | 285.12 | 12.6 | 693.15 | 30.7 | 22.15 | 84.7 |
| December | 329.94 | 14.6 | 855.64 | 37.9 | 22.10 | 84.7 |

There was 353,061.86 m³ of water processed in Arthur for 2016 (Jan. 01 to Dec. 31). This represents 0.81 % decrease compared to the same time period in 2015 and 1.45% increase from 2014.

Table 5: Mount Forest Well #3 Flows

Mount Forest

Approved Volume (m³/day): 1637

Approved Flow Rate (L/sec):22.7

| | Avg Daily Volume (m³) | % of Approved Volume | Max Daily Volume (m³) | % of Approved Volume | Peak Flow Rate (L/sec) | % of Approved Flow Rate |
|------------------|---|-----------------------------|---|-----------------------------|-------------------------------|--------------------------------|
| January | 304.81 | 18.6 | 600.40 | 36.7 | 18.85 | 83.0 |
| February | 311.82 | 19.0 | 585.67 | 35.7 | 21.84 | 96.2 |
| March | 289.09 | 17.6 | 531.28 | 32.5 | 18.80 | 82.8 |
| April | 304.48 | 18.6 | 540.46 | 33.0 | 18.78 | 82.7 |
| May | 246.58 | 15.1 | 535.40 | 32.7 | 17.80 | 78.4 |
| June | 305.27 | 18.6 | 564.13 | 34.4 | 19.12 | 84.2 |
| July | 222.42 | 13.6 | 522.47 | 19.7 | 17.65 | 77.8 |
| August | 293.38 | 17.2 | 526.69 | 32.2 | 17.64 | 77.7 |
| September | 277.51 | 16.9 | 527.41 | 32.2 | 17.56 | 77.4 |
| October | 281.80 | 17.2 | 495.83 | 30.2 | 19.92 | 87.8 |
| November | 295.45 | 18.0 | 528.79 | 32.3 | 19.74 | 86.9 |
| December | 307.66 | 18.8 | 603.81 | 36.9 | 19.41 | 85.5 |

Table 6: Mount Forest Well #4 Flows

Approved Volume (m³/day): 1964

Approved Flow Rate (L/sec): 22.7

| | Avg Daily Volume (m³) | % of Approved Volume | Max Daily Volume (m³) | % of Approved Volume | Peak Flow Rate (L/sec) | % of Approved Flow Rate |
|-----------------|---|-----------------------------|---|-----------------------------|-------------------------------|--------------------------------|
| January | 342.72 | 17.4 | 713.16 | 36.3 | 18.53 | 81.6 |
| February | 359.38 | 18.3 | 615.39 | 31.3 | 18.28 | 80.5 |
| March | 365.48 | 18.6 | 653.91 | 33.29 | 18.27 | 80.4 |
| April | 326.98 | 16.6 | 576.81 | 29.3 | 18.42 | 81.1 |
| May | 385.17 | 19.6 | 707.55 | 36.0 | 26.50 | 116.7 |
| June | 294.02 | 14.9 | 615.49 | 31.3 | 20.56 | 90.6 |
| July | 338.57 | 17.2 | 806.72 | 41.1 | 19.93 | 87.8 |
| August | 390.24 | 19.9 | 965.61 | 49.1 | 19.95 | 87.9 |

| | | | | | | |
|------------------|--------|------|--------|-------|-------|------|
| September | 343.18 | 17.5 | 742.65 | 37.8 | 20.25 | 89.2 |
| October | 339.03 | 17.2 | 585.73 | 29.80 | 20.18 | 88.9 |
| November | 428.15 | 21.8 | 790.79 | 40.3 | 20.65 | 90.1 |
| December | 365.32 | 18.6 | 649.32 | 33.1 | 20.02 | 88.1 |

Table 7: Mount Forest Well #5 Flows

Approved Volume (m³/day): 3928

Approved Flow Rate (L/sec): 45.46

| | Avg Daily Volume (m³) | % of Approved Volume | Max Daily Volume (m³) | % of Approved Volume | Peak Flow Rate (L/sec) | % of Approved Flow Rate |
|------------------|---|-----------------------------|---|-----------------------------|-------------------------------|--------------------------------|
| January | 316.12 | 8.04 | 465.95 | 11.8 | 39.16 | 86.1 |
| February | 308.23 | 8.0 | 504.12 | 12.8 | 39.94 | 87.8 |
| March | 350.44 | 9.0 | 568.34 | 14.4 | 39.18 | 86.1 |
| April | 370.38 | 9.0 | 707.30 | 18.0 | 40.67 | 89.5 |
| May | 418.93 | 10.6 | 779.48 | 19.8 | 39.75 | 87.4 |
| June | 587.83 | 14.9 | 1103.96 | 28.1 | 41.85 | 92.0 |
| July | 543.62 | 13.8 | 968.10 | 24.6 | 42.75 | 94.0 |
| August | 467.56 | 11.9 | 1124.33 | 28.6 | 40.44 | 88.9 |
| September | 380.27 | 9.6 | 683.68 | 17.4 | 40.47 | 89.0 |
| October | 378.92 | 9.6 | 671.95 | 17.1 | 38.57 | 84.8 |
| November | 322.37 | 8.2 | 599.87 | 15.27 | 40.07 | 88.1 |
| December | 347.80 | 8.8 | 562.35 | 14.3 | 39.26 | 86.3 |

Table 8: Mount Forest Well #6 Flows

Approved Volume (m³/day): 3928

Approved Flow Rate (L/sec): 45.46

| | Avg Daily Volume (m³) | % of Approved Volume | Max Daily Volume (m³) | % of Approved Volume | Peak Flow Rate (L/sec) | % of Approved Flow Rate |
|-----------------|---|-----------------------------|---|-----------------------------|-------------------------------|--------------------------------|
| January | 285.42 | 7.2 | 936.47 | 23.8 | 40.10 | 88.2 |
| February | 327.90 | 8.3 | 719.80 | 18.3 | 35.31 | 77.7 |
| March | 286.36 | 7.2 | 464.17 | 11.8 | 36.13 | 79.5 |
| April | 326.45 | 8.3 | 541.07 | 13.8 | 36.39 | 80.0 |
| May | 359.25 | 9.1 | 974.55 | 24.8 | 36.93 | 81.23 |

| | | | | | | |
|------------------|--------|------|---------|------|-------|------|
| June | 490.24 | 12.5 | 886.05 | 22.5 | 38.28 | 84.2 |
| July | 585.75 | 14.9 | 902.36 | 22.9 | 35.78 | 78.7 |
| August | 521.72 | 13.2 | 1052.40 | 26.7 | 37.05 | 94.3 |
| September | 406.67 | 10.3 | 823.45 | 20.9 | 35.13 | 77.3 |
| October | 392.97 | 10.0 | 611.67 | 15.6 | 36.51 | 80.3 |
| November | 276.96 | 7.1 | 527.67 | 13.4 | 35.64 | 80.6 |
| December | 347.80 | 8.8 | 562.35 | 14.3 | 39.26 | 86.4 |

