Town of Newmarket 2018 Annual Water Quality Summary Report

Prepared by: Public Works Services, Town of Newmarket
Presented to Council: March 18, 2019

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Annual Report

Background

Purpose

The purpose of this Annual Water Quality Summary report is to provide information to residents and stakeholders of the Town of Newmarket, as well as to satisfy the regulatory requirements of the *Safe Drinking Water Act, 2002* including the Drinking Water Quality Management Standard (DWQMS), reports to Owner, and regulatory reporting required under Ontario Regulation (O. Reg.) 170/03. This report is a compilation of information that documents the means of ensuring the ongoing delivery of safe drinking water to the residents of the Town of Newmarket.

Scope

This Annual Water Quality Report includes information pertaining to the Town of Newmarket's Drinking Water System (DWS) form January 1, 2018 to December 31, 2018.

Provincial law requires we report this information to the following:

- The Drinking Water System Owners (Mayor and Council)
- Owner and Operating Authority Top Management (Commissioner, Development & Infrastructure Services; Director, Public Works Services; and Manager, Water/Wastewater Services)
- The Public

Report Requirements under the Ontario Safe Drinking Water Act, 2002

This report satisfies the requirements of the Ministry of the Environment, Conservation and Parks (MECP) *Safe Drinking Water Act, 2002 (SDWA)* and O. Reg. 170/03 as outlined below.

Section 11, Annual Reports that include:

- a brief description of the Drinking Water System
- a summary of the most recent water test results required under O. Reg. 170/03
- a summary of adverse test results and other issues reported to the Ministry including corrective actions taken
- a description of the major expenses incurred to install, repair, or replace required

equipment/infrastructure

- the locations where this report is made available for the public

Schedule 22 Summary Report that includes:

- a list of the requirements of the SDWA, the regulations, the system's approval, Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), and any orders applicable for the system that were not met at any time during the period covered by the report
- for each requirement that was not met, the duration of the failure and the 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.

The Town of Newmarket 2018 Annual Water Quality Summary report satisfies the above regulatory reporting requirements.

Copies of Newmarket's 2018 Annual Water Quality Summary Report are available for viewing at:

- Robert N. Shelton Operations Centre (1275 Maple Hill Court)
- Newmarket Municipal Offices, Customer Service Counter (395 Mulock Drive)
- Online at newmarket.ca/waterwastewater

Drinking Water System Description

The Newmarket Water Distribution System is a Class I Distribution Subsystem. From January 1, 2018 to December 31, 2018, eighteen (18) water operators and staff were certified to operate/maintain the system.

The Town of Newmarket purchases water from York Region, which in turn purchases it through supply agreements from the City of Toronto and Peel Region. York Region also operates and maintains groundwater wells located in the Yonge Street Aquifer that service the Town of Newmarket. The integrated system includes Newmarket's local distribution watermains and York Region's transmission watermains, pumping stations, storage facilities and groundwater treatment facilities. Treated water from the Region supply network is monitored on-line, 24 hours per day by operators through the Regional SCADA

(System Control and Data Acquisition) system.

The Town and York Region operations staff works closely to deliver source to tap drinking water in the integrated and complex system.

The Region also publishes an Annual Water Quality Summary Report summarizing water quality for the preceding year that is available for viewing to the public. More information, as well as an electronic version of this report is found on their website at york.ca/drinkingwater.

The Town's Distribution System Infrastructure (including watermains, valves, hydrants, water services, and meters) services approximately 84,224 people within the Town of Newmarket.

The Newmarket DWS is comprised of approximately;

- 318 kilometers of distribution system watermain
- 4,035 mainline valves
- 2,358 municipally owned fire hydrants
- 26,407 metered water services

Water pressure is maintained throughout the distribution system ranging between approximately 40-100 psi.

Legislation

The following are the primary pieces of legislation that directly affect the operation of the Town of Newmarket's drinking water distribution system.

Safe Drinking Water Act, 2002

The *Safe Drinking Water Act, 2002* (SDWA) purpose is to protect human health through the control and regulation of drinking-water systems and drinking-water testing. The Act also has the benefit of gathering in one place all legislation and regulations relating to the treatment and distribution of drinking water.

Highlights of the Act address:

- Accreditation of operating authorities
- Municipal drinking water systems
- Drinking water testing
- Inspections, Compliance and Enforcement
- Standard of Care

Standard of Care, Section 19, Safe Drinking Water Act, 2002

Standard of Care defines the legal responsibility of the owner and operating authority of a municipal drinking water system. It requires that the owners and operating authorities exercise the level of care, diligence and skill with regard to a municipal drinking water system that a reasonably prudent person would be expected to exercise in a similar situation. Owners and operating authorities must exercise this due diligence honestly, competently and with integrity. Based on the definition of owner in the SDWA, the Town of Newmarket Council is considered the owner of the Town of Newmarket's drinking water distribution system.

