



Staff Report for Council Meeting

Date of Meeting: March 9, 2022

Report Number: SRCS.22.04

Department: Community Services
Division: Public Works Operation

Subject: 2021 Municipal Drinking Water Reporting

Purpose:

This report provides information to Council related to the City of Richmond Hill's Water Distribution System, pursuant to requirements under the *Safe Drinking Water Act, 2002*; a Summary Report, an Annual Report, the Ministry of the Environment, Conservation and Parks Inspection Report, and updates to the Municipal Drinking Water Licensing Program.

Recommendation(s):

- a) That the "Summary Report" of Richmond Hill's drinking water system, as set out in SRCS.22.04 and as required under Schedule 22 of O. Reg. 170/03 be received;
- b) That the "City of Richmond Hill Drinking Water Annual Report 2021" regulatory reporting for municipal drinking water systems as contained in Appendix #1 to SRCS.22.04 and as required under Section 11 of O. Reg. 170/03 be received;
- c) That the Ministry of the Environment, Conservation and Parks Distribution System Drinking Water Inspection Report 2021 for Richmond Hill's drinking water system as contained in Appendix # 2 to SRCS.22.04 be received;
- d) That updates and information regarding the Quality Management System Report 2021, as contained in Appendix # 3 to SRCS.22.04, be received.

Contact Person:

Diogo Oliveira, Manager, Water Wastewater and Roads Operations, Extension 2971

Jeff Stewart, Director, Public Works Operations, Extension 2966

Report Approval:

Submitted by: Tracey Steele, Acting Commissioner of Community Services

Approved by: Darlene Joslin, Interim City Manager

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All reports are electronically reviewed and/or approved by the Division Director, Treasurer (as required), City Solicitor (as required), Commissioner, and City Manager. Details of the reports approval are attached.

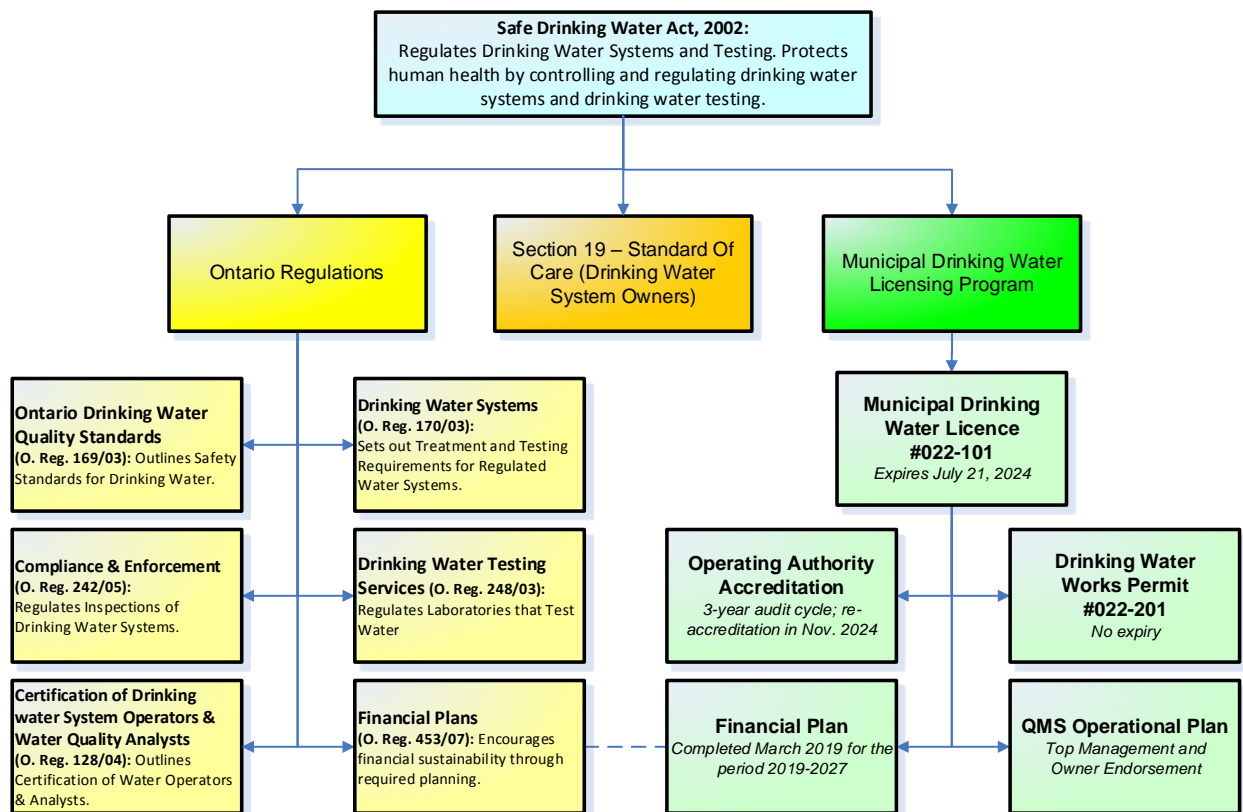
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Background:

Following the Walkerton tragedy in 2000, the Ontario government developed a new, comprehensive legislative regime based on source-to-tap, multi-barrier protection of drinking water. The *Safe Drinking Water Act, 2002*, (*SDWA*) and its regulations, contain requirements for municipalities that treat and/or provide potable water to consumers.

The chart below outlines key aspects of the *SDWA* that relate to Richmond Hill's drinking water distribution system:

Legislative Framework for Richmond Hill's Municipal Drinking Water System



Under Section 19 (Standard of Care) of the *SDWA*, owners of a drinking water system are required to:

- (a) exercise the level of care, diligence and skill in respect of a municipal drinking water system that a reasonably prudent person would be expected to exercise in a similar situation; and
 - (b) act honestly, competently and with integrity, with a view to ensuring the protection and safety of the users of the municipal drinking water system.
- 2002, c. 32, s. 19 (1).

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This report intends to provide relevant information to help Council, as owners of Richmond Hill's water distribution system, meet this Standard of Care. Its contents are organized as follows, according to specific reporting requirements under the *SDWA*:

1. **Summary Report:** Schedule 22 of Ontario's *Drinking Water Systems Regulation* (O. Reg. 170/03) requires that a summary report be prepared for the preceding calendar year, and submitted to members of Council to disclose compliance status and provide pertinent water quantity data.
2. **Annual Report** (*Appendix # 1*): Section 11 of O. Reg. 170/03 requires that an Annual Report be prepared for the preceding calendar year, and submitted to members of Council and the Regional Municipality of York. This report summarizes water quality monitoring, corrective actions, and major expenses, it is available to the public on Richmond Hill's website and at the offices of the Infrastructure and Delivery Services Department, Operations Centre and Central Library.
3. **Ministry of the Environment, Conservation and Parks Report** (*Appendix # 2*): In 2006, the Ministry of the Environment, Conservation and Parks (MECP) introduced a comprehensive inspection program for municipal residential drinking water systems. The objectives of this program are to determine compliance with the *SDWA* and associated regulations; to encourage the continuous improvement of the drinking water system; and to establish a process to measure these improvements.
4. **Quality Management System Annual Report** (*Appendix # 3*): Under the Drinking Water Quality Management Standard (DWQMS) the City is required to communicate to Council key information related to; Operational Structure, Roles, Responsibilities and Authorities; Infrastructure Maintenance, Rehabilitation, and Renewal Summary; Management Review; and Operating Authority Accreditation.
5. **QMS "Operational Plan"**: The *SDWA*, through the Municipal Drinking Water Licensing Program, requires that a municipal drinking water system owner (Council) endorse the most current version of the QMS Operational Plan. This document once endorsed, will be posted on the Richmond Hill's website and made available at the Operations Centre.

1. **SUMMARY REPORT**

1.1 ***Submission to Council***

Schedule 22 of Ontario Regulation 170/03 requires, for large municipal residential systems, that a Summary Report be prepared and submitted to Municipal Council for the period from January 1 to December 31, 2021.

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1.2 Statement of Compliance

Requirements for owning and operating Richmond Hill’s drinking water system are contained within the *Safe Drinking Water Act (SDWA)*, its applicable regulations, and approval instruments.

- The *Ministry of Environment Conservation and Parks (MECP)* “Drinking Water Ontario” web portal provides the most current version of the Act and its regulations: www.ontario.ca/page/drinking-water
- Richmond Hill is approved by the *MECP* to operate a Class 2 water distribution system through its Municipal Drinking Water Licence Number: 022-101, Issue Number: 8; and to alter the system through its Drinking Water Works Permit Number: 022-201, Issue Number: 4.

