

Drinking Water System Regulation O. Reg. 170/03

Town of Richmond Hill
Quality Management System - 2017 Annual Report



Quality Management System for Richmond Hill's Drinking Water

The Drinking Water Quality Management Standard (DWQMS) requires the Town of Richmond Hill to establish and maintain a Quality Management System (QMS) that conforms to the standard. The Town owns a stand-alone drinking water distribution system, QMS policies and procedures govern the activities and services performed by the Town. This Quality Management System Report will present the programs and objectives achieved through the 2016 calendar year towards maintaining and improving safe drinking water in Richmond Hill.

1. **Infrastructure Maintenance, Rehabilitation and Renewal Summary** – includes an update on the status of the programs in place to maintain, rehabilitate and renew the drinking water system infrastructure.

Infrastructure Type	Program Type	Program Name	Program Description	Accomplished in 2017
Watermains	Maintenance – Planned	Uni-Directional Flushing (UDF)	A preventative program that cleans watermains through high-velocity flushing, increasing pipe efficiency and prolonging lifespan	192 Km of watermain in pressure district 6
		Dead End Flushing	Targeted flushing of dead-end watermains to introduce fresh water and discourage degradation of water quality	5 dead-ends flushed after monitoring Chlorine residual
	Maintenance – Unplanned	Main Breaks	Repair of watermains following pipe breakage	25 watermain breaks
	Renewal / Rehabilitation	10 Year Capital Forecast	Water system data is analyzed and watermains are identified for renewal and rehabilitation (old pipes are replaced with new ones)	<ul style="list-style-type: none"> • Castlerock 1452 m • Doncrest 420 m • Kersey 511 m (ongoing) • Lavarock 302 m • Trench 831 m (ongoing) • Yonge St (Hwy7 to Major Mackenzie – (under construction) 4285m <p style="text-align: center;">Total of 7801m of new watermain</p>
Valves	Maintenance – Planned	Valve Cycling & Inspection	A preventative program that exercises all valves in the system to locate and identify inoperable, defective or broken valves as well as to help ensure operability and prolong lifespan of infrastructure	1518 valves cycled
	Maintenance – Unplanned	Valve Repair & Replacement	Repair/replacement of inoperable, defective or broken valves	6 valves replaced 43 valves repaired

Infrastructure Type	Program Type	Program Name	Program Description	Accomplished in 2017
Hydrants	Maintenance – Planned	Hydrant Inspection and Winterizing	A preventative program to locate and identify inoperable, defective or broken hydrants and maintain operability during winter months	4418 hydrants inspected & winterized
		Hydrant Painting	A preventative program to protect hydrants from corrosion, maintain visibility and flow parameter characterises	199 hydrants painted
	Maintenance – Unplanned	Hydrant Repair & Replacement	Repair/replacement of inoperable, defective or broken hydrants	20 hydrants repaired 2 hydrant replaced
Service Connections	Maintenance – Unplanned	Curb-box Repairs	Repairs of inoperable, defective or broken curb-boxes	21 curb stops & 109 water boxes repaired
		Water Service Pipe Repairs	Repairs and/or replacement of broken water service pipes	31 water service pipe repaired 1 lead service replaced
		Frozen Services	Thawing of frozen water service piping	0 Frozen services calls

2. **Management Review Outcomes** – Top Management evaluates the suitability, adequacy and effectiveness of the Quality Management System. The Management Review Outcomes includes, a) Action Items – Discussion and Updates and b) Annual Management Review Year-to-date from the most recent Management Review meeting held on February 16, 2018.