Ontario Regulation 170/03: Drinking Water Systems Regulation

The Drinking Water Systems Regulation (O. Reg. 170/03) regulates municipal drinking water systems. This regulation stipulates treatment equipment usage, operational checks and sampling, chemical and microbiological testing requirements, reporting adverse test results, corrective actions, and reporting requirements. Compliance to O. Reg 170/03 is determined by system inspections conducted annually by Ministry of the Environment, Conservation and Parks (MECP) Inspectors.

Ontario Regulation 128/04: Certification of Drinking-Water Operators

The Water Operator Certification Program was initiated for drinking water operators in 1987 as a voluntary program. On May 14, 2004, O. Reg. 128/04 was issued, increasing the requirements for drinking water operators' certification. The regulation establishes ongoing training requirements that operators are required to meet to remain certified. O. Reg 128/04 provides direction on license requirements, overall responsible operator (ORO) and operator in charge (OIC) responsibilities, record keeping, and operations/maintenance manuals.

The Town meets the requirements of O. Reg 128/04 by maintaining and monitoring an operator training program, by assigning an overall responsible operator (ORO) and operator(s) in charge (OIC) of the drinking water system and establishing document and record control systems.

Drinking Water Quality Management Standard (DWQMS)

The purpose of the DWQMS is to assist owners and operating authorities in the effective management and operation of their drinking water system. The DWQMS outlines requirements for a Quality Management System (QMS) to ensure high quality drinking water. In the development of a QMS, the Operating Authority must create an Operational Plan; this document defines the QMS and will be subject to internal and external audits for accreditation. As referenced in the DWQMS, the QMS must be acknowledged by all those with active rolls in the water system, from front line staff to the highest level of management to Council.

Town Staff have developed and implemented a QMS specific to the Town of Newmarket. Certification was originally obtained on February 2009. Recertification was successfully achieved in 2013 and 2016. The next external certification audit will be carried out in the spring of 2019.

The Town continues to meet the Quality Management System requirements as required under the SDWA

Drinking Water System Licences and Permits

- Municipal Drinking Water Licence (MDWL) number: 124-101
- Drinking Water Works Permit (DWWP) number: 124-201

The MDWL and the DWWP describe system-specific requirements in addition to those included in provincial regulations related to water distribution systems. These documents outline detailed conditions and regulatory requirements in regard to the operation, maintenance, and monitoring of the system. Documents can be viewed at the Newmarket Operations Centre at 1275 Maple Hill Court.

In 2018, the Town complied with all conditions of its Municipal Drinking Water Licence (MDWL) and Drinking Water Works Permit (DWWP)

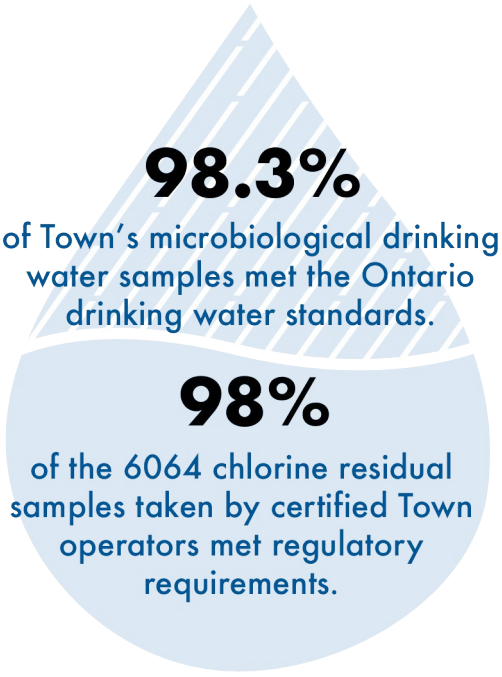
Drinking Water System Monitoring

Operators, certified by the Province of Ontario through the MECP, and employed by the Town of Newmarket, maintained and operated the Town's DWS in 2018. Some of the typical operational activities performed by staff include:

- Water quality sampling/monitoring
- System cleaning and flushing
- Infrastructure repair
- Locates of municipal infrastructure
- Valve exercising/inspections
- Fire hydrant maintenance/inspections
- Customer Service calls

In 2018, the Town maintained the DWS in a fit state of repair and followed best industry practices during the repair, inspection, and maintenance of the system.

Trained and certified operations staff closely monitors The Town's system through regulated water quality monitoring/sampling programs.



The Town's sampling program meets regulatory requirements. This ensures that the water the Town provides remains safe for residents.

All samples collected are analyzed in the field by trained operators or submitted to a provincially accredited laboratory for analysis. In 2018, the York-Durham Regional Environmental Laboratory, an accredited laboratory registered with the Canadian Association for Laboratory Certification Inc., located in Pickering, Ontario, was under contract with the Town for the third-party analysis of Town's drinking water samples.