Compliance with these standards is evaluated through the *MECP* Inspection.

1.3 Summary of Flow Rates

Under Schedule 22-2(3) of O.Reg.170/03, the Summary Report must include a summary of flow rates for the purpose of enabling the system owner to assess the capability of the system to meet existing and planned uses.

Table 1 is a summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average.

Table 1: 2021 Summary of Flows for Richmond Hill

Month	Billing Period (# of Days)	Total (m ³)	Average Daily (m ³)
January	31	1,591,154	51,329
February	28	1,497,758	53,491
March	31	1,622,285	52,332
April	30	1,531,715	51,057
May	31	1,815,618	58,568
June	30	2,036,388	67,880
July	31	1,938,884	62,545
August	31	2,055,327	66,301
September	30	1,716,835	57,228

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October	31	1,588,444	51,240
November	30	1,480,748	49,493
December	31	1,568,510	50,597
Total	365	20,443,666	
Annual Average Daily			56,010

1.4 Responsibility for Water Supply, Treatment and Storage

Provincial Legislation sets out the responsibility for water supply in the City of Richmond Hill. Under the *Municipal Act, 2001*, York Region is responsible for the treatment and storage of water in the City of Richmond Hill. In the early 1980s, Richmond Hill's water supply was converted from a groundwater source (municipal wells) to a Lake Ontario-based source supplied by the City of Toronto. The Region of York now purchases treated water from two sources – the City of Toronto and the Regional Municipality of Peel – and transmits the water to lower tier municipalities in the region.

1.5 How Does Lake Ontario Water Get to Richmond Hill?

Lake Ontario is a drinking water source for many municipalities, including Richmond Hill. Water is drawn into four treatment plants in the City of Toronto and one treatment plant in the Regional Municipality of Peel, which implement all necessary filtration and disinfection requirements in accordance with the *Ontario Drinking Water Standards*. Both Toronto and Peel use “chloramination” (chlorine plus ammonia) to disinfect the water. The chloraminated water is pumped to the Regional Municipality of York. It is York Region's responsibility to maintain trunk watermain, pumps and reservoirs.

1.6 The Richmond Hill Water Distribution System

Physical Infrastructure:

The City of Richmond Hill owns and operates a Class 2 Water Distribution System under the authority of the Ministry of the Environment, Conservation and Parks. Richmond Hill's distribution network, which provides water to the end consumer, is comprised of approximately 630 kilometres of watermains and other appurtenances (pipes, valves, and hydrants). The watermain ranges in size from 50 mm to 600 mm in diameter and are operated between 310 Kpa to 689 Kpa (45 and 100 psi). Pipe materials are predominately poly vinyl chloride (PVC), ductile iron and cast iron.

Roles and Responsibilities:

The City's Infrastructure and Delivery Services Department is responsible for the design and construction of the Water Distribution System, which the Community Services

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Department then maintains and operates. City employees that operate the system are certified by the Ministry of the Environment, Conservation and Parks. Certified operators perform a variety of maintenance activities on the watermains to keep them operational and to satisfy mandated sampling for disinfectant levels and bacteriological testing. Key activities include: watermain breaks, service connection repairs, valve exercising and other infrastructure repair programs, watermain flushing, fire hydrant maintenance, and water sampling and testing. (See Appendix # 3: Quality Management System Report 2021)

1.7 Water Sampling and Testing

The purpose of sampling and testing is to confirm that water is safe for human consumption and to provide a comprehensive track record.

Requirement:

O.Reg.170/03 stipulates the minimum number and frequency of sampling for Richmond Hill's distribution system based on population and in accordance with Richmond Hill's Ministry of Environment, Conservation and Parks Inspection Report, Richmond Hill must meet the following annual sampling requirements:

Parameter	Description/Notes	Required # of Samples	Requirement Source
Chlorine residual	For monitoring amount of residual chlorine in system, and confirming of water quality following maintenance	365	O. Reg. 170/03, Sch. 7
<i>E. Coli</i> Total Coliform HPC	For testing presence of microbiological activity	1560	O. Reg. 170/03, Sch. 10
Trihalomethanes (THM's)	For testing presence of disinfection by-products	12	O. Reg. 170/03, Sch.13
Lead (Pb)	For testing presence of lead in the distribution system only – not private side	40	O. Reg. 170/03, Sch. 15; Richmond Hill's License, Sch. D
Haloacetic Acid (HAA)	For testing presence of disinfection by-products	12	O. Reg. 170/03, Sch. 13
Nitrosodimethylamine (NDMA)	For testing presence of disinfection by-products	4	O. Reg. 169/03 Sch. 2

Sampling Frequency and Location:

Certified Richmond Hill operators perform daily chlorine residuals tests and obtain microbiological samples for analysis five days a week. Samples are taken primarily from

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dedicated sampling stations installed strategically throughout the city. Operators may use City buildings (Fire Halls, Libraries, Community Centres, and Municipal Offices). Commercial establishments are alternative sampling locations.

Samples taken in 2021

In 2021, staff collected 1897 microbiological samples (1560 Regulatory and 337 Operational) and performed 2396 chlorine residual tests (365 Regulatory and 2031 Operational). Microbiological samples are taken for analysis to the York-Durham Regional Environmental Laboratory in Pickering. The Laboratory is accredited for microbiological testing by the Canadian Association for Environmental Analytical Laboratories (CAEAL).

Richmond Hill staff also took 40 lead samples, 12 Trihalomethane (THM), 12 Haloacetic Acid and 4 Nitrosodimethylamine samples through this reporting period. THM's are the most commonly occurring group of disinfection by-products resulting from the use of chlorine.

Residents having private side plumbing issues are referred to York Region Public Health for information.

Table 2 – Water Quality Samples, 2021

Source	Number of Samples
Distribution System (sampling stations, residential, etc.)	1897 microbiological
	2396 chlorine residual
	12 trihalomethane
	40 lead
	12 haloacetic acid
	4 nitrosodimethylamine

Note: More detailed summary of sampling results could be found within Appendix #1.

1.8 Drinking Water is also tested by the City of Toronto, Peel Region, and York Region

Under the SDWA, all agencies providing water have a responsibility from the source to the consumer. Toronto and Peel both sample raw water and treated water entering the distribution system. The Regional Municipality of York also samples and tests water received from Toronto and Peel at its storage facilities and pumping stations. The City of Richmond Hill tests water received from York Region as it moves through the distribution system to the consumer.

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The sampling completed at the source by the treatment facility owners includes a rigorous scan of over 300 parameters. More information on Toronto's and Peel's sampling and system analysis can be reviewed at their respective web sites: www.toronto.ca/water and www.peelregion.ca/pw/water.

The Region of York is also required to take additional samples for microbiological testing and residual disinfectant levels. More information on York Region's sampling and system analysis can be obtained through their web site at www.york.ca.

1.9 Communications When Adverse Water Samples Are Identified

Requirement – Laboratory:

A water sample that does not meet provincial water quality standards is considered "adverse". When adverse water quality is detected, the York-Durham Laboratory, conducting the tests on behalf of Richmond Hill, will immediately notify City staff, the Ministry of the Environment, Conservation and Parks (Spills Action Centre) and the York Region Medical Officer of Health. This notification is made by telephone through live communication to a person in authority; messages are not permitted. In addition to the phone calls, an email sent to the three agencies to verify the live communication made earlier.

Requirement – Drinking Water System Owner/Operating Authority:

The *SDWA* also requires the drinking water system owner/operating authority to immediately notify the Ministry of the Environment, Conservation and Parks and the York Region Medical Officer of Health that the laboratory notice has been received and that "corrective actions" are being initiated. The method of contact is, again, by telephone to a person in authority. Richmond Hill also emails both agencies first to verify the previous live communication, and again to confirm that corrective actions have been completed and the issue resolved.

This reporting system provides assurance that the water works owner is complying with applicable regulations and that appropriate corrective actions are being taken and are being reported.

2. ANNUAL REPORT

The Annual Report is appended to this report as **Appendix #1**. The format for the Annual Report was established by the Ministry of the Environment, Conservation and Parks. Section 11 of Ontario Regulation 170/03 requires that an Annual Report be prepared by February 28 each year for the preceding calendar year. As well, the Annual Report must be made available to the public, free of charge. To meet this requirement, Richmond Hill's Drinking Water Annual Report 2021 will be posted in a number of City facilities and on the City's website. The Report must include:

- A brief description of the water system.

