

# **CITY OF MARKHAM – WATER SAMPLING PROGRAM**

## ***January 1 to December 31, 2025***

To comply with the Ontario Drinking Water System Regulation, Markham collects and tests water samples throughout its distribution system at a total of 107 locations. The 107 sample locations are strategically selected and evenly distributed to ensure Markham gets the best representation of the water distribution system. Sampling is rotated through the 107 locations and the drinking water is tested for Chlorine residual, Bacteria, Trihalomethanes (THM), Haloacetic Acids (HAA), Nitrosodimethylamine (NDMA), Nitrites & Nitrates, Lead, and Organics & Inorganics in compliance with Ontario Regulation 170/03. The samples are collected by licensed Waterworks operators and analyzed by an accredited and provincially licensed Laboratory.

Waterworks follows rigorous testing and compliance procedures. The City reports any adverse sampling results that occur to the York Region Medical Officer of Health and to the Ministry of Environment, Conservation and Parks (MECP) and immediately undertakes the necessary corrective action. Re-samples are taken following the corrective action(s) and tested until two consecutive samples are within acceptable parameters.

### **Summary of the sampling for 2025 follows:**

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#### **Sampling Program:**

Total Number of Samples collected and tested in 2025= 7,153

#### **Adverse Test Results:**

Total Number of Adverse Water Quality Incidents (AWQI) = 41

#### **Breakdown of Adverse Results:**

Total adverse due to Microbiology Exceedances = 37

Total adverse due to low Chlorine Residual = 1

Total adverse due to Observation during Watermain Break =3

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The drinking water distributed to the City of Markham residents in 2025 was safe to drink and met all drinking water requirements. During 2025 the operation of the water distribution system, there were very few adverse sample incidents (0.53% of all system samples undertaken) and when these occurred, they were immediately resolved. The drinking water system is maintained by Waterworks with continual improvements and programs in place to ensure water of the highest quality.



**ANNUAL REPORT**

<b>Drinking-Water System Number:</b>	<b>220004162</b>
<b>Drinking-Water System Name:</b>	Markham Distribution System
<b>Drinking-Water System Owner:</b>	The Corporation of the City of Markham
<b>Drinking-Water System Category:</b>	Large Municipal Residential System
<b>Period being reported:</b>	January 1, 2024 to December 31, 2025

<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p><b>Does your Drinking-Water System serve more than 10,000 people? Yes [ x ] No [ ]</b></p> <p><b>Is your annual report available to the public at no charge on a web site on the Internet? Yes [ x ] No [ ]</b></p> <p><b>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</b></p> <div style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> <li>• <a href="http://www.markham.ca">www.markham.ca</a></li> <li>• 8100 Warden Ave. – Environmental Services Department, Waterworks Division</li> </ul> </div>	<p><b><u>Complete for all other Categories.</u></b></p> <p><b>Number of Designated Facilities served:</b></p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">Not applicable</div> <p><b>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]</b></p> <p><b>Number of Interested Authorities you report to:</b></p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">Not applicable</div> <p><b>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]</b></p>
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**Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report**

**List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:**

Drinking Water System Name	Drinking Water System Number
Not applicable	

**Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water? Yes [ ] No [ ] Not applicable [x]**



Indicate how you notified system users that your annual report is available, and is free of charge.

- Public access/notice via the web
- Public access/notice via Government Office
- Public access/notice via a newspaper
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method \_\_\_\_\_

**Describe your Drinking-Water System**

The City of Markham’s distribution system is an extension of the Toronto and York Region distribution systems. Raw surface water from Lake Ontario is disinfected, treated and tested rigorously by the City of Toronto and Peel Region for microbiological, organic and inorganic parameters prior to reaching the York Region distribution system. Markham is supplied with treated water via feeder mains from Toronto and Peel Region. York Region distribution system acts as a wholesale supplier of water and provides further testing, storage and pressure boosting for the Markham system.