The above lab analyzed 1363 water samples for bacteriological water quality in 2018 based on the Town's regulatory sampling plan.

From January 1, 2018 to December 31, 2018, the Operating Authority for the Newmarket DWS reported 147 Adverse Water Quality Incidents (AWQIs) to the MECP and the local Medical Officer of Health (York Region Public Health).
Of these:

- 124 were due to adverse (low) combined chlorine residual
- 22 for Total Coliform
- 1 E Coli

Operators immediately initiated corrective actions for all AWQIs as per requirements under O. Reg. 170/03, and all were resolved without incident.

In all cases, drinking water supplied to the community was confirmed safe and no further actions were directed by the MECP or York Region Public Health.

Regulatory Compliance and MECP Inspections

2018 Annual MECP Inspection Results

As the Operating Authority, the Town of Newmarket undergoes an annual inspection of the DWS and all associated practices by a Provincial Drinking Water Inspector/Officer from the MECP. The annual inspection ensures we comply with all applicable regulatory requirements. In 2018, The Town's inspection occurred on August 22 and data was reviewed for the period covering October 1, 2017 to August 11, 2018

The Town received a final inspection rating of 90.95%

Schedule 22 requires that all non-compliance with applicable legislation be discussed in the

Non-Compliance	MECP Observation	Action(s) Required	Town Response
1. All required notifications of adverse water quality incidents were not immediately provided as per O. Reg. 170/03 16-6.	On November 9, 2017, an AWQI was reported for a low chlorine residual below the regulatory requirement of 0.05 mg/l free or 0.25 mg/l combined which occurred on November 7, 2017. Two samples were collected at the same source at the same time with two different devices while conducting advanced sampling. Corrective actions were taken at the time by flushing downstream to get adequate residual. The Town suspected the lower residual was inaccurate. The Ministry gave guidance on November 10, 2017, to have the equipment verified/calibrated. If it is determined the adverse result was an erroneous result, it can be detracted. The equipment was found to be working within specification. It was determined the error may have with the sample cell of the equipment that gave the higher reading having discolouration, scratched, condensation or some foreign debris on the actual cell lens of the unit. This AWQI was not reported immediately, as	The Town of Newmarket is to ensure that an immediate report, as described in section 16-6 of O. Reg 170/03, is given of adverse results of a drinking water test for the purpose of Section 18 of the Safe Drinking Water Act	The Town conducted a comprehensive review of its standard operating procedures for AWQI reporting. The Town provided training to operations staff and contractors working in the Town's DWS using internal staff and external training providers. The standard operating procedure for "Measurement and Recording Equipment Calibration" was reviewed by the Town and includes industry best practices and recommendations provided by the MECP. Training was provided to staff on the revised procedure.

	required by O. Reg 170/03 Schedule 16-6		
2. For one AWQI a written notice of resolution was provided to the Ministry a day later than the prescribed seven (7) days.	The AWQI was resolved on November 28, 2017 and the notice of issue resolution was submitted on December 2, 2017. Under Section 16-9(1), of O. Reg 170/03: if an immediate report of a written notice is given under the same Schedule and the issue that gave rise to the notice is resolved, the owner of the drinking water system shall, within 7 days after the issue is resolved, give written notice summarizing the actions taken and the results achieved		The Town conducted a comprehensive review of its standard operating procedures for AWQI reporting. The Town provided training to operations staff and contractors working in the Town's DWS using internal staff and external training providers.
3. Watermain break/repair records were not clear on which of the listed certified operators took chlorine residuals and at what time the residuals were taken	The watermain break/repair records record the time the watermain was re-installed and the amount of time the watermain was flushed, but the exact time was not recorded and often another record would be made with the time the residual was taken.		The Town is reviewing all forms and moving to electronic forms for operator field access and enhanced data collection. The Town's "Watermain Break Repair Report Form" has been reviewed and updated using industry best practices and includes all information as outlined in the Watermain Disinfection Procedure and recommendations made by the MECP.

2018 Water Consumption Data

From January 1 to December 31, 2018, the Town of Newmarket received a total of 8,768,108 m^3 of water from York Region (supplier). This compares to 8,061,649 m^3 from the previous year (an increase of approximately 8.76 %).

