

## **CITY OF VAUGHAN**

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 26 2024**

Item 6, Report No. 7, of the Committee of the Whole, which was adopted without amendment by the Council of the City of Vaughan on March 26, 2024.

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#### **6. 2023 ANNUAL DRINKING WATER SYSTEM REPORT**

**The Committee of the Whole recommends approval of the recommendation contained in the report of the Deputy City Manager, Public Works, and the Director of Environmental Services, dated March 5, 2024.**

#### **Recommendations**

1. That this Report be received for information.

# Committee of the Whole (1) Report

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**DATE:** Tuesday, March 5, 2024

**WARD(S):** ALL

**TITLE:** 2023 ANNUAL DRINKING WATER SYSTEM REPORT

**FROM:**

Zoran Postic, Deputy City Manager, Public Works  
Emilie Alderman, Director, Environmental Services

**ACTION:** FOR INFORMATION

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**Purpose**

The purpose of this Report is to provide information regarding the performance of the City's Drinking Water System and associated Operational Plan during 2023 based on the Drinking Water Quality Management Standard (DWQMS). This Report and its attachments support Council, as the System Owner, in meeting its statutory standard of care under the *Safe Drinking Water Act, 2002* by providing information on water quality and the operational performance of the drinking water system. This Report to Council satisfies the annual reporting requirements under *Ontario Regulation 170/03 – Drinking Water Systems*.

**Report Highlights**

- The City's Drinking Water System achieved a 100% inspection rating in the Ministry of the Environment, Conservation and Parks' (MECP) 2022-2023 Chief Drinking Water Inspector's Report.
- In 2023, 99.4% of the 3,951 annual drinking water samples met regulatory standards. Prompt and decisive action was taken, in collaboration with the MECP and York Region Public Health, to address any Adverse Water Quality Incidents which upheld the City's commitment to ensure public safety and facilitated continuous delivery of safe drinking water throughout 2023.
- The City's Drinking Water System's Quality Management System (QMS) was audited on June 28, 2023.
- Two Management Reviews were completed during 2023 (July 19, 2023 and November 22, 2023) to evaluate the continued suitability, adequacy, and effectiveness of the City's QMS as required under Element 20 of the DWQMS.

## **Recommendation**

1. That this Report be received for information.

## **Background**

**An annual Summary Report of the City's Drinking Water System is required to satisfy the statutory annual reporting requirement under *Ontario Regulation 170/03 – Drinking Water Systems*.**

Drinking water and Drinking Water Systems are regulated by the Province through the Ministry of the Environment, Conservation and Parks (MECP).

The *Safe Drinking Water Act, 2002 (the Act)*, mandates owners and operating authorities of the municipal Drinking Water System to produce an Annual Summary Report containing information on the System's operation, management, sampling, testing, certification of staff, and water quality and quantity. The Summary Report must be completed and made available to the public by March 31<sup>st</sup> of each year and is included in Attachment 1.

**Annual reporting and regular information sharing assists Council in exercising the due diligence required to meet the statutory standard of care under *the Act*.**

*The Act* imposes a standard of care upon individuals with decision making authority over municipal Drinking Water Systems. Council, through its decision-making role, protects the City's residents and businesses by demonstrating diligence and prudent oversight of the supply and distribution of drinking water.

Council's commitment to the provision of safe drinking water ensures responsible action is taken to manage risk and increase efficiency through sustainable financial planning, proactive asset management, and systematic continuous improvement.

**Drinking water protection is a vital responsibility shared by many partners as safe drinking water is one of the key pillars of public health in Ontario.**

York Region's Medical Officer of Health (MOH) has a key role in protecting public health by assessing potential health impacts from adverse water quality test results. The MOH may direct the owner of a Drinking Water System to take corrective actions exceeding regulatory mandates and/or the City's Standard Operating Procedures (SOPs). For the 2023 reporting period, there were no additional corrective actions or restrictions (e.g. boil water or drinking water advisories) imposed on the City by the MOH.

Should an adverse water quality event or water emergency occur, procedures are in place to protect public health by ensuring close communication and cooperation between the MOH, York Region, and the MECP.

**Ontario has an integrated system of procedures, processes, and tools that collectively prevent or reduce the risk of contamination in drinking water to protect public health.**

This multi-faceted approach to protecting drinking water in Ontario was a key recommendation in Justice O'Connor's report on the Walkerton tragedy in 2000.

Elements of this approach include source water protection, health-based standards, regular and reliable testing, strong legislative and regulatory framework, mandatory certification and training of drinking water operators, a Provincial inspection and enforcement program, and implementation of an Operational Plan and QMS based on the DWQMS.

Multiple barriers protect the public and ensure that preventative and corrective actions are taken to address potential risks.

**Drinking Water System Operators play a vital operational role in providing safe drinking water so the Province established requirements for the training and certification of Drinking Water System Operators under *Ontario Regulation 128/04 – Certification of Drinking Water System Operators and Water Quality Analysts*.**

The City continues to participate in high quality Operator training through MECP-approved training providers and training courses. Drinking Water System Operators must complete annual in-class and on-the-job training to maintain certification. All City Operators and contractors responsible for operating any component of City's Drinking Water System are required to hold current MECP issued Drinking Water Certificates.

**Every municipal residential Drinking Water System is inspected at least once a year by the MECP to assess compliance with *the Act*.**

The MECP's Provincial Officers conduct on-site inspections to assess compliance with regulatory requirements including those detailed in the City's Municipal Drinking Water License and Drinking Water Works Permit. Inspections include a review of the Drinking Water System's source, treatment, and distribution components, as well as water quality monitoring results and procedures to evaluate system management and operations.



One inspection is conducted by the MECP annually, including at least one unannounced inspection every three years.

The City participated in one announced MECP inspection on January 5, 2023, spanning the August 21, 2021, to January 5, 2023, inspection period. The MECP inspection included a site visit to the Maplewood Booster Station on January 5, 2023, followed by a comprehensive review of the City's operational documents and records. The City received a 100% inspection rating following the inspection that took place on January 5, 2023.

The City also participated in an unannounced MECP inspection on July 6, 2023, spanning the January 6, 2023, to July 6, 2023, inspection period. The MECP inspection included a site visit to the Maplewood Booster Station and Woodland Acres Pressure Elevating Station on July 6, 2023, followed by a comprehensive review of the City's operational documents and records. The City received the final inspection report and there were no instances of non-conformance.

If Provincial Officers uncover significant findings that may affect public health, System Owners and Operators are informed immediately during the inspection.

**Annual internal and external audits of the City's Operational Plan and Quality Management System are mandated and are used to facilitate continuous improvement.**

The City's DWQMS was re-accredited on June 22, 2021, followed by two external surveillance audits of the City's Operational Plan on May 19, 2022, and June 28, 2023. The June 28, 2023, audit identified zero instances of non-conformance and five opportunities for improvement (OFI). The OFIs have been reviewed and incorporated in the System. Re-accreditation is a requirement under *the Act* for the City to continue to operate the Drinking Water System.

