Annual Report

O. Reg. 170/03, s.11 (1)
Jan. 1, 2018 – Dec. 31, 2018

Town of Fort Erie
Annual Water Quality Report

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Introduction

The Town of Fort Erie is pleased to present its annual report for 2018 on the Fort Erie Water Distribution System covering the period from January 1, 2018 to December 31, 2018. Pursuant to Ontario Regulation 170/03, Section 11 (10) the Town of Fort Erie must make an annual water quality report available to anyone, at no charge. The Town of Fort Erie also posts monthly water quality summaries on our website. www.forterie.ca .

This report is provided in compliance with the Safe Drinking Water Act and associated regulations.

Water Supply and Distribution

The Drinking Water System in the Town of Fort Erie is a split jurisdictional model between the Regional Municipality of Niagara (Region) and the Corporation of the Town of Fort Erie (Town). The Region is responsible for water treatment, trunk water main facilities, water storage, and residual disinfection. The Town owns and operates the Fort Erie Distribution System, purchasing water from the Region and supplying it to serviced areas within all urban and settlement areas of the Municipality. The distribution system is a Class 2 system, extending westerly as far as Pt. Abino through Ridgeway and Crystal Beach and northerly to Douglastown through Stevensville.

The Regional Municipality of Niagara has prepared a companion report providing information on Lake Erie as our water source, on the Rosehill Water Treatment Plant and the results of their quality assurance testing of the water provided to the Fort Erie Distribution System. This report is available on the Region's website. (see page 5)

Quality Management System [QMS]

We continue the operation of our Water Utility through adherence to our adopted Quality Management System. The Town of Fort Erie is committed to:

- The delivery of safe drinking water to our customers.
- Maintaining compliance to all drinking water legislation.
- Ensuring regular maintenance and continuous improvement of our QMS.

Town of Fort Erie Water Distribution System Responsible Persons

Position	Name	Telephone 905-871-1600 Ext.
Director, Infrastructure Services	Kelly M Walsh, P.Eng.	2400
Manager WWD	Chris Pisaric	2475
Water/Wastewater Technician	Paul Earl	2465
Coordinator QMS	Shawna Mills	2485

Water Quality Monitoring

As the operator of the water distribution system, the Town of Fort Erie Water & Wastewater Services Division must conduct the water quality sampling and testing outlined in: **Table 1 (Page 3)**. .

Sampling locations must vary and be representative of the system. Similarly, the Region of Niagara, Public Works Department tests the water supplied to the Town from the Rosehill Treatment Plant. The results of their water quality monitoring are reported separately in their annual report. **(See Page 5)**

Our Water Quality Test Results

The results of water quality testing for the period January 1, 2018 – December 31, 2018 are summarized in **Table 2 (Page 6)**.

Microbiological Analysis

A total of 536 samples were taken for microbiological testing and analyzed by E-3 Laboratories, an independent accredited laboratory for microbiological analysis. During this reporting period, as recorded in Table 2 (Page 6), four (4) preliminary adverse samples were collected. In all instances, follow-up flushing was conducted to elevate the area free available chlorine residual and repeat sampling and testing have proven the water to be microbiologically safe. This low percentage (0.7%) of initial adverse results would not be recognized as unusual in a system of our size and age.

"A total of 536 samples were taken for microbiological testing … During this reporting period, as recorded in Table 2 (Page 6), only four (4) adverse samples were collected."

Minimum Free Chlorine Residual

To ensure the maintenance of water quality throughout the distribution system; Operators of Large Municipal Drinking Water Systems are regulated to maintain a minimum disinfectant residual of 0.05 mg/L of free available chlorine (FAC). During this reporting period there were no instances where system sampling identified a (FAC) residual less than the regulated minimum from the 1,430 samples taken. Routine system monitoring and flushing continues to address the adequacy of chlorine residual in low flow, high residence, and dead end areas of our distribution system.

Chemical Analysis

Samples are to be collected from points that are likely to have an elevated potential for the formation of trihalomethanes and that are likely to have an elevated concentration of lead. Trihalomethane analysis is required to be done once per quarter. Three sample collections are required each quarter. The town completed sampling during this reporting period, yielding test results indicating all twelve (12) samples were well below the maximum allowable concentrations (MAC) of 0.10 mg/L. The Town completed distribution system lead sampling in conjunction with pH and total alkalinity during each of the two (2) sampling periods in 2018. Lead sampling analysis showed lead levels within the distribution system to be well below the (MAC) of 0.010 mg/L. 2018 seen the continuation of Haloacetic acid (HAAs) sampling in the Town's distribution system. HAAs are a type of chlorination disinfection by-product formed when the chlorine used to disinfect drinking water reacts with naturally occurring organic matter in water. In 2018, ten (10) HAA samples were collected, total, yielding results well below the (MAC) of 0.08 mg/L.