The table below shows a summary of water billing from York Region to the Town of Newmarket for the supply of water for 2018**.**

Description	Amount
Total water billed to the Town of Newmarket by York Region (m^3)	8,768,108
Total water sold to the consumers of the Town of Newmarket (m^3)	6,885,791
Total unbilled water (m^3)	1,882,317
Percentage water loss*	21.47%

Please note: " the 21.47 Percentage water loss" includes the following;

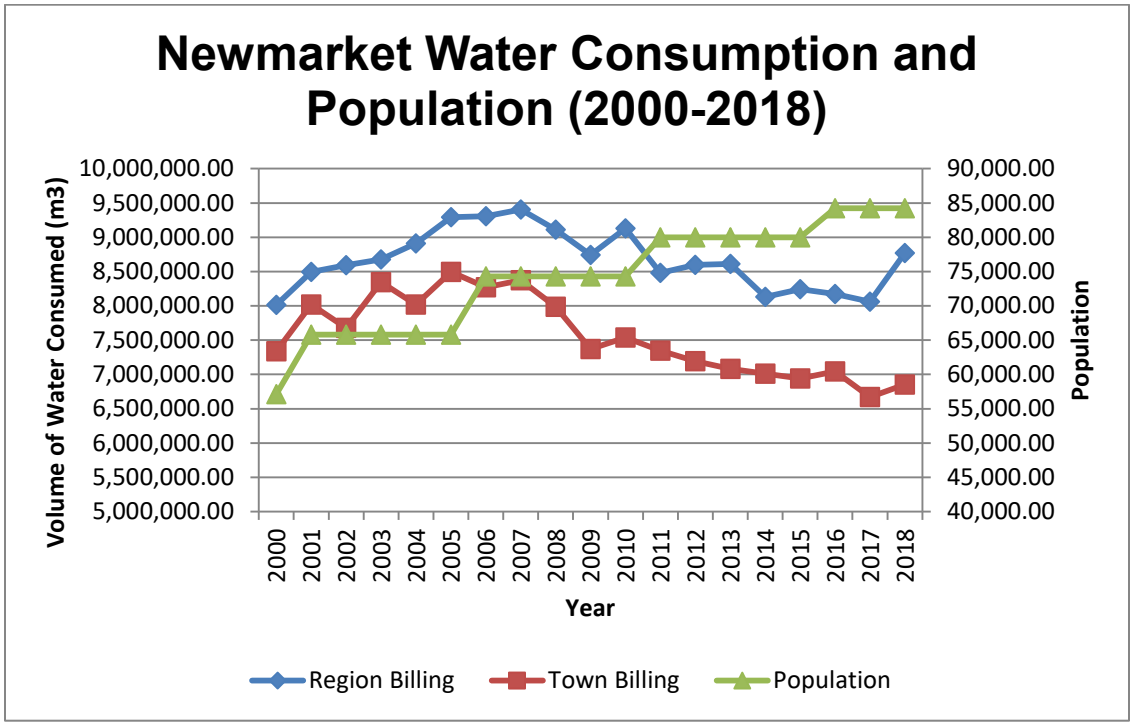
- Water used for flushing to maintain water quality (approximately 750,840 m^3, 8.56%)
- Routine maintenance activities (approximately 29,060 m^3, 0.33%)
- Watermain breaks (approximately 26,060 m^3, 0.30%)
- Other Water Loss including water meter inaccuracies, system leakage, firefighting, theft, new watermain commissioning / testing (1,108,253 m^3, 12.28%)

Annual Water Purchase / Billing Comparison 2009 to 2018

Year	Purchased volume from York Region (m^3)	Billed volume for Town of Newmarket (m^3)	% Difference – Purchase vs. Consumption* (non-revenue water)
2009	8,741,611	7,368,900	15.70%
2010	9,129,588	7,539,311	17.42%
2011	8,479,472	7,345,696	13.37%
2012	8,598,676	7,191,412	16.37%

2013	8,613,261	7,080,899	17.79%
2014	8,130,411	7,011,144	13.77%
2015	8,242,358	6,940,811	15.79%
2016	8,175,016	7,045,890	13.81%
2017	8,061,649	6,669,617	17.27%
2018	8,768,108	6,885,791	21.47%

Town of Newmarket – Annual Water Consumption (m^3)



Although, Town population has increased, water use has decreased over time due to water conservation and efficiency efforts, changing water use habits and plumbing code requirements.

TOWN OF NEWMARKET DRINKING WATER SYSTEM ANNUAL REPORT

Drinking-Water System Number:	**260003188**
Drinking-Water System Name:	Town of Newmarket Water Distribution System
Drinking-Water System Owner:	The Corporation of the Town of Newmarket
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2018 to December 31, 2018

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories.***
Does your Drinking-Water System serve more than 10,000 people? Yes [X] No [ ] **Is your annual report available to the public at no charge on a web site on the Internet?** **Yes [X] No [ ]**	**Number of Designated Facilities served:** **Did you provide a copy of your annual report to all Designated Facilities you serve?** **Yes [ ] No [ ]** **Number of Interested Authorities you report to:** **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?** **Yes [ ] No [ ]**

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

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.

[X] Public access/notice via the web
[X] 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 Town of Newmarket purchases water from York Region, which in turn purchases it through supply agreements from the City of Toronto and Peel Region. York Region also operates and maintains groundwater wells located in the Yonge Street Aquifer that service the Town of Newmarket. The integrated system includes Newmarket's local distribution watermains and York Region's transmission watermains, pumping stations, storage facilities and groundwater treatment facilities. Treated water from the Region supply network is monitored on-line, 24 hours per day by operators through the Regional SCADA (System Control and Data Acquisition) system.