a) Action Items – Discussion and Updates

Item	Comment/Recommendation	Action	Status
Document Control	QMS Coordinator in charge of updating current documentation to DWQMS reference binders.	Zully	Ongoing – SOPs Workshop held Oct 5, 2017. Water operators had a chance to review and provide feedback on all water activities performed by the division.
Infrastructure, Maintenance, Rehabilitation and Renewal	Hydraulic Model , discussions to take place with Planning and Regulatory Services (dept) in regards to having a hydraulic model for the Town.	Grant / Diogo	Ongoing – Informal discussions have taken place. Water section has seen an increase in requests for modeling of existing water system and has provided this by contracting out.
	Trenchless Repair Method discussion to take place with Environmental and Infrastructure Services (dept) as to when to use trenchless repair method for rehabilitation pipelines.	Grant / Diogo	Completed – Staff meet regularly to establish project scope and terms of reference for capital projects, including ongoing meeting during construction project

Item	Comment/Recommendation	Action	Status
Infrastructure, Maintenance, Rehabilitation and Renewal	Valve Cycling Program , This program needs to be reviewed in order to identify which valves need to be on a 3 year programs and which ones can be on a 5 year program.	Diogo	Completed – Proposed valve cycling programs for 2017: 2 year program - 300mm+ 5 year program - 100mm – 250mm
	Uni-directional Flushing , This program was not performed in 2015. For 2016 both years should be accomplished. Program will be performed by a contractor.	Diogo	Ongoing – 167 Km of watermain pipe were uni-directionally flushed within Pressure District 8 and 9.
Management Review	As the Management Review is held only once a year, all managers should be present at the meeting or a delegate should be in attendance.	Shane	Ongoing – Meeting requests to include all of Top Management.

b) Annual Management Review Year-to-date

2.1 Incidents of regulatory non-compliance	One incident of regulatory non-compliance (WQA-Logbooks), 98.28% on Inspection Rating
2.2 Incidents of adverse drinking-water tests	27 adverse drinking water test results: <ul style="list-style-type: none"> • 15 from new development through flushing-sampling program • 12 from distribution sampling
2.3 Deviations from critical control point limits and response actions	No deviations from critical control points; however, upon adverse test result flush and re-sample is performed as per requirements in O. Reg. 170-03
2.4 Efficacy of the risk assessment process	<ul style="list-style-type: none"> • Full scope review was performed on October 30 & November 1, 2017. • Frozen Services added as a hazardous event due to potential for microbiological contamination. • Back Flow and Back Siphonage remain the main threat to the water distribution system. • Vandalism, Terrorism and Fire Suppression Event are now part of the high Risk Table.
2.5 Internal and Third-Party Audit Results	<p><i>Internal Audit Results</i></p> <ul style="list-style-type: none"> • Internal Audit was performed Jun 26-27, 2017 • 12 OFIs • Process-based approach audit which allow for larger audit scope <p><i>Third-party Audit Results</i></p> <ul style="list-style-type: none"> • External Audit was performed on Oct 30-31, 2017 • 5 NCRs (Minor) 4 OFIs • The audit was based on a sampling of the company's management system.
2.6 Results of emergency response testing	Tabletop exercise performed on Nov 15, 2017 in response to water failure and pressure loss which occurred on Trench St. at Major Mackenzie Hospital on Tuesday, Sep/26/2017. Mock exercise was performed by CUPE and SEA staff.
2.7 Operational Performance	Only persons holding a valid water operator's certificate can operate the municipal system. Operators have being trained in the following areas for 2017: <ul style="list-style-type: none"> • Technical Tour and Orientation of RC Harris Water Treatment Plant Spills • Winter Wise: The Cold Hard Facts about Distribution Systems • Spring and Fall Georgian Bay Waterworks Workshop. • Lift Station Operation and Maintenance • Diligence in Drinking Water Operations
2.8 Raw water supply and drinking water quality trends	<ul style="list-style-type: none"> • Emerging issues in raw water: <ul style="list-style-type: none"> ◦ Blue-green algae ◦ Microplastics (less 5 mm) and microbeads (tiny, non-biodegradable beads found in skin cleansers and washes) • In addition to Trihalomethanes (THMs), Haloacetic Acid (HAA) samples were collected every three months in 2017.
2.9 Changes that could affect the Quality Management System	The version of the DWQMS referenced in this pocket guide is the final version posted on Ontario's Environmental Registry on October 29, 2006.