There was 5201,511.30 m³ of water processed in Mount Forest for 2016 (Jan. 01 to Dec. 31). This represents 2.83 % less compared to the same time period in 2015 and 0.81% more than in 2014.

d) Raw and Treated Water Quality

This section describes the water quality monitoring, both regulatory and operational, that has been completed in 2016.

Water Quality Review

Under the SDWA, municipalities are required to monitor both the raw and treated quality of the source water supplied. This monitoring is performed for both regulatory compliance and due diligence and is expected to identify any changes within the treated water as well as in raw source waters.

Table 9: O. Regulation 170/03 Schedule 7-2, Distribution Manual Free Chlorine Residual Summary

| Parameter | ODWQS | Total Analyzed | Total Outside ODWQS Criteria | Range | Units |
|-------------------------------------|----------|----------------|------------------------------|--------------|-------|
| Arthur Free Chlorine Residual | 0.05-4.0 | 470 | 0 | 0.68 to 1.87 | mg/L |
| Mount Forest Free Chlorine Residual | 0.05-4.0 | 527 | 0 | 0.68 to 1.85 | mg/L |

Table 10: O. Regulation 170/03 Schedule 10-4- Raw Bacteriological Sampling Summary

| Parameter | ODWQS | Total Analyzed | Total Outside ODWQS Criteria | Range | Units |
|---------------------|-------|----------------|------------------------------|-------|-----------|
| Arthur Raw- T.coli | n/a | 156 | n/a | 0 | cfu/100mL |
| Arthur Raw-E.coli | n/a | 156 | n/a | 0 | cfu/100mL |
| Mount Forest T.coli | n/a | 208 | n/a | 0 | cfu/100mL |

| | | | | | |
|---------------------|-----|-----|-----|---|-----------|
| Mount Forest E.coli | n/a | 208 | n/a | 0 | cfu/100mL |
|---------------------|-----|-----|-----|---|-----------|

Table 11: O. Regulation 170/03 Schedule 10-3, Treated Bacteriological Sampling Summary

| Parameter | ODWQS | Total Analyzed | Total Outside ODWQS Criteria | Range | Units |
|---------------------|-------|----------------|------------------------------|-------|-----------|
| Arthur T.coli | 0 | 104 | 0 | 0 | cfu/100mL |
| Arthur E.coli | 0 | 104 | 0 | 0 | cfu/100mL |
| Mount Forest T.coli | 0 | 209 | 0 | 0 | cfu/100mL |
| Mount Forest E.coli | 0 | 209 | 0 | 0 | cfu/100mL |

Table 12: O. Regulation 170/03 Schedule 10-2, Distribution Samples Summary

| Parameter | ODWQS | Total Analyzed | Total Outside ODWQS Criteria | Range | Units |
|----------------------------------|-------|----------------|------------------------------|------------|-----------|
| Arthur Distribution- T.coli | 0 | 142 | 0 | 0 | cfu/100mL |
| Arthur Distribution-E.coli | 0 | 142 | 0 | 0 | cfu/100mL |
| Arthur Distribution-HPC | n/a | 142 | n/a | <10 to 210 | cfu/mL |
| Mount Forest Distribution T.coli | 0 | 209 | 1 | 0-1 | cfu/100mL |
| Mount Forest Distribution E.coli | 0 | 209 | 0 | 0 | cfu/100mL |
| Mount Forest Distribution-HPC | n/a | 209 | n/a | <10 >2000 | cfu/mL |

Treated Water Quality- O. Regulation 170/03 Schedule 13-6 and 13-7, “Three Month” Sampling Results Summary

In 2016, all operational Treated sources were sampled and analyzed for Schedule 13-6 and 13-7 parameters as per O.Reg. 170-03.

Regulation 170/03, Schedule 13-6 requires a minimum of one distribution sample taken from the Distribution System where THM’s (trihalomethanes) are most likely to develop (locations with high retention times). The Maximum Allowable Concentration (MAC) for THM’s is 100 ug/L. However, for this parameter the MAC uses a running annual average of quarterly samples.

The results of the running average value for THM’s for all related Distribution System samples in 2016 are below the ½ MAC (half of the maximum allowable concentration). Mount Forest had an annual running average of 33.5 ug/L of Total THM’s and Arthur had an annual running average of 18.75 ug/L of Total THM’s.

All operational Treated Sources were sampled and analyzed for Nitrates and Nitrites as per Regulation 170/03, Schedule 13-7. There was no instance of any adverse results in 2016.

Table 13: O. Regulation 170/03 Schedule 13-6 and 13-7, “Three Month” Sampling Results Summary

| Arthur | Date | ODWQS MAC | Well #7b | Well #8a/b |
|-----------------------|----------|-----------|-----------|------------|
| Nitrite (mg/L) | Feb 2016 | 1 | 0.003<MDL | 0.003<MDL |
| | May 2016 | 1 | 0.003<MDL | 0.003<MDL |
| | Aug 2016 | 1 | 0.003<MDL | 0.003<MDL |
| | Nov 2016 | 1 | 0.003<MDL | 0.003<MDL |
| | | | | |
| Nitrate (mg/L) | Feb 2016 | 10 | 0.006<MDL | 0.006<MDL |
| | May 2016 | 10 | 0.006<MDL | 0.006<MDL |
| | Aug 2016 | 10 | 0.007 | 0.006<MDL |
| | Nov 2016 | 10 | 0.006 | 0.006<MDL |