Table 1: Water Quality Sampling and Testing for Distribution Systems

Town of Fort Erie Water Distribution System

Parameter	Sampling and Analysis	Distribution System Standards.	Remarks
Microbiological	Minimum 38 samples throughout each month tested for total coliform and E. coli.- Based on a population of just over 31,000. At least 25% of sample collections must include analysis for general bacteria population expressed as colony counts on a heterotrophic plate count.	• Escherichia coli (E.coli): **no** colonies detection • Total coliforms: **no** colonies detection	Fort Erie collects 10 samples per week. Microbiological analysis is conducted using the Membrane Filtration Analysis technique.
Chlorine Residual (Disinfectant)	Sampling and testing and testing in conjunction with microbiological samples. Twice weekly collections in representative system locations.	0.05 mg/L minimum concentration of free available chlorine.	System is monitored at representative locations; e.g., system dead-ends. Flushing used to maintain level.
Trihalomethane	Quarterly – There is no regulatory definitive number of required sample collections. Three (3) samples collection per quarter were submitted for analysis.	0.10 mg/L maximum acceptable concentration	Based on a four-quarter progressive annual average of test results at points which are likely to have an elevated potential for the formation of trihalomethanes.
Lead	The Town is exempt from plumbing sampling. The Town is however, required to sample the system's distribution system as per section 15.1 5(10). This would require the Town to test for pH and total alkalinity during each of the two (2) sampling periods, in every 12-month period and test for lead during each of the two (2) sampling periods in every third 12 month period which began the winter of 2018.	0.010 mg/L maximum acceptable concentration	Historical results of lead sampling below standards has afforded relief of this requirement until January 2018
Haloacetic Acids	Quarterly – There is no regulatory definitive number of required sample collections. Three (3) sample collection per quarter were submitted for analysis.	0.08 mg/L maximum acceptable concentration	Based on a four-quarter progressive annual average of test results at points which are likely to have an elevated potential for the formation of Haloacetic Acids
Turbidity	Frequency not specified	5.0 NTU maximum aesthetic objective.	Measured at consumer outlets. System is monitored at various locations. Flushing used to reduce turbidity.

Notes: 1) mg/L – milligrams per litre of water (parts per million – ppm)
2) NTU – Nephelometric Turbidity Units

What We Do To Assure Water Quality

Initiatives

- Comprehensive flushing of the cast iron water mains within the distribution system, as well as other areas that require routine maintenance flushing.
- Continued collection of, regulatory required, random and representative water samples for microbiological analysis,
- Treated water pH monitoring and control at the Rosehill Water Treatment Plant,
- Monitoring of the distribution system for turbidity and free chlorine residual and conducting corrective flushing as necessary,
- Installation of permanent sampling stations.
- Periodic leak detection testing,
- All staff within the Water and Wastewater Utility hold Operator Licenses for certification of competency pursuant to O.Reg. 128/04.
- Ongoing development of a backflow/cross connection control program.
- Establishment of a long-term capital plan for water main rehabilitation. Expenditures in 2018 capital investment for water main and water meter replacement totaled $1,600,.00, and
- Service delivery through adherence to our Quality Management System Operational Plan.

At present, an average of less than one water quality related complaint is received per month, which is well within the norm experienced by municipal distribution systems.

Ensuring Water Quality

The assurance of a safe water supply is achieved through the following cooperative efforts of the Region of Niagara and the Fort Erie Infrastructure Services Department:

- The water supplied by the Regional Public Works, Rosehill Water Treatment Plant, is continuously subjected to comprehensive testing to ensure the water supplied to the Fort Erie distribution system meets the criteria set out by the Safe Drinking Water Act and associated regulations.
- On January 31, 2018 the Ministry of the Environment, Conservation and Parks conducted an inspection of The Town of Fort Erie's Distribution System. There was no non-compliance issues identified in the inspection. The Town received a report rating of 100% report rating for the January inspection.
- Qualified municipal technicians systematically monitor our water distribution system. They measure free chlorine residual, pH and turbidity, and take samples for microbiological evaluation. E3 Laboratories, an independent accredited laboratory, conduct the microbiological analyses. ALS Environmental Laboratory conducts the trihalomethane analyses as well as Haloacetic Acid analyses. All sampling and testing is conducted in accordance with standards set by the Ministry of the Environment (MOE) and accepted by the Ministry of Health. We consistently receive bacteriological test results, which prove the water to be microbiologically safe.
- All adverse samples are investigated by repeat special sampling and testing and by an evaluation of the distribution system in the area of the adverse results. All adverse results are reported to the Regional Medical Officer of Health and to the MECP Spills Action.
- A free chlorine residual sufficient to disinfect any potential contamination is consistently maintained. Low chlorine residuals usually associated with low flows, dead ends and system extremities are monitored and are corrected by flushing.
- Infrastructure Services, Water & Wastewater Services Division, will test a customer's municipal water supply on request.

"Qualified Licensed Operators systematically monitor our water distribution system"

"The Medical Officer of Health has reviewed our water distribution system operations and our water quality assurance practices and supports them."

We're on the Web!

See us at:

www.forterie.ca

What We Do To Assure Water Quality (Cont'd)

Collaboration with the Regional Public Health Department

We work in close collaboration with the Region of Niagara, Public Health Department. We share our test results with them and immediately report all instances of adverse results and our follow-up actions. Public Health Staff work with us to evaluate the causes of any adverse test results. The Medical Officer of Health has reviewed our water distribution system operations and our water quality assurance practices and supports them.

To Obtain Copies of Annual or Summary Reports

Copies of this Annual Report and our Summary Report are available free of charge from the Town web page or by contacting the Request for Service Desk, at (905) 871-1600, extension 2466.

In addition, all laboratory test results are available for inspection at the Infrastructure Services Operations Division Offices. For an appointment to review these documents contact the Operations Division at (905) 871-1600 ext. 2466.

Region of Niagara reports are available from the Regional Public Works Department, Water and Wastewater Division, telephone (905) 685-1571, and also on the Regional Web Site:

http://www.niagararegion.ca/living/water/water-quality-reports/rosehill/default.aspx

The Municipal Council of the Town of Fort Erie supports the current management of the Fort Erie Water and Wastewater Utility and has been provided a copy of this report and a Summary Report as required by O. Reg. 170/03 Schedule 22.

Kelly M. Walsh, P. Eng.
Director, Infrastructure Services

Chris Pisaric
Manager Water & Wastewater Division

Table 2:

Town of Fort Erie Water Distribution System
Water Quality Sampling and Testing
Period January 1, 2018 to December 31, 2018

Parameter	Criteria	# of Samples	Results		Common Source	Remarks
			Range	Exceedances		
A. Microbiological Analysis						
• E. coli	ND	536	All 0 count/100 ml	0	Indicates the presence of fecal matter.	The Town of Fort Erie collects 10 samples weekly – equaling 40 per month. All of the samples are analyzed by membrane filtration analysis.
• Total Coliforms	ND	536	0 to 3 counts/100 ml	4	Indicates the possible presence of pathogenic bacteria.	
• Heterotrophic Plate Count	<500 colonies per mL sample	536	0 to 356 colonies per 1mL sample	0	Indication of water quality deterioration.	
B. Organics						
• Trihalomethane	0.10 mg/L	12	0.0213 – 0.0476 mg/L	0	By-product of chlorination – reaction of chlorine on organic matter.	Based on a four-quarter progressive annual average of test results at points likely to have an elevated potential for the formation of trihalomethanes.
• Lead	0.010 mg/L	8	<0.00010 – 0.00043	0	Corrosion of plumbing systems; erosion of natural deposits in Lake Erie water.	At points that are likely to have an elevated concentration of lead.
• Haloacetic Acids	0.080 mg/L	10	0.0059 – 0.0262	0	Corrosion of plumbing systems; erosion of natural deposits in Lake Erie water.	At points that are likely to have elevated concentrations.
C. Disinfectant						
• Free Chlorine Residual	0.05 mg/L	1,268	0.07 – 1.61 mg/L	0	Level of disinfectant present.	

- As required in all incidents of adverse water quality indicators, remedial follow up *Special Samples* were collected pursuant to the provisions of O. Reg. 170/03.
- mg/L - milligrams per Litre