As a best management practice, two internal DWQMS audits were completed in 2023 by a contracted auditing company. The first internal DWQMS audit took place on August 14, 2023, and August 15, 2023. The audit identified zero instances of non-conformance and four OFIs. The OFIs have been reviewed incorporated into the Operational Plan. The second internal audit took place on November 16, 2023, and November 17, 2023. The audit identified zero instances of non-conformance and four OFIs. The OFIs identified in the second internal audit have been reviewed and will be incorporated into the System, as appropriate.

Two Management Reviews were held to update Top Management, as defined in the DWQMS, on the status of the Drinking Water System, actions taken in the current calendar year, and actions planned for the next calendar year. The Management Reviews took place on July 19, 2023, and November 22, 2023. A summary of the Management Reviews is provided in Attachment 2.

## **Previous Reports/Authority**

[2022 Annual Drinking Water System Report](#)

## **Analysis and Options**

**In 2023, 99.4% of laboratory samples were within regulatory limits which reaffirms the City's commitment to supplying safe drinking water.**

The York-Durham Environmental Laboratory (YEDL), an MECP accredited drinking water laboratory, and the City's certified Drinking Water Operators performed 3,951 water quality tests during 2023. Of these tests, only 23 tested outside of the regulatory limits. These incidents are called Adverse Water Quality Incidents (AWQI).

Staff responded to each AWQI in accordance with City's SOPs, performing corrective actions as required under *Ontario Regulation 170/03 – Drinking Water Systems of the Act* and as directed by York Region's MOH. Prompt and decisive action to address AWQIs and their causes maintained continuous delivery of safe drinking water and ensured public safety.

**MECP inspections show the City is achieving strong and consistent performance levels and also highlight opportunities for the City to improve the Drinking Water System.**

During the 2023 inspection period, the City identified and reported one instance of non-compliance to the MECP. The instance was associated with a new development site where a contractor's staff member was collecting and testing chlorine residuals without being a certified operator or water quality analyst.

Contractors are required to following the MECP's Watermain Disinfection Procedure and the City's New Watermain Commissioning Requirements when commissioning all new and temporary watermains. The City continues to engage the development community throughout the development process to promote and support compliance with the City's New Watermain Commissioning Requirements.

## **The City received a 100% inspection rating on the MECP's 2022-2023 Chief Drinking Water Inspector's Report.**

Ontario's Chief Drinking Water Inspector releases an Annual Report rating Drinking Water Systems across the Province. The 2022-2023 Chief Drinking Water Inspector's Annual Report includes in-depth information on the performance of Ontario's drinking water systems and licensed laboratories.

The 2023-2023 Chief Drinking Water Inspector Report gave the City the highest possible inspection rating of 100%. Of the 657 municipal residential Drinking Water Systems in Ontario, 76% received an inspection rating of 100%. This illustrates that the operation and management of the City's Drinking Water System is among the best in the Province.

### **Financial Impact**

In November 2023, Council approved the [Long-Term Drinking Water System Financial Plan \(2024-2035\)](#), committing to the long-term financial sustainability of the City's Drinking Water System and ensuring continuous delivery of safe drinking water. The Plan identifies the financial support required to operate, maintain, and perform asset management planning on the Drinking Water System and was a component in the City's Municipal Drinking Water License renewal submission to the MECP.

Under Section 11 of *Ontario Regulation 170/03 – Drinking Water Systems*, Owners are required to describe “any major expenses incurred during the period covered by the report to install, repair or replace required equipment.”

In 2023, the City invested \$18,507,688 to install, repair, and/or replace equipment required to deliver safe drinking water. Costs were funded through the City's water rates, associated reserves, and the approved capital and operating budgets.

### **Operational Impact**

No operational impact is expected as a result of receiving this Report for information.

### **Broader Regional Impacts/Considerations**

There is no impact to the Region.

## **Conclusion**

This Report and its attachments are provided to support Council's statutory standard of care under Provincial drinking water regulations and allows Council to demonstrate its due diligence in performing informed decision making.

The City's Drinking Water System is subject to strict regulations implemented by the Province to keep drinking water safe. The audit and inspection results from both internal and external parties for the 2023 reporting year confirm the City's Drinking Water System is performing well.

These results are attributed to Council's commitment to provide safe drinking water to the City's residents and businesses.

As part of the City's regulatory requirements, links to this report and its attachments will be posted on the City's external website.

**For more information**, please contact: Emilie Alderman, Director, Environmental Services, ext. 6116.

## **Attachments**

1. 2023 Annual Summary Report
2. Drinking Water Quality Management System – Summary of Management Reviews

## **Prepared by**

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## **Approved by**



Zoran Postic, Deputy City Manager,  
Public Works

## **Reviewed by**



Haiqing Xu, on behalf of  
Nick Spensieri, City Manager

## **Approved by**



Emilie Alderman, Director,  
Environmental Services



# 2023 ANNUAL SUMMARY REPORT

A description of the City of Vaughan's Water Distribution System to fulfill the requirements under Schedule 22 of *Ontario Regulation 170/03 – Drinking Water Systems*

This report is available to the public at no charge on the City of Vaughan's website and upon request.

MARCH 5, 2024





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# 1.0 Report Overview

## 1.1 Background

The 2023 Annual Summary Report is intended to provide the Mayor and Members of Council, as Owners of the Drinking Water System, an understanding of the status of the City of Vaughan's Drinking Water System for the reporting period of January 1, 2023 to December 31, 2023.

Under the *Safe Drinking Water Act, 2002 (the Act)*, municipalities are required to:

- recognize that the people of Ontario are entitled to expect their drinking water to be safe; and
- provide for the protection of human health and the prevention of drinking water health hazards through the control and regulation of Drinking Water Systems and drinking water testing.

This report has also been prepared to satisfy the requirements of *Schedule 22 of Ontario Regulation 170/03 – Drinking Water Systems* (Summary Reports for Municipalities).

For the 2023 reporting period, a separate Annual Report, which contains data related to annual testing and sampling parameters, was prepared to fulfill Section 11 of Ontario Regulation 170/03 – Drinking Water Systems and was posted on the City's website by February 28, 2024.



## 1.2 Quality Management System (QMS) Policy

The Owners and Operators of the City's Water Distribution System are committed to:

- providing safe and clean drinking water to residents and businesses;
- complying with all applicable legislation and regulations related to the provision of safe drinking water; and
- implementing and continually improving the effectiveness of the City's Quality Management System (QMS).

The City's QMS Policy has been developed to enhance and ensure community safety, health and wellness and to maintain assets and infrastructure integrity.





# 2.0 Drinking System Description

## 2.1 Drinking Water System Profile

The City’s Environmental Services department is responsible for the distribution of safe drinking water throughout the city. In 2023, 35,992,863 cubic metres of water was supplied to residential, industrial, commercial and institutional locations throughout the city.