*MDL- method detection limit

| Mount Forest | Date | ODWQS MAC | Well #3 | Well #4 | Well #5 | Well #6 |
|-----------------------|----------|-----------|-----------|-----------|-----------|-----------|
| Nitrite (mg/L) | Feb 2016 | 1 | 0.003<MDL | 0.003<MDL | 0.003<MDL | 0.003<MDL |
| | May 2016 | 1 | 0.003<MDL | 0.003<MDL | 0.003<MDL | 0.003<MDL |
| | Aug 2016 | 1 | 0.003<MDL | 0.003<MDL | 0.003<MDL | 0.003<MDL |
| | Nov 2016 | 1 | 0.003<MDL | 0.003<MDL | 0.003<MDL | 0.003<MDL |
| | | | | | | |
| Nitrate (mg/L) | Feb 2016 | 10 | 0.052 | 0.006<MDL | 1.74 | 0.006<MDL |
| | May 2016 | 10 | 0.050 | 0.006<MDL | 1.53 | 0.006<MDL |
| | Aug 2016 | 10 | 0.048 | 0.006<MDL | 2.55 | 0.006<MDL |
| | Nov 2016 | 10 | 0.050 | 0.006<MDL | 2.44 | 0.011 |

*MDL- method detection limit

Treated Water Quality Statistics- O. Regulation 170/03 Schedule 23 Results Summary

If sampling for a particular schedule’s parameters (e.g. Schedule 23 or 24) did not occur within the calendar year of the report, then the most recent values are required to be included in the report for reference.

Table 14: O. Regulation 170/03 Schedule 23 Results Arthur Well #7

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|-----------------|-------------|--------------|-----------------|------------|
| Antimony | Aug. 14/15 | 0.02 | ug/L | No |
| Arsenic | Aug. 14/15 | 3.4 | ug/L | No |
| Barium | Aug. 14/15 | 59.9 | ug/L | No |
| Boron | Aug. 14/15 | 79.1 | ug/L | No |
| Cadmium | Aug. 14/15 | 0.003<MDL | ug/L | No |

| | | | | |
|-----------------|------------|----------|------|----|
| Chromium | Aug. 14/15 | 0.03<MDL | ug/L | No |
| Mercury | Aug. 14/15 | 0.10<MDL | ug/L | No |
| Selenium | Aug. 14/15 | 0.04<MDL | ug/L | No |
| Uranium | Aug. 14/15 | 0.224 | ug/L | No |
| Fluoride | Sept 9/13 | 1.40 | mg/L | No |

Table 15: O. Regulation 170/03 Schedule 23 Results Arthur Well #8

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|------------------|--------------------|---------------------|------------------------|-------------------|
| Antimony | Nov. 10/14 | 0.10 | ug/L | No |
| Arsenic | Nov. 10/14 | 0.2<MDL | ug/L | No |
| Barium | Nov. 10/14 | 66.7 | ug/L | No |
| Boron | Nov. 10/14 | 55.4 | ug/L | No |
| Cadmium | Nov. 10/14 | 0.003<MDL | ug/L | No |
| Chromium | Nov. 10/14 | 0.03<MDL | ug/L | No |
| Mercury | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Selenium | Nov. 10/14 | 1<MDL | ug/L | No |
| Uranium | Nov. 10/14 | 0.412 | ug/L | No |
| Fluoride | Nov. 9/15 | 0.32 | mg/L | No |

Table 16: O. Regulation 170/03 Schedule 23 Results Mount Forest Well #3

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|------------------|--------------------|---------------------|------------------------|-------------------|
| Antimony | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Arsenic | Jan. 13/16 | 1.4 | ug/L | No |
| Barium | Jan. 13/16 | 113 | ug/L | No |
| Boron | Jan. 13/16 | 42.8 | ug/L | No |
| Cadmium | Jan. 13/16 | <0.003 | ug/L | No |
| Chromium | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Mercury | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Selenium | Jan. 13/16 | 0.04<MDL | ug/L | No |
| Uranium | Jan. 13/16 | 0.303 | ug/L | No |
| Fluoride | Sept. 9/13 | 1.14 | mg/L | No |

Table 17: O. Regulation 170/03 Schedule 23 Results Mount Forest Well #4

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|-----------|-------------|--------------|-----------------|------------|
| Antimony | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Arsenic | Jan. 13/16 | 0.09 | ug/L | No |
| Barium | Jan. 13/16 | 176 | ug/L | No |
| Boron | Jan. 13/16 | 40.7 | ug/L | No |
| Cadmium | Jan. 13/16 | <0.003 | ug/L | No |
| Chromium | Jan. 13/16 | 0.26 | ug/L | No |
| Mercury | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Selenium | Jan. 13/16 | 0.04<MDL | ug/L | No |
| Uranium | Jan. 13/16 | 0.228 | ug/L | No |
| Fluoride | Sept. 9/13 | 0.81 | mg/L | No |

Table 18: O. Regulation 170/03 Schedule 23 Results Mount Forest Well #5

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|-----------|-------------|--------------|-----------------|------------|
| Antimony | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Arsenic | Jan. 13/16 | 0.2 <MDL | ug/L | No |
| Barium | Jan. 13/16 | 140 | ug/L | No |
| Boron | Jan. 13/16 | 39.1 | ug/L | No |
| Cadmium | Jan. 13/16 | < 0.003 | ug/L | No |
| Chromium | Jan. 13/16 | 0.28 | ug/L | No |
| Mercury | Jan. 13/16 | 0.01 <MDL | ug/L | No |
| Selenium | Jan. 13/16 | 0.73 | ug/L | No |
| Uranium | Jan. 13/16 | 0.699 | ug/L | No |
| Fluoride | Sept. 9/13 | 0.18 | mg/L | No |

Table 19: O. Regulation 170/03 Schedule 23 Results Mount Forest Well #6

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|-----------|-------------|--------------|-----------------|------------|
| Antimony | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Arsenic | Jan. 13/16 | 0.7 | ug/L | No |
| Barium | Jan. 13/16 | 124 | ug/L | No |
| Boron | Jan. 13/16 | 36.8 | ug/L | No |
| Cadmium | Jan. 13/16 | 0.003 | ug/L | No |

| | | | | |
|-----------------|------------|----------|------|----|
| Chromium | Jan. 13/16 | 0.16 | ug/L | No |
| Mercury | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Selenium | Jan. 13/16 | 0.04<MDL | ug/L | No |
| Uranium | Jan. 13/16 | 0.330 | ug/L | No |
| Fluoride | Sept. 9/13 | 1.34 | mg/L | No |

Treated Water Quality Statistics- O. Regulation 170/03 Schedule 24 Results Summary

If sampling for a particular schedule's parameters (e.g. Schedule 23 or 24) did not occur within the calendar year of the report, then the most recent values are required to be included in the report for reference.