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- 2,358 municipally owned fire hydrants
- 26,407 metered water services

Water pressure is maintained throughout the distribution system ranging between approximately 40-100 psi.

List all water treatment chemicals used over this reporting period

Water treatment is the responsibility of York Region. Chlorine is added to provide primary disinfection, and chloramine (addition of ammonia) provides a secondary

residual in the distribution system. Sodium silicate is added to sequester naturally occurring iron and manganese in the groundwater source.

Were any significant expenses incurred to?

[X] Install required equipment
[X] Repair required equipment
[X] Replace required equipment

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

Drinking Water System Capital Improvements:	**$ 2,229,924**
Watermain Maintenance:	**$ 337,340**
Hydrant Maintenance:	**$ 90,000**
Watermain Unidirectional Flushing/Swabbing Program:	**$ 476,235**

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	AWQI NO.	PARAMETER	RESULT (mg/L or P)	CORRECTIVE ACTION DATE	CORRECTIVE ACTIONS
3-Jan-18	138481	Combined Chlorine (LOW)	0.11mg/L	3-Jan-18	Flush and resample
4-Jan-18	138491	Total Coliform	P	4-Jan-18	Flush and resample
11-Jan-18	138532	Combined Chlorine (LOW)	0.23mg/L	11-Jan-18	Flush and resample
15-Jan-18	138586	Total Coliform	P	15-Jan-18	Flush and resample
17-Jan-18	138606	Total Coliform	p	17-Jan-18	Flush and resample
23-Jan-18	138622	Combined Chlorine (LOW)	0.19mg/L	23-Jan-18	Flush and resample
8-Mar-18	138687	Combined Chlorine (LOW)	0.19mg/L	8-Mar-18	Flush and resample
20-Feb-18	138761	Combined Chlorine (LOW)	0.16mg/L	20-Feb-18	Flush and resample
20-Feb-18	138781	Total Coliform	P	20-Feb-18	Flush and resample
6-Mar-18	138854	Combined Chlorine	0.22mg/L	6-Mar-18	Flush and

		(LOW)			resample
14-Mar-18	138907	Combined Chlorine (LOW)	0.22mg/L	14-Mar-18	Flush and resample
12-Mar-18	138908	Total Coliform	P	12-Mar-18	Flush and resample
6-Apr-18	139046	Combined Chlorine (LOW)	0.24mg/L	6-Apr-18	Flush and resample
17-Apr-18	139122	Combined Chlorine (LOW)	0.21mg/L	17-Apr-18	Flush and resample
30-Apr-18	139209	Total Coliform	P	30-Apr-18	Flush and resample
2-May-18	139213	Combined Chlorine (LOW)	0.24mg/L	2-May-18	Flush and resample
7-May-18	139264	Combined Chlorine (LOW)	0.10mg/L	7-May-18	Flush and resample
8-May-18	139272	Combined Chlorine (LOW)	0.20mg/L	8-May-18	Flush and resample
9-May-18	139288	Combined Chlorine (LOW)	0.11mg/L	9-May-18	Flush and resample
15-May-18	139321	Combined Chlorine (LOW)	0.13mg/L	15-May-18	Flush and resample
16-May-18	139348	Combined Chlorine (LOW)	0.09mg/L	16-May-18	Flush and resample
15-May-18	139367	Total Coliform	P	15-May-18	Flush and resample
1-Jun-18	139552	Combined Chlorine (LOW)	0.21mg/L	1-Jun-18	Flush and resample
30-May-18	139556	Total Coliform	P	30-May-18	Flush and resample
1-Jun-18	139569	Total Coliform	P	1-Jun-18	Flush and resample
2-Jun-18	139591	Total Coliform	P	2-Jun-18	Flush and resample
5-Jun-18	139623	Combined Chlorine (LOW)	0.22mg/L	5-Jun-18	Flush and resample
5-Jun-18	139649	Total Coliform	P	5-Jun-18	Flush and resample
6-Jun-18	139684	Total Coliform	P	6-Jun-18	Flush and resample
11-Jun-18	139713	Combined Chlorine (LOW)	0.22mg/L	11-Jun-18	Flush and resample
12-Jun-18	139754	Combined Chlorine (LOW)	0.20mg/L	12-Jun-18	Flush and resample
13-Jun-18	139768	Combined Chlorine (LOW)	0.19mg/L	13-Jun-18	Flush and resample