The City purchases its drinking water from York Region prior to distribution. York Region obtains this water from the City of Toronto and the Region of Peel. The water originates from Lake Ontario and is treated using a process called chloramination, a disinfection method which uses chlorine combined with ammonia to ensure the water remains safe to drink from the time of treatment until it reaches the consumer.

The City’s Water Distribution System includes 1,150.9 kilometres of active watermains, one booster station and one pressure elevating station. Table 1 below displays the City’s Water Distribution System profile information, including the system number, class of subsystem, Municipal Drinking Water Licence (MDWL) number, Drinking Water Works Permit (DWWP) number, and the system classification.

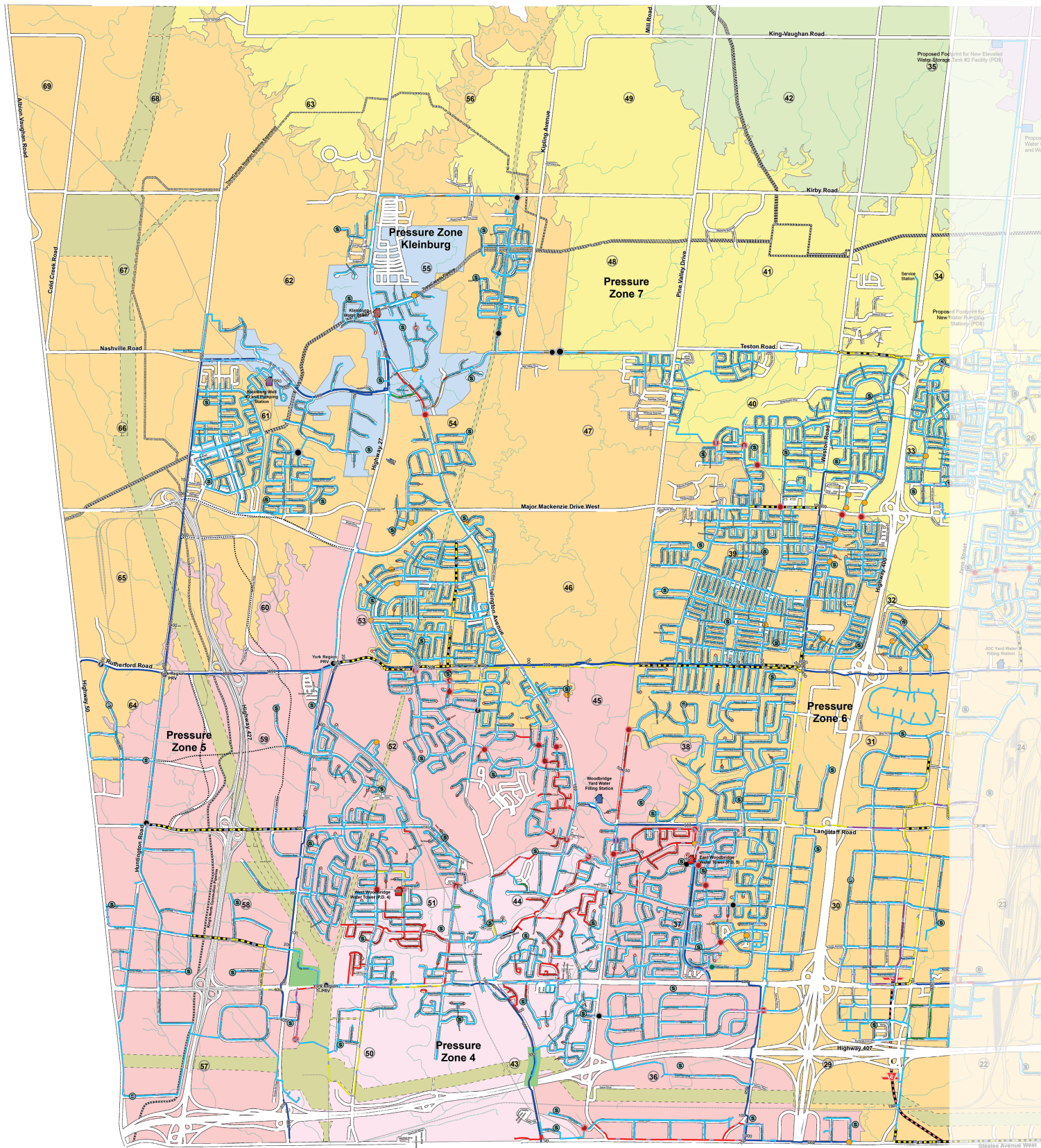
**TABLE 1: City of Vaughan Water Distribution System profile information**

<b>System Number:</b> 260003097	Class 2 Water Distribution Subsystem
<b>Municipal Drinking Water Licence:</b> 011-101	<b>Drinking Water Works Permit:</b> 011-201
<b>Classification:</b> Large Municipal Residential System	