2.10 Resources needed to maintain the Quality Management System	Software tool is still needed to keep track of documents and corrective actions for the drinking water QMS. Intelex currently being used. Tablets for GIS/Maps access in the field.
2.11 Consumer Feedback	Water quality information: 1 Water pressure complaints: 5 high, 60 low Noise pipe / air in pipe complaints: 1 Taste & Odour: 8 Cloudy (dirty water): 35 (mainly after watermain breaks)
2.12 Results of the Infrastructure Review	EP-DW-5 Infrastructure Maintenance, Rehabilitation and Renewal Summary (Table attached).
2.13 Operational Plan Currency, content and updates	Current version is 4.3 dated Feb 28, 2017 Details of Changes: <ul style="list-style-type: none"> • Updated construction Division in Element 1, Project Managers - Capital Infrastructure are part of 'Appendix F'. • Element 7 & 8 updated to include annual review of the currency of the information and the validity of the assumptions. • Corrected associated documents within all Elements as Standard Operating Procedures have changed. • New Endorsement Form 'Appendix B' has to be update to include: current Operational Plan Version/Release Date and Endorsement Date.
2.14 Staff Suggestions	<ul style="list-style-type: none"> • Manager of Water and Wastewater held one-on-one interviews with all water/wastewater operators early in the year, the common suggestions was to provide more personal advancement training in the following topics: <ul style="list-style-type: none"> ○ Customer Services ○ Resume Writing ○ Microsoft Office – Word and Excel

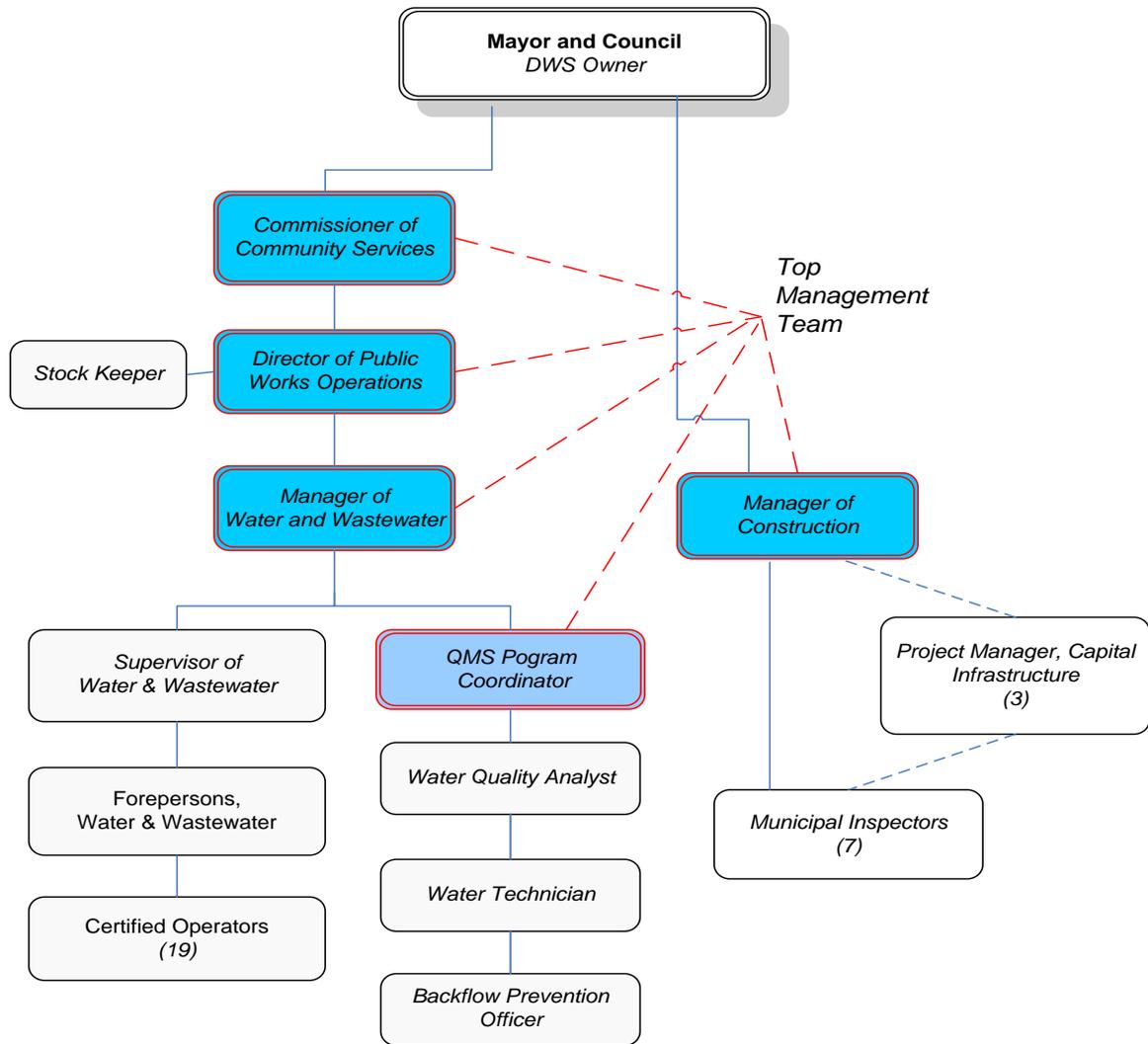
3. Third-Party Audit Outcomes and Accreditation Renewal – Every year the Town’s Drinking Water Quality Management System undergoes a third-party audit. Recertification of Richmond Hill’s Quality Management System takes place every three years through a thorough on-site audit of all the 21 elements of the Standard.