14-Jun-18	139793	Combined Chlorine (LOW)	0.21mg/L	14-Jun-18	Flush and resample
21-Jun-18	139965	Combined Chlorine (LOW)	0.05mg/L	21-Jun-18	Flush and resample
25-Jun-18	140014	Combined Chlorine (LOW)	0.22mg/L	25-Jun-18	Flush and resample
26-Jun-18	140053	Combined Chlorine (LOW)	0.05mg/L	26-Jun-18	Flush and resample
25-Jun-18	140057	Total Coliform	P	25-Jun-18	Flush and resample
27-Jun-18	140064	Combined Chlorine (LOW)	0.02mg/L	27-Jun-18	Flush and resample
28-Jun-18	140091	Combined Chlorine (LOW)	0.21mg/L	28-Jun-18	Flush and resample
29-Jun-18	140145	Combined Chlorine (LOW)	0.22mg/L	29-Jun-18	Flush and resample
3-Jul-18	140190	Combined Chlorine (LOW)	0.11mg/L	3-Jul-18	Flush and resample
4-Jul-18	140220	Combined Chlorine (LOW)	0.16mg/L	4-Jul-18	Flush and resample
3-Jul-18	140253	Total Coliform and E. Coli	P	3-Jul-18	Flush and resample
6-Jul-18	140284	Combined Chlorine (LOW)	0.10mg/L	6-Jul-18	Flush and resample
10-Jul-18	140396	Combined Chlorine (LOW)	0.07mg/L	10-Jul-18	Flush and resample
11-Jul-18	140415	Combined Chlorine (LOW)	0.06mg/L	11-Jul-18	Flush and resample
14-Jul-18	140601	Combined Chlorine (LOW)	0.07mg/L	14-Jul-18	Flush and resample
15-Jul-18	140603	Combined Chlorine (LOW)	0.07mg/L	15-Jul-18	Flush and resample
16-Jul-18	140670	Combined Chlorine (LOW)	0.17mg/L	16-Jul-18	Flush and resample
17-Jul-18	140676	Combined Chlorine (LOW)	0.15mg/L	17-Jul-18	Flush and resample
18-Jul-18	140750	Combined Chlorine (LOW)	0.08mg/L	18-Jul-18	Flush and resample
20-Jul-18	140848	Combined Chlorine (LOW)	0.03mg/L	20-Jul-18	Flush and resample
22-Jul-18	140890	Combined Chlorine (LOW)	0.12mg/L	22-Jul-18	Flush and resample
23-Jul-18	140903	Combined Chlorine (LOW)	0.23mg/L	23-Jul-18	Flush and resample
24-Jul-18	140931	Combined Chlorine	0.11mg/L	24-Jul-18	Flush and

		(LOW)			resample
30-Jul-18	141164	Combined Chlorine (LOW)	0.22mg/L	30-Jul-18	Flush and resample
31-Jul-18	141219	Combined Chlorine (LOW)	0.08mg/L	31-Jul-18	Flush and resample
1-Aug-18	141256	Combined Chlorine (LOW)	0.13mg/L	1-Aug-18	Flush and resample
2-Aug-18	141309	Combined Chlorine (LOW)	0.21mg/L	2-Aug-18	Flush and resample
3-Aug-18	141334	Combined Chlorine (LOW)	0.17mg/L	3-Aug-18	Flush and resample
4-Aug-18	141370	Combined Chlorine (LOW)	0.19mg/L	4-Aug-18	Flush and resample
5-Aug-18	141386	Combined Chlorine (LOW)	0.18mg/L	5-Aug-18	Flush and resample
6-Aug-18	141388	Combined Chlorine (LOW)	0.09mg/L	6-Aug-18	Flush and resample
7-Aug-18	141399	Combined Chlorine (LOW)	0.18mg/L	7-Aug-18	Flush and resample
8-Aug-18	141434	Combined Chlorine (LOW)	0.18mg/L	8-Aug-18	Flush and resample
9-Aug-18	141465	Combined Chlorine (LOW)	0.17mg/L	9-Aug-18	Flush and resample
10-Aug-18	141538	Combined Chlorine (LOW)	0.23mg/L	10-Aug-18	Flush and resample
14-Aug-18	141626	Combined Chlorine (LOW)	0.23mg/L	14-Aug-18	Flush and resample
15-Aug-18	141635	Combined Chlorine (LOW)	0.18mg/L	15-Aug-18	Flush and resample
17-Aug-18	141699	Combined Chlorine (LOW)	0.09mg/L	17-Aug-18	Flush and resample
20-Aug-18	141742	Combined Chlorine (LOW)	0.15mg/L	20-Aug-18	Flush and resample
22-Aug-18	141908	Combined Chlorine (LOW)	0.18mg/L	22-Aug-18	Flush and resample
24-Aug-18	142100	Combined Chlorine (LOW)	0.07mg/L	24-Aug-18	Flush and resample
27-Aug-18	142196	Combined Chlorine (LOW)	0.05mg/L	27-Aug-18	Flush and resample
30-Aug-18	142370	Combined Chlorine (LOW)	0.23mg/L	30-Aug-18	Flush and resample
4-Sep-18	142510	Combined Chlorine (LOW)	0.15mg/L	4-Sep-18	Flush and resample
10-Sep-18	142623	Combined Chlorine (LOW)	0.18mg/L	10-Sep-18	Flush and resample

