

The Regional Municipality of York

Committee of the Whole
Environmental Services
March 12, 2020

Report of the Commissioner of Environmental Services

2019 Drinking Water Systems Report

1. Recommendation

The Regional Clerk circulate this report to the Clerks of the local municipalities, City of Toronto, Regional Municipality of Peel, and the Ontario Chief Drinking Water Inspector (Ministry of the Environment, Conservation and Parks).

2. Summary

This report and attachments satisfy the Council reporting requirements for water quantity and compliance in *Ontario Regulation 170/03 – Drinking Water Systems*, and supports Council in meeting statutory standard of care requirements under the *Safe Drinking Water Act, 2002* (the Act).

Key Points:

- In 2019, 99.98% of the 17,920 laboratory analyzed samples and 99.99% of 39.5 million continuous monitoring analyzer readings were within regulated standards and confirm York Region's high quality drinking water. All adverse results were addressed and reported. Additional information on 2019 adverse results is found in Attachment 1
- In 2019, all Ministry inspections at the Region's 15 drinking water systems scored 100%. Additional information on all 2019 calendar year inspections is found in Attachment 2
- York Region received excellent scores in the Chief Drinking Water Inspector's Annual Report Card for the 2018-2019 fiscal year, with a score of 100% for water samples meeting Ontario's drinking water quality standards, and an overall average inspection and sample score of 99.54%
- Drinking water systems operated within permitted volume and capacity limits. Additional information is found in Attachment 3
- Advanced systems monitoring, controls, and a multi-barrier approach protect drinking water and public health

3. Background

York Region complies with the *Safe Drinking Water Act, 2002* to protect public health through drinking water

The Ministry of the Environment, Conservation and Parks (the Ministry) regulates municipal drinking water systems in Ontario. The Act was developed to address factors that led to the Walkerton tragedy. As a result, Ontario now has some of the safest drinking water in the world.

The Act requires municipalities to report annually on drinking water. It also imposes a standard of care upon Municipal Council members. Council protects the people in their communities by ensuring financial sustainability, asset management, risk mitigation, and continual improvement for the Region's water systems.

This report summarizes 2019 calendar year drinking water systems information:

- Water quality and water quantity performance
- Reported adverse water quality events and corrective actions (Attachment 1)
- Summary of 2019 Ministry inspection findings and corrective actions (Attachment 2)
- Summary of 2019 performance data for each drinking water system (Attachment 3)
- Summary of 2019 monetary expenses for each drinking water system (Attachment 4)

York Region partners with Public Health, its nine local municipalities, and neighbouring municipalities to provide safe drinking water

Within York Region, water is delivered through a two-tiered water system. The Region operates and maintains 15 drinking water supply systems, which provide water to the nine local municipalities. Our local municipal partners maintain their distribution systems to distribute the high quality water to residents and businesses.

Environmental Services and Public Health maintain a 24/7 response system to address potential water quality issues. Public Health assesses potential health impacts from all adverse water quality test results. There were no follow up corrective actions required in 2019. No boil water advisories or drinking water avoidance advisories due to water quality concerns have been ordered by Public Health in over a decade. Procedures are in place to ensure close cooperation with Public Health, local municipalities, and the Ministry to ensure effective communication and protect public health for all water quality concerns.

In 2019, the media profiled concerns about lead content in drinking water tested across Canada. Lead is not detected in York Region's drinking water systems, because the Region does not have any lead water service lines.

Multi-barrier approach to risk management protects drinking water systems and public health

The multi-barrier approach proactively protects drinking water quality and safety, and informs corrective actions when required. Elements of this approach include Source Water Protection, training of operators, a Drinking Water Quality Management Standard, and a strict Provincial Inspection and Enforcement Program.

Source Protection Program prevents contamination of Ontario's drinking water

Staff continue to identify, mitigate, and report current and future threats to drinking water sources as required by the *Clean Water Act, 2006*. York Region's Drinking Water Source Protection Program identifies and manages potential threats to drinking water. Continued focus areas in 2020 include:

- Requiring proposed developments in vulnerable areas to plan carefully to ensure the safety of our immediate and long term drinking water supply
- Delivery of the Source Water Protection Incentive Program which encourages and supports businesses to make changes to protect drinking water sources. In 2019, over \$11,500 was provided to local businesses through the incentive program to implement risk management measures
- Working together with the Province, local and neighbouring municipalities, and Conservation Authorities, to align our programs and plans to ensure consistent, effective, and successful protection of all sources of drinking water

Provincially mandated training provides staff with required knowledge to sustain high performing water and wastewater systems

York Region continues to develop and participate in top quality operator training. The training program is tailored to ensure operators receive required provincially standardized education, and on-the-job training that translates regulatory requirements to operational needs. The training program ensures staff are equipped to competently and efficiently manage drinking water systems in compliance with applicable rules and best practices.