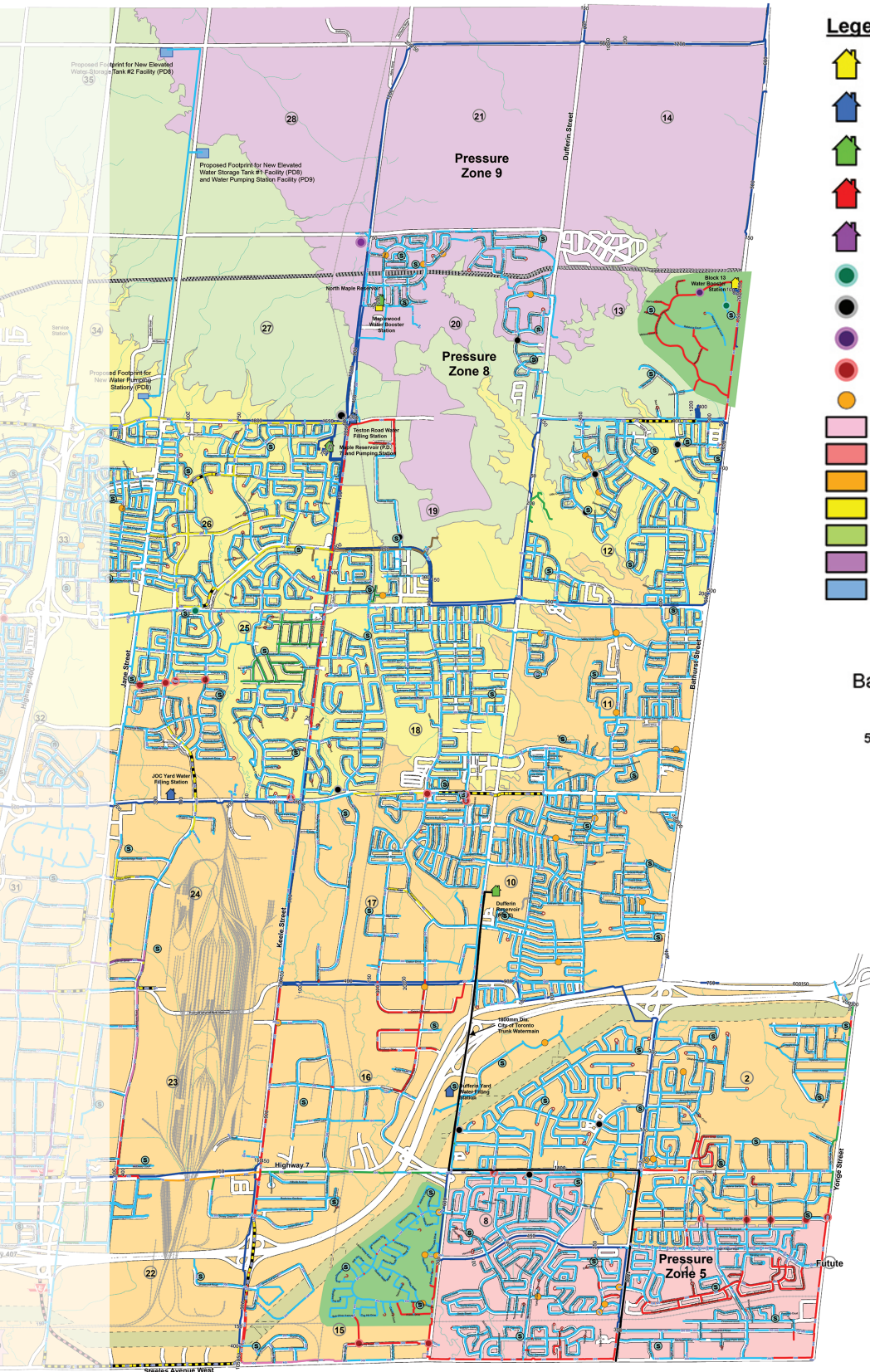




## Water Servicing Infrastructure







### Legend

- |  |                           |  |                         |
|--|---------------------------|--|-------------------------|
|  | Water Booster Station     |  | Asbestos Cement         |
|  | Water Filling Station     |  | Cast Iron               |
|  | Water Reservoir           |  | Concrete                |
|  | Water Tower               |  | Concrete Pressure Pipe  |
|  | Water Well                |  | Copper                  |
|  | Check Valve               |  | HDPE                    |
|  | Pressure Reducing Valve   |  | Hyprescon               |
|  | Pressure Sustaining Valve |  | PVC                     |
|  | Zone Valve                |  | PVCO (IPEX Bionax)      |
|  | Meter Chamber             |  | Reinforced Concrete     |
|  | Pressure Zone 4           |  | Unknown                 |
|  | Pressure Zone 5           |  | Regional Watermain      |
|  | Pressure Zone 6           |  | White PVC area          |
|  | Pressure Zone 7           |  | Railway                 |
|  | Pressure Zone 8           |  | Subway Line             |
|  | Pressure Zone 9           |  | TransCanada Pipeline    |
|  | Pressure Zone Kleinburg   |  | Hydro Corridor          |
|  |                           |  | Rivers                  |
|  |                           |  | City Block Number       |
|  |                           |  | Water Sampling Stations |

Based on As-Built Information from GIS  
Printed Date: December 19, 2023



# 3.0 Legislative Requirements

## 3.1 Summary of Legislative Requirements

The Act and associated Regulations under which the City operates the Water Distribution System are:

- (a) *Ontario Regulation 170/03 of the Act*;
  - Overall legislative framework to operate a Drinking Water System
- (b) *Ontario Regulation 128/04 of the Act*;
  - Certification of the Drinking Water System Operators
- (c) *Ontario Regulation 169/03 of the Act*; and
  - Water sampling parameters according to the Ontario Drinking Water Quality Standards
- (d) *Ontario Regulation 188/07 of the Act*.
  - Licensing requirements for Drinking Water Systems



### 3.1.1 Ontario Regulation 170/03 - Drinking Water Systems

*Ontario Regulation 170/03 – Drinking Water Systems* establishes eight categories of Drinking Water Systems, four of which are municipal, and the other four are non-municipal. The City's Drinking Water System is a Large Municipal Residential System because it matches the legislative definition of a "municipal drinking water system that serves a major residential development and serves more than 100 private residences."

*Ontario Regulation 170/03 – Drinking Water Systems* contains Schedules that address several requirements for a Drinking Water System. The following Schedules are applicable to the City's Water Distribution System:

- **SCHEDULE 6: Operational Checks, Sampling and Testing – General**
- **SCHEDULE 7: Operational Checks**
- **SCHEDULE 10: Microbiological Sampling and Testing**
- **SCHEDULE 13: Chemical Sampling and Testing**
- **SCHEDULE 15.1: Lead**
- **SCHEDULE 16: Reporting Adverse Test Results and Other Problems**
- **SCHEDULE 17: Corrective Action**
- **SCHEDULE 22: Summary Reports for Municipality**





### **SCHEDULE 6: Operational Checks, Sampling and Testing – General**

This Schedule of the Regulation provides direction on sample frequency, form, handling, monitoring equipment, and record keeping and provides the framework for performing drinking water samples as detailed in Schedule 7.

### **SCHEDULE 7: Operational Checks**

This Schedule identifies the responsibility for chlorine, turbidity and fluoride testing and defines tests that can be performed by a Certified Water Operator.

As required under this Schedule, the City ensures that drinking water samples from the City's Water Distribution System are taken and tested for a combined chlorine residual. In 2023, 2,112 samples were taken to measure chlorine residuals.

The City's Water Distribution System is a standalone system, which means that the received water stays within the City borders. Primary disinfection, testing for turbidity and fluoride addition is undertaken at wastewater treatment plants that are owned and operated by the City of Toronto and the Region of Peel.

### **SCHEDULE 10: Microbiological Sampling and Testing**

This Schedule identifies the frequency of microbiological sampling for the presence of bacteria and associated testing. The number of required samples is based upon population size. The City was mandated to take a minimum of 135 microbiological samples per month in 2023 for an annual total of 1,620 samples.

The City collected a total of 1,744 microbiological samples for testing in 2023. Over 25 per cent of the 1,744 microbiological samples were tested for Heterotrophic Plate Count (HPC) to satisfy regulatory requirements. HPC measures the overall bacteriological quality of drinking water.

### **SCHEDULE 13: Chemical Sampling and Testing**

This Schedule outlines the requirements for sampling of inorganics, organics, trihalomethanes (THMs), haloacetic acids (HAAs), nitrate and nitrite, sodium, and fluoride.

Though the City is not required to test for inorganics/organics, the City tested for inorganics in 2023 to maintain diligence.

The City also tested for THMs and HAAs (chlorine disinfection byproducts) on a quarterly basis as required under *Schedule 13 of Ontario Regulation 170/03 – Drinking Water Systems*. All test results were within legislative limits.