The result of the 2017 third-party audit was a total of 5 minor corrective actions (CARs) and 4 opportunities-for-improvement (OFIs) which are non-binding, see below the Executive Summary of the third-party audit performed on October 30-31, 2017:

Third-Party Certification Body – <i>NSF International Strategic Registration</i> Auditor – <i>Kishor Desai</i> Standard – <i>Ontario’s Drinking Water Quality Management Standard</i>	
Executive Summary	
Ontario’s Drinking Water Quality Management Standard	<p>This Operating Authority (OA) started with very good system documents and at this stage they have further improved it from the practitioners view point and use. Drinking water system description, responsibility and authority, personnel coverage , infrastructure, and related maintenance, sampling and testing and calibration, internal audit, management review and continual improvement parts of the system documents are considered strength of this OA.</p> <p>OA performed systemic corrective actions for 5 minor CARs issued through 2017 off-site audit. Based on the action plan reviewed for verification this auditor considers implementation of corrective and preventive action a strength for the OA and Quality Management Representative involved. Internal audit for last twelve (12) month was completed so is Management Review. Number of auditors and related audit notes suggest that this process is improving at the OA.</p> <p>Finally as an improvement required OA personnel need to submit all required documents referenced in Operational Plan and related documents and records for system audit in future.</p>

4. Organizational Structure, Roles, Responsibilities and Authorities—Mayor and Council, in representation of the Town of Richmond Hill, is the owner of the drinking water system. As the owner of the drinking water system, Mayor and Council, have direct responsibility for ensuring safe, high quality drinking water to the Town’s residents keeping in mind three key factors:

- a. **It’s your duty** – to ensure safe drinking water.
- b. **Be informed** – seek advice from those with expertise and act prudently on their advice.
- c. **Be vigilant** – complacency can pose one of the greatest risks to drinking water systems, the health of your community depends on diligent and prudent oversight.



Note: For Roles, Responsibilities and Authorities please see Table of Roles and Responsibilities in Appendix F of the Drinking Water Operational Plan.