Drinking Water Quality Management Standard is a tool for driving continual improvement

The Region manages a statutory quality standard that protects public health through consistent practices for managing and operating water systems, and by proactively identifying and mitigating risks. It is also a tool for identifying and resolving inefficiencies through process and procedure updates. The 2020 Integrated Management System Update Report, also on today's agenda, provides more information.

Provincial inspections and enforcement assess compliance

York Region facilities are regularly inspected by the Ministry to confirm compliance with regulations, licenses, permits and Ministry procedures. Staff maintains a positive working relationship with regulators to identify and mitigate risks identified in our watersheds.

York Region's data management supports industry-leading water operations

Online instruments and a comprehensive sampling program generate mountains of data about the performance of drinking water systems. Automated data analysis processes save staff time by comparing the data against environmental regulations and prompting staff to follow up as appropriate. Empowering staff with the right tools, technology, and training allows them to dig into data that supports our industry-leading drinking water operations.

An added benefit of the data management processes is the minimal effort required to share meaningful datasets on the Region's website. The interactive report found on york.ca provides an engaging and effective way for anyone to learn about the Region's drinking water systems. Citizen scientists also have the option to download the reported data from the Region's Open Data site. Website statistics show that more people access and download this data every year. Easy to access and transparent data supports the Strategic Plan Objective of "Maintaining public confidence in Regional government" and the Vision 2051 goal of "Open and Responsive Governance".

4. Analysis

WATER QUALITY

99.98% of laboratory samples met limits in 2019, and results confirm York Region's high quality drinking water continues to be safe

The comprehensive sampling program includes both regulatory and research samples, and is updated in response to operational needs and regulatory changes. In 2019, the York-Durham Environmental Laboratory performed 17,920 water quality tests for York Region's drinking water systems, resulting in four adverse test results. This means 99.98% of all samples collected and analyzed by the laboratory in 2019 were within regulated standards. The laboratory initiates a notification process when analysis indicates a parameter is outside regulatory limits. Staff responded to each adverse test result and performed corrective actions accordingly. There were no risks to public health as a result of these adverse events.

Table 1 summarizes the laboratory analyzed water quality test results reported as adverse water quality events in 2019. Attachment 1 summarizes all reported adverse water quality events.

Table 1
Adverse Water Quality Events Reported from
Laboratory Analyzed Samples in 2019

Parameter, Drinking Water System (DWS) and Number of Occurrences	Summary of Reported Sample Results and Corrective Actions Taken
Microbiological <ul style="list-style-type: none"> • Holland Landing DWS (2) 	<ul style="list-style-type: none"> • Total Coliform bacteria detected in two separate samples collected from the Holland Landing East Elevated Tank in June 2019 • Resample results and ongoing weekly sampling results confirm these tests were an anomaly • For due diligence, staff also reviewed sample collection and handling procedures
Sodium <ul style="list-style-type: none"> • Aurora DWS (1) • King City DWS (1) 	<ul style="list-style-type: none"> • Sodium levels between 22 and 26.7 mg/L were reported in April for two storage facilities – the King City Dufferin Elevated Tank and the Aurora North Elevated Tank • The reporting standard is once every 57 months for results exceeding 20 mg/L. Health Canada’s guideline for sodium in drinking water is an aesthetic taste objective of 200 mg/L • Operators resampled these facilities to confirm sodium levels were meeting the aesthetic taste objective

Continuous monitoring analyzers and online equipment safeguard drinking water delivered to residents

In addition to sampling conducted by operators, 376 online analyzers continuously monitor system performance, creating approximately 39.5 million records in 2019. Online analyzers continuously monitor several water quality parameters, including chlorine residual, which is an indicator of disinfection level. Analyzers and other online equipment are calibrated regularly by trained operators and technicians.

The system records point-in-time measurements from highly sensitive analyzers. When a potential issue is detected, a facility alarm is triggered and flow is stopped. Control panel operators monitor the system and dispatch operators to respond to alarms or unusual trends. Facilities can only restart after an operator attends the site to inspect the equipment, manually test the water, and complete any other required corrective actions to confirm water quality. Because the analyzers are sensitive and trigger facility shut down quickly, disinfection level analyzer readings that are reported as adverse do not always represent the overall disinfection level of water in the distribution system.

Online monitoring system and analyzer readings showed over 99.99% compliance with Regulatory limits for water safety parameters

Of the 39.5 million analyzer readings in 2019, staff reported 34 adverse water quality events. Most self-corrected or required minor equipment adjustment, and required no operator intervention aside from confirming drinking water was safe through on-site tests and restarting the facility operation. There were no risks to public health as a result of these adverse events.

Table 2 summarizes the continuously monitored analyzer readings reported as adverse water quality events in 2019. Attachment 1 summarizes all reported adverse water quality events.