### SCHEDULE 15.1: Lead Sampling

This Schedule applies to sampling for lead and stipulates that there are two annual sampling periods to consider – one between December 15 and April 15 and the other between June 15 and October 15. Prior to 2011, the City was mandated to collect 100 samples from points in plumbing that serve private residences, 10 samples from points in plumbing that do not serve private residences and 20 samples from sampling points in the Water Distribution System. The City has since received approval from the MECP for relief from the regulatory requirements for standard lead sampling. In exchange for the relief granted, the City is required to comply with Schedule 15.1-5 (9) of *Ontario Regulation 170/03 – Drinking Water Systems*, which allowed the City exemption from plumbing sampling. Relief was granted because the City demonstrated that less than 10 per cent of all the samples from plumbing that were tested for lead in two consecutive sampling periods exceeded the standard prescribed for lead.

The City's current lead sampling plan includes 10 distribution samples taken between December 15 and April 15 and 10 distribution samples taken between June 15 and October 15 annually, which are measured for pH, alkalinity and lead. There was one sample exceedance for

lead in 2023 at a hydrant used for sampling. The City reported the incident to York Region Public Health and the Ministry of the Environment, Conservation and Parks (MECP) Spills Action Centre and completed corrective actions prescribed under Schedule 17 *Ontario Regulation 170/03 – Corrective Actions of the Safe Drinking Water Act*. The resampling results **were within** the Ontario-regulated concentration limit for lead.

### SCHEDULE 16: Reporting Adverse Test Results and Other Problems

This Schedule defines the City's responsibility to report any drinking water test result which exceeds any of the standards outlined in the *Ontario Regulation 169/03 – Ontario Drinking Water Quality Standards*.

The reporting requirement involves immediate oral and written notification to the Ministry of the Environment, Conservation, and Parks (MECP) Spills Action Centre (SAC), and the Medical Officer of Health at York Region Public Health.

Table 2 below provides a summary of all adverse water quality incidents that occurred in 2023. The corrective action for each incident is also included in the Table. There were 23 adverse water quality incidents, none of which resulted in a risk to public health.

**TABLE 2: 2023 Adverse water quality incidents and corrective actions**

INCIDENT DESCRIPTION	INCIDENT DATE	ADVERSE TEST RESULT	REGULATORY LIMITS	CORRECTIVE ACTION
Combined Chlorine Residual	01/03/23	0.12mg/L	0.25 mg/L (minimum) 3.0 mg/L (maximum)	Flushed and retested.
	01/25/23	3.84mg/L	0.25 mg/L (minimum) 3.0 mg/L (maximum)	Flushed and retested.
	02/15/23	4.92mg/L	0.25 mg/L (minimum) 3.0 mg/L (maximum)	Flushed and retested.
	08/15/23	0.05mg/L	0.25 mg/L (minimum) 3.0 mg/L (maximum)	Flushed and retested.
	08/16/23	0.01mg/L	0.25 mg/L (minimum) 3.0 mg/L (maximum)	Flushed and retested.

**Table 2: continued**

INCIDENT DESCRIPTION	INCIDENT DATE	ADVERSE TEST RESULT	REGULATORY LIMITS	CORRECTIVE ACTION
Total Coliform (TC) Present  E. Coli (EC) Present	06/22/23	TC- Present	0	Flushed and resampled.
	07/14/23	TC- Present	0	Flushed and resampled.
	07/14/23	TC- Present	0	Flushed and resampled.
	07/21/23	TC- Present	0	Flushed and resampled.
	07/26/23	TC- Present	0	Flushed and resampled.
	07/26/23	TC- Present	0	Flushed and resampled.
	07/28/23	TC- NDOGN EC- NDOGN	0	Flushed and resampled.
	07/28/23	TC- Present	0	Flushed and resampled.
	07/30/23	TC - 42 EC - 29	0	Flushed and resampled.
	07/31/23	TC - 1	0	Flushed and resampled.
	08/04/23	TC- Present	0	Flushed and resampled.
	08/16/23	TC- Present	0	Flushed and resampled.
	08/18/23	TC- Present	0	Flushed and resampled.
	09/15/23	TC- Present	0	Flushed and resampled.
	10/25/23	TC- Present	0	Flushed and resampled.
	11/03/23	TC- Present	0	Flushed and resampled.
Lead	03/29/23	0.145mg/L	0.010mg/L	Resampled and tested for pH, lead and alkalinity.
	09/21/23	Standing - 0.53mg/L  Flushed - 25.5mg/L	0.010mg/L	Resampled and tested for pH, lead and alkalinity.







### **SCHEDULE 17: Corrective Action**

In conjunction with the requirements of Schedule 16, corrective actions are immediately undertaken to address adverse water quality incidents. Responses include watermain flushing and resampling of the identified area as well as any additional direction provided by the Medical Officer of Health at York Region Public Health and MECP Spills Action Centre. The samples are tested for chlorine residuals on-site and sent to the laboratory for further tests that may include microbiological and/or chemical tests. Once complete results have been received from the laboratory, and are within the set regulatory limits, a notice of issue resolution is reported back to both the MECP Spills Action Centre and the Medical Officer of Health at York Region Public Health.

### **SCHEDULE 22: Summary Reports for Municipalities and Section 11 of Ontario Regulation 170/03 – Drinking Water Systems**

Summary Report requirements for Municipalities with Large Municipal Residential Systems are identified within Schedule 22. Annual Report submissions for the previous calendar year must be submitted to the City's Mayor and Members of Council, as Owners of the system, by March 31 of the following year. The City also posts the report on the City's external website and copies of the report are available free of charge to the public upon request.

Similarly, Annual Reports, as defined under Section 11 of the Regulation, for the previous calendar year are prepared for submission to the City's Mayor and Members of Council, as Owners of the system, no later than February 28 of the following year. Annual Report requirements are defined in the legislation. The City ensures that effective steps are taken to advise users that copies of the report are available, without charge, including the location where copies of the report may be obtained. This report is also made available on the City's external website.





### **3.1.2 Ontario Regulation 128/04 – Certification of Drinking Water System Operators and Water Quality Analysts**

This Regulation establishes the training and certification requirements that must be satisfied by Certified Water Operators.

The City's Water Operations staff operated the City's Water Distribution System in 2023. Every Operator is required to complete a total of 105 training hours within the three-year Operator certificate renewal period. Operator training consists of 36 hours of Director-approved training or Continuing Education Units (CEUs) and 69 hours of on-the-job practical training.

During the reporting period of January 1, 2023 to December 31, 2023, every Drinking Water Operator at the City held a valid Operator certificate in compliance with *Ontario Regulation 128/04 – Certification of Drinking Water System Operators and Water Quality Analysts* and met provincial training requirements.

### **3.1.3 Ontario Regulation 169/03 – Ontario Drinking Water Quality Standards**

*Ontario Regulation 169/03 - Ontario Drinking Water Quality Standards* identifies the minimum level of drinking water quality acceptable for human consumption.

The City's water sampling and testing program complied with the Standards under the Regulation and ensured appropriate corrective actions were taken when necessary. As this Regulation indicates the minimum standard, exceedance of these values represent the point of which adverse reporting and corrective action is triggered.