Table 20: O. Regulation 170/03 Schedule 24 Results for Arthur Well #7b

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|--|--------------------|---------------------|------------------------|-------------------|
| Alachlor | Aug. 4/15 | 0.02<MDL | ug/L | No |
| Aldicarb | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Aldrin + Dieldrin | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Atrazine + N-dealkylated metabolites | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Azinphos-methyl | Aug. 4/15 | 0.05<MDL | ug/L | No |
| Bendiocarb | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Benzene | Aug. 4/15 | 0.32<MDL | ug/L | No |
| Benzo(a)pyrene | Aug. 4/15 | 0.004<MDL | ug/L | No |
| Bromoxynil | Aug. 4/15 | 0.33<MDL | ug/L | No |
| Carbaryl | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Carbofuran | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Carbon Tetrachloride | Aug. 4/15 | 0.16<MDL | ug/L | No |
| Chlordane (Total) | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Chlorpyrifos | Aug. 4/15 | 0.02<MDL | ug/L | No |
| Cyanazine | Aug. 4/15 | 0.03<MDL | ug/L | No |
| Diazinon | Aug. 4/15 | 0.02<MDL | ug/L | No |
| Dicamba | Aug. 4/15 | 0.20<MDL | ug/L | No |
| 1,2-Dichlorobenzene | Aug. 4/15 | 0.41<MDL | ug/L | No |
| 1,4-Dichlorobenzene | Aug. 4/15 | 0.36<MDL | ug/L | No |
| Dichlorodiphenyltrichloroethane (DDT) + metabolites | Aug. 4/15 | 0.01<MDL | ug/L | No |
| 1,2-Dichloroethane | Aug. 4/15 | 0.35<MDL | ug/L | No |
| 1,1-Dichloroethylene (vinylidene chloride) | Aug. 4/15 | 0.33<MDL | ug/L | No |

| | | | | |
|--|-----------|----------|------|----|
| Dichloromethane | Aug. 4/15 | 0.35<MDL | ug/L | No |
| 2-4 Dichlorophenol | Aug. 4/15 | 0.15<MDL | ug/L | No |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | Aug. 4/15 | 0.19<MDL | ug/L | No |
| Diclofop-methyl | Aug. 4/15 | 0.40<MDL | ug/L | No |
| Dimethoate | Aug. 4/15 | 0.03<MDL | ug/L | No |
| Dinoseb | Aug. 4/15 | 0.36<MDL | ug/L | No |
| Diquat | Aug. 4/15 | 1.0<MDL | ug/L | No |
| Diuron | Aug. 4/15 | 0.03<MDL | ug/L | No |
| Glyphosate | Aug. 4/15 | 6<MDL | ug/L | No |
| Heptachlor + Heptachlor Epoxide | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Lindane (Total) | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Malathion | Aug. 4/15 | 0.02<MDL | ug/L | No |
| Methoxychlor | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Metolachlor | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Metribuzin | Aug. 4/15 | 0.02<MDL | ug/L | No |
| Monochlorobenzene | Aug. 4/15 | 0.3<MDL | ug/L | No |
| Paraquat | Aug. 4/15 | 1<MDL | ug/L | No |
| Parathion | Aug. 4/15 | 0.02<MDL | ug/L | No |
| Pentachlorophenol | Aug. 4/15 | 0.15<MDL | ug/L | No |
| Phorate | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Picloram | Aug. 4/15 | 1<MDL | ug/L | No |
| Polychlorinated Biphenyls(PCB) | Aug. 4/15 | 0.04<MDL | ug/L | No |
| Prometryne | Aug. 4/15 | 0.03<MDL | ug/L | No |
| Simazine | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Temephos | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Terbufos | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Tetrachloroethylene | Aug. 4/15 | 0.35<MDL | ug/L | No |
| 2,3,4,6-Tetrachlorophenol | Aug. 4/15 | 0.14<MDL | ug/L | No |
| Triallate | Aug. 4/15 | 0.01<MDL | ug/L | No |
| Trichloroethylene | Aug. 4/15 | 0.44<MDL | ug/L | No |
| 2,4,6-Trichlorophenol | Aug. 4/15 | 0.25<MDL | ug/L | No |
| 2,4,5-Trichlorophenoxy acetic acid (2,4,5-T) | Aug. 4/15 | 0.22<MDL | ug/L | No |
| Trifluralin | Aug. 4/15 | 0.02<MDL | ug/L | No |
| Vinyl Chloride | Aug. 4/15 | 0.17<MDL | ug/L | No |

Table 21: O. Regulation 170/03 Schedule 24 Results for Arthur Well #8

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|-------------------|-------------|--------------|-----------------|------------|
| Alachlor | Nov. 10/14 | 0.02<MDL | ug/L | No |
| Aldicarb | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Aldrin + Dieldrin | Nov. 10/14 | 0.01<MDL | ug/L | No |