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- A summary of chemical usage for treatment.
- A summary of expenses incurred to make improvements to the distribution system.
- A summary of water quality testing results for microbiological, inorganic chemical and organic chemical parameters.
- A summary of adverse water quality reports.
- A description of how the Annual Report has been distributed and where the Annual Report and Summary Report required under O.Reg.170/03 Schedule 22, will be located in order to be accessible to the public.

3. MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS INSPECTION REPORT

The Ministry of the Environment, Conservation and Parks staff conducts a scheduled inspection of Richmond Hill's Water Distribution System. The inspection includes a review of operating manuals, logbooks, staff certification and training, and water quality monitoring, and an audit of water samples.

The entire process concludes with a drinking water inspection report that includes required actions, recommended actions and a final inspection rating. A low inspection rating does not necessarily mean that the drinking water provided is unsafe; however, it does indicate the degree to which there is room for improvement in meeting the province's regulatory requirements. These findings are used as a tool to track progress towards Ontario's Chief Drinking Water Inspector's goal of achieving 100% compliance with the regulatory framework on a province wide basis.

The Distribution System Drinking Water Inspection Report 2021 by the MECP is appended to this report as **Appendix #2**.

4. QUALITY MANAGEMENT SYSTEM ANNUAL REPORT

Under the Drinking Water Quality Management Standard (DWQMS) the City is required to communicate to Council key information relating to:

- a) Operational Structure, Roles, Responsibilities, and Authorities*
- b) Review and Provision of Infrastructure*
- c) Infrastructure Maintenance, Rehabilitation, and Renewal Summary*
- d) Management Review Outcomes*
- e) Operating Authority Accreditation*

Appendix #3 contains the Quality Management System Report 2021 for Council's review.

5. QMS OPERATIONAL PLAN

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Richmond Hill must document its QMS in an Operational Plan, which must be endorsed by QMS Top Management and Richmond Hill Council, and made available to the public. The Operational plan defines and documents the quality management policies and procedures specific to the City's municipal drinking water system.

There are no changes to the QMS Operational Plan requiring Councils review or endorsement.

Financial/Staffing/Other Implications:

This report is for information purposes, as required by Ontario's Ministry of the Environment, Conservation and Parks, and therefore has no financial, staffing or other implications.

Relationship to Council's Strategic Priorities 2020-2022:

This report aligns with Council's Priority of *Balancing Growth and Green* by meeting the regulatory requirements to provide safe and sustainable drinking water.

Climate Change Considerations:

Climate Change considerations are not applicable to this staff report.

Conclusion:

Richmond Hill takes considerable care in providing a safe and reliable supply of drinking water. Richmond Hill drinking water staff are certified by the MECP to test and monitor water quality and to maintain and operate infrastructure. All relevant skills are continually being updated through publication notices, training, and workshops. In 2021, Richmond Hill complied with all mandatory testing under the *Ontario Drinking-Water Quality Standards*.

In accordance with the *Safe Drinking Water Act, 2002*, and Ontario Regulation 170/03, the receiving of this report by Council fulfills the condition of advising members of Council on the status of the drinking water system in Richmond Hill through the results published in the Summary Report and Annual Report

Attachments:

The following attached documents may include scanned images of appendices, maps and photographs. If you require an alternative format please call contact person listed in this document.

- Appendix 1 - Drinking Water Annual Report 2021
- Appendix 2 – Richmond Hill Distribution System Inspection Report 2021
- Appendix 3 - Quality Management System Report 2021

Report Approval Details

Document Title:	SRCS.22.04 - 2021 Municipal Drinking Water Reporting.docx
Attachments:	- SRCS.22.04 – Appendix 1 - Drinking Water Annual Report 2021.docx - SRCS.22.04 – Appendix 2 – Richmond Hill Distribution System Inspection Report 2021.docx - SRCS22.04 – Appendix 3 - Quality Management System Report.docx
Final Approval Date:	Mar 2, 2022

This report and all of its attachments were approved and signed as outlined below:

Jeff Stewart - Mar 2, 2022 - 11:23 AM

Tracey Steele - Mar 2, 2022 - 4:07 PM

Darlene Joslin - Mar 2, 2022 - 4:09 PM