Table 2
Adverse Water Quality Events Reported from
Continuous Monitoring Analyzer Readings in 2019

Parameter, Drinking Water System (DWS) and Number of Occurrences	Summary of Reported Results and Corrective Actions
<p>High Disinfection Level (combined chlorine)</p> <ul style="list-style-type: none"> • Aurora DWS (5) • Holland Landing DWS (1) • Kleinburg DWS (1) • Newmarket DWS (5) • Schomberg DWS (8) • Sharon/Queensville DWS (1) • York DWS (Markham, Richmond Hill, Vaughan) (2) 	<ul style="list-style-type: none"> • Most high residual events resulted from temporary, minor equipment errors or maintenance • Many of the high residual events occurred at facilities operating near the upper regulatory limit in targeted areas. This practice helps to optimize water quality in the farthest parts of the distribution system • Corrective actions for high disinfection level include collecting grab samples and recalibrating analyzers
<p>Low Disinfection Level (free chlorine, primary disinfection)</p> <ul style="list-style-type: none"> • Mount Albert DWS (1) • Newmarket DWS (3) • Stouffville DWS (1) 	<ul style="list-style-type: none"> • Low disinfection events were caused by process issues where analyzers briefly received no water or previously disinfected water. In each case, these readings did not reflect the true quality of the drinking water at that moment • Corrective actions included collecting grab samples and restoring normal operation of the facility to ensure the analyzer was receiving appropriate process water

Parameter, Drinking Water System (DWS) and Number of Occurrences	Summary of Reported Results and Corrective Actions
<p>High Fluoride Level</p> <ul style="list-style-type: none"> • Georgina DWS (2) • Keswick DWS (3) 	<ul style="list-style-type: none"> • Fluoride is continuously monitored at the Georgina and Keswick Water Treatment Plants, where it is applied within the optimal range recommended by the Medical Officer of Health • If fluoride is read as exceeding operational limits, the facility immediately stops directing water to the distribution system • If required, an operator may backflush the system to prevent water from leaving the facility and restore the correct fluoride dose
<p>Low System Pressure</p> <ul style="list-style-type: none"> • Newmarket DWS (1) 	<ul style="list-style-type: none"> • Low water pressure has the potential to introduce foreign materials into the distribution system • A low pressure incident occurred in Newmarket due to a watermain break. The break was repaired, disinfected and flushed. Disinfection was restored, and microbiological sampling results confirmed no contamination

2019 CALENDAR YEAR MINISTRY INSPECTIONS

In 2019, all 16 drinking water system inspections scored 100%

In the 2019 calendar year, all Ministry inspections scored 100%. There were 16 inspections completed for the Region's 15 drinking water systems. Attachment 2 outlines the 2019 calendar year inspection results. There were no non-compliance findings identified, and Ministry staff included some best management practice recommendations to improve system efficiency and performance.

CHIEF DRINKING WATER INSPECTOR 2018-2019 RATINGS

York Region received high scores in the Greater Toronto Area for the Ontario Chief Drinking Water Inspector's 2018-2019 Annual Report

Ontario's Chief Drinking Water Inspector releases an annual report, which rates all regulated drinking water systems in Ontario. Reporting timelines are based on the Ministry's previous fiscal year from April 1, 2018 to March 31, 2019. York Region achieved high scores for inspections and for samples meeting provincial water quality standards. In the 2018-2019 Chief Drinking Water Inspector's Report, York Region's combined average score was 99.54%. The City of Toronto and Peel Region, which supply the majority of York Region's drinking water, also received high scores. Table 3 outlines the scores for GTA municipalities.

Table 3
Ministry of the Environment, Conservation and Parks
2017-2019 Chief Drinking Water Inspector's Annual Report Scores

Municipality	Inspection Rating (%)		Water Quality Tests Meeting Standards (%)		Overall Score (%)	
	2017-2018	2018-2019	2017-2018	2018-2019	2017-2018	2018-2019
York Region*	98.45	99.09	99.89	100.00	99.17	99.54
Durham Region*	98.14	99.65	99.81	99.84	98.98	99.74
Peel Region*	98.08	98.47	99.93	99.88	99.00	99.17
City of Toronto*	95.00	99.00	99.55	99.79	97.27	99.39
Provincial Average	98.64	98.45	99.78	99.83	99.21	99.14

*Average of scores for all drinking water systems within municipality

York Region achieved an overall inspection rating of 99.09% in the Chief Drinking Water Inspector's Report. Twelve of the 15 inspections conducted from April 1, 2018 to March 31, 2019 scored 100%. Non-compliances found in three inspections were identified and promptly addressed. There were no risks to public health relating to the inspection findings identified by the Ministry. Details on 2018 inspections are found in [the 2018 Drinking Water Systems report to Council on March 7, 2019](#).