| | | | | |
|--|------------|-----------|------|----|
| Atrazine + N-dealkylated metabolites | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Azinphos-methyl | Nov. 10/14 | 0.02<MDL | ug/L | No |
| Bendiocarb | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Benzene | Nov. 10/14 | 0.32<MDL | ug/L | No |
| Benzo(a)pyrene | Nov. 10/14 | 0.004<MDL | ug/L | No |
| Bromoxynil | Nov. 10/14 | 0.33<MDL | ug/L | No |
| Carbaryl | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Carbofuran | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Carbon Tetrachloride | Nov. 10/14 | 0.16<MDL | ug/L | No |
| Chlordane (Total) | Nov. 10/14 | 0.1<MDL | ug/L | No |
| Chlorpyrifos | Nov. 10/14 | 0.02<MDL | ug/L | No |
| Cyanazine | Nov. 10/14 | 0.03<MDL | ug/L | No |
| Diazinon | Nov. 10/14 | 0.02<MDL | ug/L | No |
| Dicamba | Nov. 10/14 | 0.20<MDL | ug/L | No |
| 1,2-Dichlorobenzene | Nov. 10/14 | 0.41<MDL | ug/L | No |
| 1,4-Dichlorobenzene | Nov. 10/14 | 0.36<MDL | ug/L | No |
| Dichlorodiphenyltrichloroethane (DDT) + metabolites | Nov. 10/14 | 0.01<MDL | ug/L | No |
| 1,2-Dichloroethane | Nov. 10/14 | 0.35<MDL | ug/L | No |
| 1,1-Dichloroethylene (vinylidene chloride) | Nov. 10/14 | 0.33<MDL | ug/L | No |
| Dichloromethane | Nov. 10/14 | 0.35<MDL | ug/L | No |
| 2-4 Dichlorophenol | Nov. 10/14 | 0.15<MDL | ug/L | No |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | Nov. 10/14 | 0.19<MDL | ug/L | No |
| Diclofop-methyl | Nov. 10/14 | 0.40<MDL | ug/L | No |
| Dimethoate | Nov. 10/14 | 0.03<MDL | ug/L | No |
| Dinoseb | Nov. 10/14 | 0.36<MDL | ug/L | No |
| Diquat | Nov. 10/14 | 1<MDL | ug/L | No |
| Diuron | Nov. 10/14 | 0.03<MDL | ug/L | No |
| Glyphosate | Nov. 10/14 | 1<MDL | ug/L | No |
| Heptachlor + Heptachlor Epoxide | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Lindane (Total) | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Malathion | Nov. 10/14 | 0.02<MDL | ug/L | No |
| Methoxychlor | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Metolachlor | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Metribuzin | Nov. 10/14 | 0.02<MDL | ug/L | No |
| Monochlorobenzene | Nov. 10/14 | 0.3<MDL | ug/L | No |
| Paraquat | Nov. 10/14 | 1<MDL | ug/L | No |
| Parathion | Nov. 10/14 | 0.02<MDL | ug/L | No |

| | | | | |
|--|------------|----------|------|----|
| Pentachlorophenol | Nov. 10/14 | 0.15<MDL | ug/L | No |
| Phorate | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Picloram | Nov. 10/14 | 1<MDL | ug/L | No |
| Polychlorinated Biphenyls(PCB) | Nov. 10/14 | 0.04<MDL | ug/L | No |
| Prometryne | Nov. 10/14 | 0.03<MDL | ug/L | No |
| Simazine | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Temephos | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Terbufos | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Tetrachloroethylene | Nov. 10/14 | 0.35<MDL | ug/L | No |
| 2,3,4,6-Tetrachlorophenol | Nov. 10/14 | 0.14<MDL | ug/L | No |
| Triallate | Nov. 10/14 | 0.01<MDL | ug/L | No |
| Trichloroethylene | Nov. 10/14 | 0.44<MDL | ug/L | No |
| 2,4,6-Trichlorophenol | Nov. 10/14 | 0.25<MDL | ug/L | No |
| 2,4,5-Trichlorophenoxy acetic acid (2,4,5-T) | Nov. 10/14 | 0.22<MDL | ug/L | No |
| Trifluralin | Nov. 10/14 | 0.02<MDL | ug/L | No |
| Vinyl Chloride | Nov. 10/14 | 0.17<MDL | ug/L | No |

Table 22: O. Regulation 170/03 Schedule 24 Results for Mount Forest Well #3

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|--------------------------------------|-------------|--------------|-----------------|------------|
| Alachlor | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Aldicarb | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Aldrin + Dieldrin | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Atrazine + N-dealkylated metabolites | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Azinphos-methyl | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Bendiocarb | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Benzene | Jan. 13/16 | 0.32<MDL | ug/L | No |
| Benzo(a)pyrene | Jan. 13/16 | 0.04<MDL | ug/L | No |
| Bromoxynil | Jan. 13/16 | 0.33<MDL | ug/L | No |
| Carbaryl | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Carbofuran | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Carbon Tetrachloride | Jan. 13/16 | 0.16<MDL | ug/L | No |
| Chlordane (Total) | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Chlorpyrifos | Jan. 13/16 | 0.02<MDL | ug/L | No |

| | | | | |
|---|------------|-----------|------|----|
| Cyanazine | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Diazinon | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Dicamba | Jan. 13/16 | 0.20<MDL | ug/L | No |
| 1,2-Dichlorobenzene | Jan. 13/16 | 0.41<MDL | ug/L | No |
| 1,4-Dichlorobenzene | Jan. 13/16 | 0.36<MDL | ug/L | No |
| Dichlorodiphenyltrichloroethane (DDT) + metabolites | Jan. 13/16 | 0.01<MDL | ug/L | No |
| 1,2-Dichloroethane | Jan. 13/16 | 0.35<MDL | ug/L | No |
| 1,1-Dichloroethylene (vinylidene chloride) | Jan. 13/16 | 0.33<MDL | ug/L | No |
| Dichloromethane | Jan. 13/16 | 0.35<MDL | ug/L | No |
| 2,4-Dichlorophenol | Jan. 13/16 | 0.015<MDL | ug/L | No |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | Jan. 13/16 | 0.019<MDL | ug/L | No |
| Diclofop-methyl | Jan. 13/16 | 0.40<MDL | ug/L | No |
| Dimethoate | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Dinoseb | Jan. 13/16 | 0.36<MDL | ug/L | No |
| Diquat | Jan. 13/16 | 1<MDL | ug/L | No |
| Diuron | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Glyphosate | Jan. 13/16 | 6<MDL | ug/L | No |
| Heptachlor + Heptachlor Epoxide | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Lindane (Total) | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Malathion | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Methoxychlor | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Metolachlor | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Metribuzin | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Monochlorobenzene | Jan. 13/16 | 0.3<MDL | ug/L | No |
| Paraquat | Jan. 13/16 | 1<MDL | ug/L | No |
| Parathion | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Pentachlorophenol | Jan. 13/16 | 0.15<MDL | ug/L | No |
| Phorate | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Picloram | Jan. 13/16 | 1<MDL | ug/L | No |
| Polychlorinated Biphenyls(PCB) | Jan. 13/16 | 0.04<MDL | ug/L | No |
| Prometryne | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Simazine | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Temephos | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Terbufos | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Tetrachloroethylene | Jan. 13/16 | 0.35<MDL | ug/L | No |
| 2,3,4,6-Tetrachlorophenol | Jan. 13/16 | 0.14<MDL | ug/L | No |
| Triallate | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Trichloroethylene | Jan. 13/16 | 0.44<MDL | ug/L | No |