### **3.1.4 Ontario Regulation 188/07 – Licensing of Municipal Water Systems**

The Act requires Owners and Operating Authorities of municipal residential Drinking Water Systems to have an accredited Operating Authority. To become accredited, an Operating Authority must establish and maintain a Quality Management System (QMS). Minimum requirements for the QMS are specified within the Drinking Water Quality Management Standard (DWQMS). *Ontario Regulation 188/07 – Licensing of Municipal Drinking Water Systems* was established to aid in the licensing of the municipal Drinking Water Systems.

### **3.2 Drinking Water Quality Management Standard (DWQMS)**

The Drinking Water Quality Management Standard has 21 elements which relate to quality management and the risk assessment and risk management of critical control points. The City's Operational Plan documents the processes and procedures that the Owner and Operating Authority have in place to meet the requirements of the DWQMS.

The original full scope DWQMS accreditation certificate was formally issued by the Canadian General Standards Board to the Corporation of the City of Vaughan on July 7, 2009. The City's Drinking Water Works Permits and Municipal Drinking Water Licenses were received on July 27, 2009 after obtaining DWQMS accreditation and submitting a Council-approved Financial Plan to the Ministry of Municipal Affairs and Housing, as required under the *Sustainable Sewage and Water System Act*. The City's DWQMS was re-accredited on June 22, 2021 followed by two surveillance audits on May 19, 2022 and June 28, 2023.

As participants of the full scope accreditation process for the DWQMS, the City is required to submit system information for an on-site verification audit to maintain accreditation status. The City's Water Distribution System remains fully accredited.

# 4.0 Drinking Water System Maintenance Programs

## 4.1 Watermain Flushing Program

The main objective of the watermain flushing program is to maintain chlorine residual in the water distribution system to meet regulatory requirements and ensure the chlorine residual reflects the water quality in a given area. Flushing also helps clean the watermain by removing mineral deposits from the pipe walls while improving the aesthetics of the water. Flushing is performed at locations that have the potential for stagnant water, such as dead ends, areas of low water consumption (i.e. new subdivisions), and during watermain repairs to remove any debris in the watermain and restore chlorine residuals. Flushing is performed by the City's certified and trained Drinking Water Operators. Chlorine residuals are recorded at each location on completion of watermain flushing. A total of 21 anti-stagnation valves were maintained by the City in 2023.



## 4.2 Hydrant Inspection Program

An annual inspection of all hydrants in the City is a requirement under *Ontario regulation 213/07 – Fire Code*. The inspection determines the operational functionality of hydrants and valves to ensure smooth operation for firefighting. The hydrant inspection program is completed by external contractors. Repair of deficiencies identified through the Hydrant Inspection Program are completed by the City's Drinking Water Operators with the assistance of external contractors, as required.

## 4.3 Valve Exercising Program

Valves, along with hydrants and water booster stations, are key components of the City's water distribution infrastructure. Valves control and change the direction of the flow of water within the Water Distribution System and are required to be operated during maintenance activities such as watermain swabbing and watermain flushing. During a watermain break, valves isolate a section of the watermain for repair which confines the water disruption to a smaller area. Valves are exercised by an external contractor as part of the City's preventative maintenance program. Valve exercising involves turning the valve on and off to prevent the valve from becoming stiff and not functioning properly. In 2023, preventative maintenance programming targeted valves in unassumed new development areas that were in long maintenance programs as well as the assumed City valves.

# 5.0 Water Quality

## 5.1 Water Quality Inquiries

Under the current issue of the City's MDWL, the City is required to address water quality inquiries related to the Drinking Water System. The nature of the inquiry and the appropriate corrective action that was taken must be documented. Table 3 below provides a summary of the water quality inquiries the City addressed in 2023.

Inquiries included questions pertaining to pH, hardness, lead, alkalinity, taste, odour and colour. The City received a total of 102 water quality inquiries in 2023, most of which were classified as water inquiries (i.e. questions pertaining to taste, odour, colour, etc.). The City can address residents' concerns and continually improve the Drinking Water System by documenting inquiries, tracking inquiries of a similar nature and location, and identifying trends.



**TABLE 3: Water quality inquiries related to the City's drinking water system**

TYPE OF INQUIRY	NUMBER OF INQUIRIES	ACTION TAKEN
Taste and odour	22	<ul style="list-style-type: none"><li>• Information provided by phone or email to identify the source of the smell (plumbing vs. drinking water) and to flush taps.</li><li>• Site investigation <b>such as</b> testing for chlorine residuals and sampling for microbiological lab test from the nearest hydrant and/or sampling station.</li></ul>
Discoloured water	16	<ul style="list-style-type: none"><li>• Information provided by phone or email to flush taps.</li><li>• Site investigation <b>such as</b> testing for chlorine residuals and sampling for microbiological lab test from the nearest hydrant and/or sampling station.</li></ul>
General inquiries	64	<ul style="list-style-type: none"><li>• Information provided by phone conversation and/or email correspondence.</li><li>• Provided most recent sample results upon request.</li><li>• Site investigation <b>such as</b> testing for chlorine residuals and sampling for microbiological lab test from the nearest hydrant and/or sampling station.</li></ul>
<b>TOTAL:</b>	<b>102</b>	



# 6.0 Water Useage

## 6.1 Annual Water Taking from York Region

York Region receives treated water from the City of Toronto and the Region of Peel and supplies it to the City of Vaughan for distribution. The total volume of water supplied from York Region to the City's Water Distribution System during the reporting period of January 1, 2023 to December 31, 2023 was 35,992,863 cubic metres.

A comparison of 2021, 2022 and 2023 monthly flows for the City's Water Distribution System and the monthly average flow are included in Table 4 below. Figure 1 shows a graphical representation of the data from Table 4.

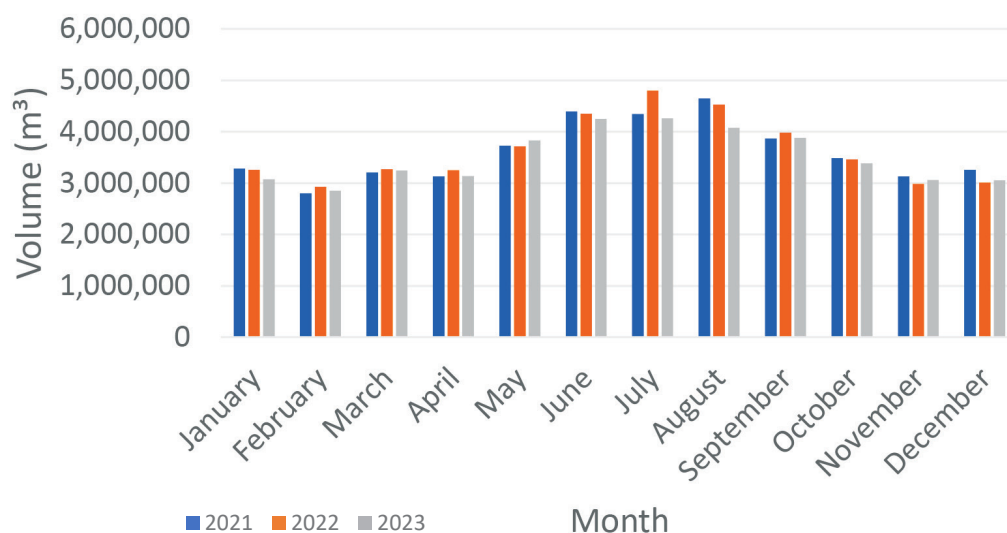
Table 5 shows the City's Water Distribution System's maximum, minimum and average daily flows during each month of 2023. The highest daily flow during (9,394 cubic metres) was recorded on June 21, 2023 and the lowest daily flow (744 cubic metres) was recorded on April 9, 2023.