11-Sep-18	142662	Combined Chlorine (LOW)	0.08mg/L	11-Sep-18	Flush and resample
13-Sep-18	142785	Combined Chlorine (LOW)	0.24mg/L	13-Sep-18	Flush and resample
11-Sep-18	142786	Total Coliform	P	11-Sep-18	Flush and resample
17-Sep-18	142874	Combined Chlorine (LOW)	0.15mg/L	17-Sep-18	Flush and resample
15-Sep-18	142878	Total Coliform	P	15-Sep-18	Flush and resample
18-Sep-18	142888	Combined Chlorine (LOW)	0.06mg/L	18-Sep-18	Flush and resample
19-Sep-18	142933	Combined Chlorine (LOW)	0.21mg/L	19-Sep-18	Flush and resample
20-Sep-18	142994	Combined Chlorine (LOW)	0.22mg/L	20-Sep-18	Flush and resample
21-Sep-18	143089	Combined Chlorine (LOW)	0.16mg/L	21-Sep-18	Flush and resample
22-Sep-18	143137	Combined Chlorine (LOW)	0.17mg/L	22-Sep-18	Flush and resample
21-Sep-18	143146	Total Coliform	P	21-Sep-18	Flush and resample
23-Sep-18	143151	Combined Chlorine (LOW)	0.23mg/L	23-Sep-18	Flush and resample
24-Sep-18	143159	Combined Chlorine (LOW)	0.09mg/L	24-Sep-18	Flush and resample
25-Sep-18	143183	Combined Chlorine (LOW)	0.19mg/L	25-Sep-18	Flush and resample
26-Sep-18	143219	Combined Chlorine (LOW)	0.02mg/L	26-Sep-18	Flush and resample
27-Sep-18	143238	Combined Chlorine (LOW)	0.04mg/L	27-Sep-18	Flush and resample
28-Sep-18	143266	Combined Chlorine (LOW)	0.20mg/L	28-Sep-18	Flush and resample
29-Sep-18	143286	Combined Chlorine (LOW)	0.07mg/L	29-Sep-18	Flush and resample
30-Sep-18	143288	Combined Chlorine (LOW)	0.08mg/L	30-Sep-18	Flush and resample
1-Oct-18	143294	Combined Chlorine (LOW)	0.21mg/L	1-Oct-18	Flush and resample
2-Oct-18	143304	Combined Chlorine (LOW)	0.12mg/L	2-Oct-18	Flush and resample
3-Oct-18	143346	Combined Chlorine (LOW)	0.05mg/L	3-Oct-18	Flush and resample
4-Oct-18	143371	Combined Chlorine	0.14mg/L	4-Oct-18	Flush and

		(LOW)			resample
5-Oct-18	143396	Combined Chlorine (LOW)	0.03mg/L	5-Oct-18	Flush and resample
6-Oct-18	143433	Combined Chlorine (LOW)	0.10mg/L	6-Oct-18	Flush and resample
7-Oct-18	143438	Combined Chlorine (LOW)	0.12mg/L	7-Oct-18	Flush and resample
8-Oct-18	143440	Combined Chlorine (LOW)	0.16mg/L	8-Oct-18	Flush and resample
9-Oct-18	143444	Combined Chlorine (LOW)	0.17mg/L	9-Oct-18	Flush and resample
13-Oct-18	143533	Combined Chlorine (LOW)	0.18mg/L	13-Oct-18	Flush and resample
14-Oct-18	143536	Combined Chlorine (LOW)	0.15mg/L	14-Oct-18	Flush and resample
15-Oct-18	143544	Combined Chlorine (LOW)	0.11mg/L	15-Oct-18	Flush and resample
16-Oct-18	143554	Combined Chlorine (LOW)	0.23mg/L	16-Oct-18	Flush and resample
18-Oct-18	143593	Combined Chlorine (LOW)	0.18mg/L	18-Oct-18	Flush and resample
19-Oct-18	143657	Combined Chlorine (LOW)	0.18mg/L	19-Oct-18	Flush and resample
22-Oct-18	143671	Combined Chlorine (LOW)	0.13mg/L	22-Oct-18	Flush and resample
23-Oct-18	143683	Combined Chlorine (LOW)	0.20mg/L	23-Oct-18	Flush and resample
24-Oct-18	143720	Combined Chlorine (LOW)	0.21mg/L	24-Oct-18	Flush and resample
17-Oct-18	143750	Combined Chlorine (LOW)	0.00mg/L	17-Oct-18	Flush and resample
25-Oct-18	143751	Combined Chlorine (LOW)	0.18mg/L	25-Oct-18	Flush and resample
28-Oct-18	143783	Combined Chlorine (LOW)	0.21mg/L	28-Oct-18	Flush and resample
30-Oct-18	143813	Combined Chlorine (LOW)	0.00mg/L	30-Oct-18	Flush and resample
1-Nov-18	143837	Combined Chlorine (LOW)	0.06mg/L	1-Nov-18	Flush and resample
5-Nov-18	143882	Combined Chlorine (LOW)	0.24mg/L	5-Nov-18	Flush and resample
6-Nov-18	143896	Combined Chlorine (LOW)	0.04mg/L	6-Nov-18	Flush and resample
5-Nov-18	143916	Total Coliform	P	5-Nov-18	Flush and resample