| | | | | |
|--|------------|----------|------|----|
| 2,4,6-Trichlorophenol | Jan. 13/16 | 0.25<MDL | ug/L | No |
| 2,4,5-Trichlorophenoxy acetic acid (2,4,5-T) | Jan. 13/16 | 0.22<MDL | ug/L | No |
| Trifluralin | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Vinyl Chloride | Jan. 13/16 | 0.44<MDL | ug/L | No |

Table 23: O. Regulation 170/03 Schedule 24 Results for Mount Forest Well #4

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|---|-------------|--------------|-----------------|------------|
| Alachlor | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Aldicarb | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Aldrin + Dieldrin | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Atrazine + N-dealkylated metabolites | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Azinphos-methyl | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Bendiocarb | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Benzene | Jan. 13/16 | 0.32<MDL | ug/L | No |
| Benzo(a)pyrene | Jan. 13/16 | 0.04<MDL | ug/L | No |
| Bromoxynil | Jan. 13/16 | 0.33<MDL | ug/L | No |
| Carbaryl | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Carbofuran | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Carbon Tetrachloride | Jan. 13/16 | 0.16<MDL | ug/L | No |
| Chlordane (Total) | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Chlorpyrifos | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Cyanazine | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Diazinon | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Dicamba | Jan. 13/16 | 0.20<MDL | ug/L | No |
| 1,2-Dichlorobenzene | Jan. 13/16 | 0.41<MDL | ug/L | No |
| 1,4-Dichlorobenzene | Jan. 13/16 | 0.36<MDL | ug/L | No |
| Dichlorodiphenyltrichloroethane (DDT) + metabolites | Jan. 13/16 | 0.01<MDL | ug/L | No |
| 1,2-Dichloroethane | Jan. 13/16 | 0.35<MDL | ug/L | No |
| 1,1-Dichloroethylene (vinylidene chloride) | Jan. 13/16 | 0.33<MDL | ug/L | No |
| Dichloromethane | Jan. 13/16 | 0.35<MDL | ug/L | No |
| 2-4 Dichlorophenol | Jan. 13/16 | 0.015<MDL | ug/L | No |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | Jan. 13/16 | 0.019<MDL | ug/L | No |
| Diclofop-methyl | Jan. 13/16 | 0.40<MDL | ug/L | No |
| Dimethoate | Jan. 13/16 | 0.03<MDL | ug/L | No |

| | | | | |
|--|------------|----------|------|----|
| Dinoseb | Jan. 13/16 | 0.36<MDL | ug/L | No |
| Diquat | Jan. 13/16 | 1<MDL | ug/L | No |
| Diuron | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Glyphosate | Jan. 13/16 | 6<MDL | ug/L | No |
| Heptachlor + Heptachlor Epoxide | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Lindane (Total) | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Malathion | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Methoxychlor | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Metolachlor | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Metribuzin | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Monochlorobenzene | Jan. 13/16 | 0.3<MDL | ug/L | No |
| Paraquat | Jan. 13/16 | 1<MDL | ug/L | No |
| Parathion | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Pentachlorophenol | Jan. 13/16 | 0.15<MDL | ug/L | No |
| Phorate | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Picloram | Jan. 13/16 | 1<MDL | ug/L | No |
| Polychlorinated Biphenyls(PCB) | Jan. 13/16 | 0.04<MDL | ug/L | No |
| Prometryne | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Simazine | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Temephos | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Terbufos | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Tetrachloroethylene | Jan. 13/16 | 0.35<MDL | ug/L | No |
| 2,3,4,6-Tetrachlorophenol | Jan. 13/16 | 0.14<MDL | ug/L | No |
| Triallate | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Trichloroethylene | Jan. 13/16 | 0.44<MDL | ug/L | No |
| 2,4,6-Trichlorophenol | Jan. 13/16 | 0.25<MDL | ug/L | No |
| 2,4,5-Trichlorophenoxy acetic acid (2,4,5-T) | Jan. 13/16 | 0.22<MDL | ug/L | No |
| Trifluralin | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Vinyl Chloride | Jan. 13/16 | 0.44<MDL | ug/L | No |

Table 24: O. Regulation 170/03 Schedule 24 Results for Mount Forest Well #5

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|--------------------------------------|-------------|--------------|-----------------|------------|
| Alachlor | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Aldicarb | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Aldrin + Dieldrin | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Atrazine + N-dealkylated metabolites | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Azinphos-methyl | Jan. 13/16 | 0.02<MDL | ug/L | No |