**TABLE 4: The City's Water Distribution System's monthly flows during 2021, 2022 and 2023**

MONTH	2021 VOLUME (m <sup>3</sup> )	2022 VOLUME (m <sup>3</sup> )	2023 VOLUME (m <sup>3</sup> )
January	3,286,583	3,261,305	3,075,495
February	2,799,114	2,927,218	2,854,806
March	3,207,629	3,273,864	3,243,104
April	3,132,150	3,252,791	3,135,406
May	3,729,063	3,713,184	3,827,994
June	4,393,697	4,348,879	4,249,891
July	4,346,091	4,799,278	4,261,306
August	4,645,725	4,525,906	4,077,271
September	3,868,170	3,983,104	3,881,215
October	3,488,178	3,462,097	3,386,375
November	3,132,888	2,985,305	3,063,987
December	3,256,141	3,009,388	3,054,346
<b>TOTAL:</b>	<b>43,285,428</b>	<b>43,542,318</b>	<b>42,111,196</b>
<b>Monthly Average Flow</b>	<b>3,607,119</b>	<b>3,628,526</b>	<b>3,509,266</b>



**FIGURE 1: The City's Water Distribution System's monthly flows during 2021, 2022 and 2023**



**TABLE 5: Maximum, minimum and average daily flows during 2023**

MONTH	MAXIMUM DAILY FLOW (m³)	DATE OF MAXIMUM FLOW	MINIMUM DAILY FLOW (m³)	DATE OF MINIMUM FLOW	AVERAGE DAILY FLOW (m³)
January	4,361	31-Jan-23	3,576	12-Jan-23	3,917
February	4,779	25-Feb-23	3,032	27-Feb-23	4,315
March	4,575	31-Mar-23	1,044	9-Mar-23	3,927
April	4,846	25-Apr-23	744	9-Apr-23	3,589
May	7,470	30-May-23	4,496	9-May-23	5,707
June	9,394	21-Jun-23	5,785	13-Jun-23	7,585
July	8,420	5-Jul-23	5,691	16-Jul-23	6,862
August	7,572	16-Aug-23	5,674	8-Aug-23	6,601
September	7,472	4-Sep-23	5,179	12-Sep-23	6,207
October	6,414	29-Oct-23	3,019	24-Oct-23	5,091
November	4,909	30-Nov-23	3,702	22-Nov-23	4,354
December	5,079	2-Dec-23	3,825	18-Dec-23	4,487

If a system is receiving all of its water from another system under an Agreement, a comparison of actual flow rates to the flow rates specified in the written Agreement must be provided in accordance with Schedule 22. The City does not currently have a written Agreement under subsection 5 (4) with

the Regional Municipality of York. The City, along with the other area municipalities, rely on Sections 11 and 89 (b) of the *Municipal Act, 2001* with respect to the supply of water.

## 7.0 Associated Water Summary Reports

### 7.1 Links to Associated Water Summary Reports

City of Toronto:

[Annual Report and Annual Summary Report](#)

Region of Peel:

[Annual Report and Annual Summary Report](#)

York Region:

[Annual Report and Annual Summary Report](#)

## 8.0 Contact Information

### 8.1 Report Contact Information

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## Attachment 2: Drinking Water Quality Management System – Summary of Management Reviews

### Review – 2023 Operational Performance

The purpose of this summary is to provide Council with mandatory updates regarding the City of Vaughan's drinking water systems performance as mandated through Element 20 of the [Drinking Water Quality Management Standard](#) (DWQMS).

	Element 20 - Management Review Requirements	Achieved?	Conforms to DWQMS?
1	<p>Ensure that a Management Review is conducted at least once every calendar year.</p> <p><b>Completed on July 19, 2023 and November 22, 2023 with Top Management and the Owner representative for the 2023 operational year.</b></p>	<p>Yes</p> <p>✓</p>	<p>Yes</p> <p>✓</p>
2	<p>Consider the results of the Management Review and identify deficiencies and action items to address the deficiencies.</p> <p><b>Completed. See the Management Review Summary below.</b></p>	<p>Yes</p> <p>✓</p>	<p>Yes</p> <p>✓</p>
3	<p>Provide a record of any decisions and action items related to the Management Review including the personnel responsible for delivering the action items and the proposed timelines for their implementation.</p> <p><b>All decisions and action items discussed during the Management Review have been captured through record of minutes. Action follow-up is tracked.</b></p>	<p>Yes</p> <p>✓</p>	<p>Yes</p> <p>✓</p>
4	<p>Report the results of the Management Review, the identified deficiencies, decisions and action items to the Owner (Council).</p> <p><b>Completed through this report, submitted for information on March 5, 2024.</b></p>	<p>Yes</p> <p>✓</p>	<p>Yes</p> <p>✓</p>

## **Management Review Summary**

### **a) Annual Review of QMS 02- Quality Management System (QMS) Policy**

The QMS Policy was reviewed with all attendees.

Action Item: No action items are pending from the 2023 report.

### **b) Incidents of regulatory non-compliance**

During the July 19, 2023 review there was one incident of regulatory non-compliance identified by the City with respect to Ontario Regulation 170/03 of the *Safe Drinking Water Act*. The instance was associated with a new development site where a contractor's staff member was conducting a flushing program for a new development site without being a certified operator or water quality analyst. Corrective actions were initiated and City reported the incident to the local Ministry of the Environment, Conservation and Parks (MECP) drinking water inspector on May 12, 2023. The drinking water inspector was satisfied with the information provided and corrective actions implemented and had no further instruction.

Action Item: No action items are pending from the 2023 report.

### **c) Incidents of adverse drinking water tests**

Indicators of adverse water quality are immediately reported to York Region Public Health and the MECP Spills Action Centre and appropriate corrective action is taken. In 2023, there were a total of 23 reportable events, all of which were immediately addressed as required by the regulation. None of these events resulted in the integrity and/or safety of the drinking water supply being compromised.

Action Item: No action items are pending from the 2023 report.

### **d) Deviations from Critical Control Points (CCPs)**

Critical control limits have been established based on known CCPs identified through Risk Assessment outcomes. There is one CCP related to potential contamination during a watermain break and one CCP related to damage and/or contamination to the drinking water system and/or water quality as a result of a terrorist threat/vandalism. There was no deviation from the identified CCPs.