8-Nov-18	143931	Combined Chlorine (LOW)	0.07mg/L	8-Nov-18	Flush and resample
10-Nov-18	143993	Combined Chlorine (LOW)	0.07mg/L	10-Nov-18	Flush and resample
12-Nov-18	143997	Combined Chlorine (LOW)	0.13mg/L	12-Nov-18	Flush and resample
19-Nov-18	144118	Combined Chlorine (LOW)	0.20mg/L	19-Nov-18	Flush and resample
20-Nov-18	144121	Combined Chlorine (LOW)	0.22mg/L	20-Nov-18	Flush and resample
19-Nov-18	144139	Total Coliform	P	19-Nov-18	Flush and resample
22-Nov-18	144147	Combined Chlorine (LOW)	0.04mg/L	22-Nov-18	Flush and resample
20-Nov-18	144153	Total Coliform	P	20-Nov-18	Flush and resample
21-Nov-18	144157	Total Coliform	P	21-Nov-18	Flush and resample
21-Nov-18	144159	Total Coliform	P	21-Nov-18	Flush and resample
27-Nov-18	144186	Combined Chlorine (LOW)	0.14mg/L	27-Nov-18	Flush and resample
28-Nov-18	144189	Combined Chlorine (LOW)	0.06mg/L	28-Nov-18	Flush and resample
29-Nov-18	144197	Combined Chlorine (LOW)	0.20mg/L	29-Nov-18	Flush and resample
30-Nov-18	144202	Combined Chlorine (LOW)	0.22mg/L	30-Nov-18	Flush and resample
3-Dec-18	144223	Combined Chlorine (LOW)	0.10mg/L	3-Dec-18	Flush and resample
4-Dec-18	144233	Combined Chlorine (LOW)	0.13mg/L	4-Dec-18	Flush and resample
5-Dec-18	144244	Combined Chlorine (LOW)	0.14mg/L	5-Dec-18	Flush and resample
7-Dec-18	144269	Combined Chlorine (LOW)	0.12mg/L	7-Dec-18	Flush and resample
10-Dec-18	144282	Combined Chlorine (LOW)	0.06mg/L	10-Dec-18	Flush and resample
12-Dec-18	144296	Combined Chlorine (LOW)	0.17mg/L	12-Dec-18	Flush and resample
17-Dec-18	144328	Combined Chlorine (LOW)	0.16mg/L	17-Dec-18	Flush and resample
18-Dec-18	144334	Combined Chlorine (LOW)	0.21mg/L	18-Dec-18	Flush and resample
20-Dec-18	144365	Combined Chlorine	0.20mg/L	20-Dec-18	Flush and

		(LOW)			resample
28-Dec-18	144405	Combined Chlorine (LOW)	0.17mg/L	28-Dec-18	Flush and resample

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 #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	Not applicable				
Treated	Not applicable				
Distribution	1363	1 sample P	22 sample P	624	<1 – 2900 CFU/mL

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 #)	Unit of Measure
Turbidity	Not applicable		
Chlorine	6064	0.00 – 3.61	mg/L
Fluoride (If the DWS provides fluoridation)	Not applicable		

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

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
Not applicable				

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Sodium	Jan – Dec 2018	14.5 - 23.4	mg/L	Yes
Nitrite	Jan – Dec 2018	<0.05 - 0.13	mg/L	No
Nitrate	Jan – Dec 2018	<0.50 - 0.61	mg/L	No
Fluoride	Jan – Dec 2018	0.2 - 0.58	mg/L	No

Summary of lead testing under Schedule 15.1 during this reporting period

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Plumbing	4	<0.0005	mg/l	None
Distribution	21	<0.0005 – 0.0008	mg/L	None

*NOTE: The Town of Newmarket has been granted Lead Regulatory Relief under Schedule D of the Municipal Drinking Water Licence.

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Trihalomethanes (NOTE: show latest annual average)	Jan – Dec 2018	16.7	ug/L	No
Haloacetic Acids (NOTE: show latest annual average)	Jan – Dec 2018	9.8	ug/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
Not Applicable			