| | | | | |
|--|------------|-----------|------|----|
| Bendiocarb | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Benzene | Jan. 13/16 | 0.32<MDL | ug/L | No |
| Benzo(a)pyrene | Jan. 13/16 | 0.04<MDL | ug/L | No |
| Bromoxynil | Jan. 13/16 | 0.33<MDL | ug/L | No |
| Carbaryl | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Carbofuran | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Carbon Tetrachloride | Jan. 13/16 | 0.16<MDL | ug/L | No |
| Chlordane (Total) | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Chlorpyrifos | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Cyanazine | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Diazinon | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Dicamba | Jan. 13/16 | 0.20<MDL | ug/L | No |
| 1,2-Dichlorobenzene | Jan. 13/16 | 0.41<MDL | ug/L | No |
| 1,4-Dichlorobenzene | Jan. 13/16 | 0.36<MDL | ug/L | No |
| Dichlorodiphenyltrichloroethane (DDT) + metabolites | Jan. 13/16 | 0.01<MDL | ug/L | No |
| 1,2-Dichloroethane | Jan. 13/16 | 0.35<MDL | ug/L | No |
| 1,1-Dichloroethylene (vinylidene chloride) | Jan. 13/16 | 0.33<MDL | ug/L | No |
| Dichloromethane | Jan. 13/16 | 0.35<MDL | ug/L | No |
| 2,4-Dichlorophenol | Jan. 13/16 | 0.015<MDL | ug/L | No |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | Jan. 13/16 | 0.019<MDL | ug/L | No |
| Diclofop-methyl | Jan. 13/16 | 0.40<MDL | ug/L | No |
| Dimethoate | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Dinoseb | Jan. 13/16 | 0.36<MDL | ug/L | No |
| Diquat | Jan. 13/16 | 1<MDL | ug/L | No |
| Diuron | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Glyphosate | Jan. 13/16 | 6<MDL | ug/L | No |
| Heptachlor + Heptachlor Epoxide | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Lindane (Total) | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Malathion | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Methoxychlor | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Metolachlor | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Metribuzin | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Monochlorobenzene | Jan. 13/16 | 0.3<MDL | ug/L | No |
| Paraquat | Jan. 13/16 | 1<MDL | ug/L | No |
| Parathion | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Pentachlorophenol | Jan. 13/16 | 0.15<MDL | ug/L | No |
| Phorate | Jan. 13/16 | 0.01<MDL | ug/L | No |

| | | | | |
|--|------------|----------|------|----|
| Picloram | Jan. 13/16 | 1<MDL | ug/L | No |
| Polychlorinated Biphenyls(PCB) | Jan. 13/16 | 0.04<MDL | ug/L | No |
| Prometryne | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Simazine | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Temephos | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Terbufos | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Tetrachloroethylene | Jan. 13/16 | 1.0 | ug/L | No |
| 2,3,4,6-Tetrachlorophenol | Jan. 13/16 | 0.14<MDL | ug/L | No |
| Triallate | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Trichloroethylene | Jan. 13/16 | 0.44<MDL | ug/L | No |
| 2,4,6-Trichlorophenol | Jan. 13/16 | 0.25<MDL | ug/L | No |
| 2,4,5-Trichlorophenoxy acetic acid (2,4,5-T) | Jan. 13/16 | 0.22<MDL | ug/L | No |
| Trifluralin | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Vinyl Chloride | Jan. 13/16 | 0.44<MDL | ug/L | No |

Table 25: O. Regulation 170/03 Schedule 24 Results for Mount Forest Well #6

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|--------------------------------------|-------------|--------------|-----------------|------------|
| Alachlor | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Aldicarb | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Aldrin + Dieldrin | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Atrazine + N-dealkylated metabolites | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Azinphos-methyl | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Bendiocarb | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Benzene | Jan. 13/16 | 0.32<MDL | ug/L | No |
| Benzo(a)pyrene | Jan. 13/16 | 0.04<MDL | ug/L | No |
| Bromoxynil | Jan. 13/16 | 0.33<MDL | ug/L | No |
| Carbaryl | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Carbofuran | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Carbon Tetrachloride | Jan. 13/16 | 0.16<MDL | ug/L | No |
| Chlordane (Total) | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Chlorpyrifos | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Cyanazine | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Diazinon | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Dicamba | Jan. 13/16 | 0.20<MDL | ug/L | No |
| 1,2-Dichlorobenzene | Jan. 13/16 | 0.41<MDL | ug/L | No |
| 1,4-Dichlorobenzene | Jan. 13/16 | 0.36<MDL | ug/L | No |

| | | | | |
|---|------------|-----------|------|----|
| Dichlorodiphenyltrichloroethane (DDT) + metabolites | Jan. 13/16 | 0.01<MDL | ug/L | No |
| 1,2-Dichloroethane | Jan. 13/16 | 0.35<MDL | ug/L | No |
| 1,1-Dichloroethylene (vinylidene chloride) | Jan. 13/16 | 0.33<MDL | ug/L | No |
| Dichloromethane | Jan. 13/16 | 0.35<MDL | ug/L | No |
| 2-4 Dichlorophenol | Jan. 13/16 | 0.015<MDL | ug/L | No |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | Jan. 13/16 | 0.019<MDL | ug/L | No |
| Diclofop-methyl | Jan. 13/16 | 0.40<MDL | ug/L | No |
| Dimethoate | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Dinoseb | Jan. 13/16 | 0.36<MDL | ug/L | No |
| Diquat | Jan. 13/16 | 1<MDL | ug/L | No |
| Diuron | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Glyphosate | Jan. 13/16 | 6<MDL | ug/L | No |
| Heptachlor + Heptachlor Epoxide | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Lindane (Total) | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Malathion | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Methoxychlor | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Metolachlor | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Metribuzin | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Monochlorobenzene | Jan. 13/16 | 0.3<MDL | ug/L | No |
| Paraquat | Jan. 13/16 | 1<MDL | ug/L | No |
| Parathion | Jan. 13/16 | 0.02<MDL | ug/L | No |
| Pentachlorophenol | Jan. 13/16 | 0.15<MDL | ug/L | No |
| Phorate | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Picloram | Jan. 13/16 | 1<MDL | ug/L | No |
| Polychlorinated Biphenyls(PCB) | Jan. 13/16 | 0.04<MDL | ug/L | No |
| Prometryne | Jan. 13/16 | 0.03<MDL | ug/L | No |
| Simazine | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Temephos | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Terbufos | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Tetrachloroethylene | Jan. 13/16 | 0.35<MDL | ug/L | No |
| 2,3,4,6-Tetrachlorophenol | Jan. 13/16 | 0.14<MDL | ug/L | No |
| Triallate | Jan. 13/16 | 0.01<MDL | ug/L | No |
| Trichloroethylene | Jan. 13/16 | 0.44<MDL | ug/L | No |
| 2,4,6-Trichlorophenol | Jan. 13/16 | 0.25<MDL | ug/L | No |
| 2,4,5-Trichlorophenoxy acetic acid (2,4,5-T) | Jan. 13/16 | 0.22<MDL | ug/L | No |
| Trifluralin | Jan. 13/16 | 0.02<MDL | ug/L | No |

| | | | | |
|----------------|------------|----------|------|----|
| Vinyl Chloride | Jan. 13/16 | 0.44<MDL | ug/L | No |
|----------------|------------|----------|------|----|

Treated Water Quality Statistics- O. Regulations 170/03 Schedule 13-8 and 13-9, "Five Year" Sampling Results Summary

If sampling for a particular schedule's parameters (e.g. Schedule 23 or 24) did not occur within the calendar year of the report, then the most recent values are required to be included in the report for reference.