Action Item: No action items are pending from 2023 report.

### **e) The effectiveness of the risk assessment process**

Verification of risks to public health and the drinking water system is conducted at least once every calendar year and assessed at least once every 36 months. The City's 36-month Comprehensive Risk Assessment was held on March 28, 2023 and resulted in minor wording updates to ensure current procedure titles and revision numbers are captured. The overall rank for two potential hazards to the drinking water system were increased and one potential hazard was removed as it is referenced in the Provincial Watermain Disinfection Procedure and poses no risk to the Vaughan distribution system. No new CCPs were identified and no new potential hazards were identified. The next Annual Review of the Risk Assessment Outcomes will occur during 2024.

Action Item: No action items are pending from 2023 report.

**f) Internal and third-party Audit results**

Internal and third-party audits assess how the City meets the requirements of the Drinking Water Quality Management Standard (DWQMS). The first internal DWQMS audit took place on August 14, 2023 and August 15, 2023. The audit identified zero instances of non-conformance and four OFIs. The OFIs have been reviewed incorporated into the Operational Plan. The second internal DWQMS audit took place on November 16, 2023 and November 17, 2023. The audit identified zero instances of non-conformance and four OFIs. The OFIs identified in the second internal audit have been reviewed, one has been incorporated into the System, and planning for the implementation of the remaining OFIs in 2024 is complete.

MECP-approved Drinking Water Quality Management System Auditors, Intertek SAI Global, performed a surveillance audit on June 28, 2023. Zero instances of non-conformance were identified and five opportunities for improvement have been reviewed and incorporated into the Quality Management System.

Action Item: There are three OFIs to be implemented in 2024.

**g) Results of emergency response testing**

Testing of emergency response ensures that staff are prepared for emergency situations and allows the City to identify what could happen in the Drinking Water System to cause an emergency. The DWQMS requires the City to complete emergency response testing at least once every two years. A desktop exercise was conducted for water-related emergencies in Q4 of 2023. The next emergency response testing exercise will be conducted in 2025.

Action Item: No action items are pending from 2023 report.

**h) Operational performance**

The City participated in one announced MECP inspection on January 5, 2023 spanning the August 21, 2021 to January 5, 2023 inspection period. The MECP inspection included a site visit to the Maplewood Booster Station on January 5, 2023 followed by a comprehensive review of the City's operational documents and records. The City received a 100% inspection rating following the inspection that took place on January 5, 2023.

The City also participated in an unannounced MECP inspection on July 6, 2023 spanning the January 6, 2023 to July 6, 2023 inspection period. The MECP inspection included a site visit to the Maplewood Booster Station and Woodland Acres Pressure Elevating Station on July 6, 2023 followed by a comprehensive review of the City's operational documents and records. The City received the final inspection report and there were no instances of non-conformance.

Action Item: No action items are pending from 2023 report.

**i) Raw water supply and drinking water quality trends**

The Annual Water Quality Report and Annual Summary Report provide data on drinking water quality trends within the City's drinking water. The 2023 Annual Water Quality Report and Annual Summary Report will be posted on the City's website prior to February 28, 2024 and

March 31, 2024, respectively. The City has an exemption under the Municipal Drinking Water Licence (MDWL) for lead sampling from plumbing systems.

Action Item: No action items are pending from 2023 report.

**j) Follow-up on action items from previous management reviews**

The previous Management Review was held on December 15, 2022. There were a total of six action items identified, majority of which have been actioned.

Action Item: There is one action item pending:

- Determining the feasibility of offering DWQMS awareness training to staff in departments outside of the Environmental Services Department.

**k) The status of management action items identified between reviews**

All actions from the City's Internal Audit of Water, Wastewater, and Stormwater Operations have been completed and implemented.

Action Items: No action items are pending from 2023 report.

**l) Changes that could affect the Quality Management System (QMS)**

The Municipal Drinking Water Licence (MDWL) renewal application deadline was December 23, 2023. The application for renewal was sent to the MECP on December 19, 2023 and the City receive confirmation from the MECP that the application was received and is currently undergoing technical review. At the discretion of the MECP, additional system-specific requirements may be identified through the licence renewal process that the City may be required to comply with such as additional sampling, testing, and monitoring.

Action Items: No action items are pending from 2023 report.

**m) Consumer feedback**

Consumer feedback allows the City to identify if the water system is operating effectively. In 2023, there were a total of 102 calls that were received related to water odour, taste, colour, and quality inquiries. All concerns/inquiries were addressed appropriately and in a timely manner. Resolutions included field investigations, testing, and sharing information and laboratory results.

Action Items: No action items are pending from 2023 report.

**n) Resources needed to maintain the QMS**

Adequate resources are in place to maintain the QMS. There is currently one DWQMS Coordinator position that is temporarily vacant. Water Operations staff were trained for DWQMS Awareness in Q4 of 2023.

Action Items: No action items are pending from 2023 report.

**o) The results of the infrastructure review**

The physical condition of water infrastructure is regularly evaluated to maintain a state of good repair. Capital projects were identified by Environmental Services and Infrastructure Planning and Corporate Asset Management via the City's capital budget process. In 2023, there were 29

watermain breaks. Preventative maintenance of the Drinking Water System included the following during 2023: 3,000 valves were visited for preventative maintenance programming by an external contractor and 8,148 hydrants were maintained by an external contractor.

Action Items: No action items are pending from 2023 report.

**p) Operational Plan currency, contact and updates**

The Operational Plan has been revised to reflect majority of the OFIs from the 2023 External and Internal Audits.

Action Items: The following two OFIs are the only remaining OFIs under review for implementation into the DWQMS Operational Plan:

- QMS-21: Consider updating QMS-19 and QMS-21 and related forms to remove the redundancy in the record keeping requirements for Continual Improvement; and
- QMS-21: Consider referencing the internal audit process as a way verifying effectiveness.

**q) Staff suggestions**

Water Operations staff continue to provide input and assist in the development of Standard Operating Procedures through the Standard Operating Procedure Review Committee. Water Operations maintains a One Drive folder with meeting minutes which capture staff discussions and suggestions.

Action Items: No action items are pending from 2023 report.

**r) Review of Best Management Practices (BMPs)**

There were no BMP improvements identified during the 2023 reporting period.

Action Items: No action items are pending from 2023 report.

**s) New Business**

None identified.

Action Items: No action items are pending from 2023 report.

**t) Date of Next Meeting**

The DWQMS dictates that the Management Review meeting be held at least once every calendar year.

Action Items: No action items pending from 2023 report.

**Conclusion**

The Management Review is recognized as a best practice for continual improvement for the City's Drinking Water Quality Management System, Drinking Water System, and associated monitoring and maintenance programs.

The on-going maintenance of the Quality Management System and focus on continual improvement provides assurance to Council, as the Owner of the municipal Drinking Water System, that its duties, responsibilities, and standard of care under the Act are being met.