York Region achieved an overall sample compliance rating of 100% in the Chief Drinking Water Inspector's Report for laboratory analyzed samples meeting the requirements of the *O.Reg.169/03: Ontario Drinking Water Quality Standards*. This is based on laboratory sampling conducted from April 1, 2018 to March 31, 2019. Details on 2018 adverse water quality incidents are found in [the 2018 Drinking Water Systems report to Council on March 7, 2019](#).

WATER VOLUME AND CAPACITY

All drinking water systems operated within permitted water volume and capacity limits

In 2019, York Region's drinking water systems operated within the monthly average flow, maximum daily withdrawal and allowable daily withdrawal limits.

York Region continues to maintain compliance with:

- The *Safe Drinking Water Act, 2002* and its regulations
- Terms and conditions of the Region's Permits to Take Water and supply agreements with the City of Toronto and Peel Region
- Permitted Intra-Basin Transfer volumes for water taken from (and returned to) Lake Ontario, for communities in the Lake Huron watershed

York Region continues to ensure sufficient drinking water capacity for the Region's growing population. Attachment 3 illustrates important data about the amount of water taken from each water source. This data informs decision making regarding long-term, reliable water sourcing, and helps ensure there is adequate water available for fire protection. Maximum permitted volumes support forecasted population growth to 2031. Long-term water demands will be refined in the updated Water and Wastewater Master Plan which is currently underway.

5. Financial

Effective and comprehensive asset management is critical to delivering reliable and sustainable water services

York Region delivers high quality drinking water in a safe and cost effective manner. In December 2019, Environmental Services presented the 2020 to 2022 budget and operating outlook. In addition to funding to maintain assets that are wholly owned and maintained by York Region, many projects are cost-shared with the Regional Municipality of Peel and the City of Toronto. These investments support long-term drinking water safety and supply reliability. Effective asset and infrastructure management is critical to the Region's ability to deliver services and sustain our growing communities. The [2020 Capital and Operating budget report and presentation, presented to Council on December 5, 2019](#), shares information on how asset management is funded.

In [October 2015](#), Council approved 2016-2021 water and wastewater rates. The plan was implemented commencing in April 2016, and the Region is on track to achieving full cost recovery pricing by 2021, which will eliminate shortfalls in asset management funding. In the [10 year Capital Plan tabled on November 21, 2019](#), asset management projects for water rehabilitation and replacement totaled \$300.6 million.

York Region spent \$14.0 million in 2019 to maintain and improve drinking water systems

The Drinking Water Systems regulation requires water utility owners to “describe any major expenses incurred during the period covered by the report to install, repair or replace required equipment.”

In 2019, York Region spent \$14.0 million installing, repairing or replacing equipment used to treat, store and deliver safe drinking water. These rate-supported costs are funded through the Environmental Services water budget, as approved annually by Council. These expenses do not include operational costs or salaries, and are summarized in Attachment 4.

6. Local Impact

York Region and its nine local municipalities work together to distribute high quality drinking water

Water quality standards are maintained through collaboration between York Region and the nine local municipalities. Although ownership and operation of the water systems is two-tiered, the Region and the local municipalities coordinate operation of highly efficient systems to provide safe and uninterrupted water supply to our customers. In 2019, the Regional Water Quality Committee developed a new set of internal quality objectives for new watermain acceptance based on industry standards and a review of surrounding municipalities. This committee will focus upcoming efforts on distribution system maintenance, monitoring, and water quality best practices, to look for opportunities to further improve system performance and inter-municipal cooperation.

7. Conclusion

This report and attachments satisfy the Council reporting requirements in *Ontario Regulation 170/03 – Drinking Water Systems*, and supports Council in meeting statutory standard of care requirements under the *Safe Drinking Water Act, 2002*. The drinking water quality and systems data, posted on york.ca/opendata and on york.ca/drinkingwater, satisfies the public-facing water quality and systems information reporting requirements under the Act. It demonstrates the Region's commitment to operational excellence through continual improvement, while also fulfilling our obligation to communicate performance to Council, stakeholders and the public. Council is able to demonstrate due diligence required for decision-making under their statutory standard of care by reviewing and considering the information contained in this report when exercising decision-making authority.

York Region's drinking water systems must comply with strict provincial regulations to keep public drinking water safe. Results from the 2019 reporting year continue to demonstrate the compliant and excellent performance of York Region's drinking water systems.

For more information on this report, please contact David Szeptycki, Director of Strategy and Innovation, at 1-877-464-9675 ext. 75723, or Roy Huetl, Director of Operations, Maintenance and Monitoring, at 1-877-464-9675 ext. 75323. Accessible formats or communication supports are available upon request.

Recommended by: **Erin Mahoney, M. Eng.**
Commissioner of Environmental Services

Approved for Submission: **Bruce Macgregor**
Chief Administrative Officer

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Attachments (4)
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