Fluoride and Sodium are sampled on the "five year" sampling schedule. Results for most recent tests can be found in Table 26.

Table 26: O. Regulation 170/03 Schedule 13-8 and 13-9, Fluoride and Sodium Results

| Parameter | Sample Date | Result Value | Unit of Measure | Exceedance |
|-------------------------------|-------------|--------------|-----------------|------------------|
| Sodium- Arthur Well #7 | Sept 9/13 | 36.8 | mg/L | Yes ¹ |
| Sodium- Arthur Well #8 | Nov 9/15 | 21.5 | mg/L | Yes ¹ |
| Sodium- Mount Forest Well #3 | Sept 9/13 | 16.2 | mg/L | No |
| Sodium- Mount Forest Well #4 | Sept 9/13 | 10.7 | mg/L | No |
| Sodium- Mount Forest Well #5 | Sept 9/13 | 58.9 | mg/L | Yes ¹ |
| Sodium- Mount Forest Well #6 | Sept 9/13 | 10.1 | mg/L | No |
| Fluoride- Arthur Well #7 | Sept 9/13 | 1.40 | mg/L | No |
| Fluoride-Arthur Well #8 | Nov 9/15 | 0.32 | mg/L | No |
| Fluoride-Mount Forest Well #3 | Sept 9/13 | 1.14 | mg/L | No |
| Fluoride-Mount Forest Well #4 | Sept 9/13 | 0.81 | mg/L | No |
| Fluoride-Mount Forest Well #5 | Sept 9/13 | 0.18 | mg/L | No |
| Fluoride-Mount Forest Well #6 | Sept 9/13 | 1.34 | mg/L | No |

¹ 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.

e) Significant Expenses Incurred

The table below outlines a brief description and breakdown for significant monetary expenses occurred in 2016.

| Location | Maintenance Item | Cost |
|----------|----------------------------------|--------------|
| Arthur | Spheroid (Freud) Tower Upgrades | \$35,000.00 |
| Arthur | Eliza St. Water Main Replacement | \$125,384.00 |

| | | |
|---------------------|---|-------------|
| Arthur | Well #8a/b Radio (communications) Tower Extension | \$2,013.83 |
| Mount Forest | Water Tower Inspection | \$2,544.00 |
| Mount Forest | Concrete Pad Well #6 for Tractor (Power backup) | \$5,860.36 |
| Mount Forest | Well #3 Check Valve | \$1,809.87 |
| Mount Forest | Well #3 Pump & Casing Inspection | \$8,904.61 |
| Mount Forest | Variable Frequency Drives (VFD) Mount Forest Well #3, #4 | \$13,838.58 |
| Mount Forest | Flow Meter Replacement | \$4,019.52 |
| Arthur/Mount Forest | Well Monitoring/Inspections | \$8,453.50 |
| Arthur/Mount Forest | 3 Chlorine Analyzers | \$9,737.32 |
| Arthur/Mount Forest | 3 Chemical Metering Pumps | \$4,229.04 |
| Arthur/Mount Forest | Generator Maintenance/Serviceing | \$2,818.37 |

f) Source Water Protection

The Township of Wellington North is subject to three Source Protection Plans (based on watershed or conservation authority boundaries): the Grand River Plan, the Saugeen Valley, Grey Sauble, Northern Bruce Peninsula Plan (Saugeen Valley) and the Ausable Bayfield Bayfield Maitland Valley (ABMV – Maitland Valley) Plan. The ABMV – Maitland Valley Plan came into legal effect on April 1, 2015 while the Grand River and Saugeen Valley Plans came into legal effect on July 1, 2016. Please note that although the Township is subject to three Source Protection Plans, the only policies applicable to the Township within the ABMV-Maitland Valley Plan are general education and outreach policies that are covered by the general County-wide education program discussed below. This is because there are no municipal drinking water systems or wellhead protection areas present within the ABMV-Maitland Valley Plan area. Therefore, with the exception of the education section, this annual report focuses on the implementation of the Grand River and Saugeen Valley Source Protection Plans.

Review of Source Water Protection for 2016

In 2016, five development review notices were issued per Section 59 of the Clean Water Act within the municipality. Additionally, comments were provided on an additional three applications that did not require development review notices. Guidance material for applicants and staff was developed County wide including a source protection screening form, instructions to applicants, dedicated page on the website, GIS mapping on Explore Wellington, a business process flow chart and detailed screening aids. Training was provided by the RMO to planning and building staff. The County Official Plan was also amended to conform with the five Source Protection Plans in the County.

Threat verification was conducted for 136 industrial, commercial and institutional properties identified as potential significant drinking water threats, eight properties are remaining to be verified. Data is still being analyzed to determine what properties are confirmed as significant drinking water threats.

Outreach and threat verification for agricultural properties began in 2016 and will continue in 2017. One Risk Management Plan is in the process of negotiation for the municipality.

In 2015, 9 of 9 mandatory septic inspections (100%) were completed within the Township. There are 640 septic inspections required County wide. If a septic system is present within well head protection area with a vulnerability score of 10 or within an issues contributing area for nitrates, a septic inspection is required every 5 years. In total, there were 2 remedial actions identified in the municipality with 1 requiring minor maintenance (i.e. pump outs or lid replacements) and 1 requiring major maintenance work (tank or leaching bed replacements). In 2016, one additional property was discovered in Mount Forest, however, the property owner decommissioned the septic system and connected to municipal sewer.

The Township passed By-law 094-16 (Sewer Connection) and By-law 095-16 (Sewer Use) on December 19, 2016 to conform with the Saugeen Valley Source Protection Plan. Other accomplishments included the update of the County Emergency Management Plan to include source protection, updates to education material (ie fact sheets, website), participation in a number of events including the International Plowing Match and beginning the development of education and outreach programs for a variety of significant drinking water threat activities. The Wellington County municipalities continue to implement source protection under the Wellington Source Water Protection partnership, www.wellingtonwater.ca