Markham’s Distribution System provides treated water to approximately 367,721 residents and is comprised of approximately 1,136.6 kilometers of various size watermains, 11,917 watermain valves and 9,258 municipal fire hydrants. Markham is a distribution only system, without pumping and storage facilities. Markham’s drinking water within the distribution system is tested for standard parameters, in compliance with Ontario Regulation 170/03. The samples are collected by licensed Waterworks operators and analyzed by an accredited and provincially licensed Laboratory.

**List all water treatment chemicals used over this reporting period**

Not applicable; treatment chemicals are introduced at various sources by the City of Toronto, Peel Region and York Region only.

**Were any significant expenses incurred to?**

- Install required equipment
- Repair required equipment
- Replace required equipment

**Please provide a brief description and a breakdown of monetary expenses incurred**

<b>Cathodic Protection of Iron Watermains</b>	<b>= \$399,003.50</b>
<b>Watermain CIPP Lining (Watermain Rehabilitation)</b>	<b>= \$8,184,800.09</b>
<b>Water Meter Replacement/ Upgrades</b>	<b>= \$1,020,000</b>
<b>Watermain Replacement</b>	<b>= \$2,645,788.57</b>
<b>Watermain Replacement Design for 2025</b>	<b>= \$323,163.45</b>
<b>Curb Box Inspection and Replacement</b>	<b>= \$515,531.97</b>



**Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre**

<b>Incident Date and AWQI #</b>	<b>Parameter</b>	<b>Result</b>	<b>Unit of Measure</b>	<b>Corrective Action</b>	<b>Corrective Action Date</b>
<b>January 14, 2025 (AWQI #167215)</b>	<b>Total Coliform</b>	<b>1</b>	<b>Colony Forming units per 100 millilitres</b>	<b>Flush Mains and Resample</b>	<b>January 14, 2025</b>
<b>March 8, 2025 (AWQI #167489)</b>	<b>On-Site Observation (CAT 2)</b>	<b>N/A</b>	<b>N/A</b>	<b>Repair Watermain, Flush Mains and Resample</b>	<b>March 10, 2025</b>
<b>April 15, 2025 (AWQI #167877)</b>	<b>NDOGN</b>	<b>N/A</b>	<b>N/A</b>	<b>Flush Mains and Resample</b>	<b>April 15, 2025</b>
<b>May 6, 2025 (AWQI #168118)</b>	<b>NDOGN</b>	<b>N/A</b>	<b>N/A</b>	<b>Flush Mains and Resample</b>	<b>May 6, 2025</b>
<b>May 11, 2024 (AWQI # 168175)</b>	<b>NDOGN</b>	<b>N/A</b>	<b>N/A</b>	<b>Flush Mains and Resample</b>	<b>May 11, 2025</b>
<b>May 11, 2024 (AWQI # 168176)</b>	<b>NDOGN</b>	<b>N/A</b>	<b>N/A</b>	<b>Flush Mains and Resample</b>	<b>May 11, 2025</b>
<b>June 17, 2025 (AWQI #168580)</b>	<b>NDOGN</b>	<b>N/A</b>	<b>N/A</b>	<b>Flush Mains and Resample</b>	<b>June 17, 2025</b>
<b>June 28, 2025 (AWQI # 168770)</b>	<b>On-Site Observation (CAT 2)</b>	<b>N/A</b>	<b>N/A</b>	<b>Repair Watermain, Flush Mains and Resample</b>	<b>July 2, 2025</b>
<b>July 8, 2025 (AWQI #168895)</b>	<b>Total Coliform</b>	<b>73</b>	<b>Colony Forming units per 100 millilitres</b>	<b>Flush Mains and Resample</b>	<b>July 8, 2025</b>
<b>July 15, 2025 (AWQI #169006)</b>	<b>Total Coliform</b>	<b>1</b>	<b>Colony Forming units per 100 millilitres</b>	<b>Flush Mains and Resample</b>	<b>July 15, 2025</b>
<b>July 22, 2025 (AWQI # 169118)</b>	<b>Total Coliform</b>	<b>160</b>	<b>Colony Forming units per 100 millilitres</b>	<b>Flush Mains and Resample</b>	<b>July 22, 2025</b>
<b>July 22, 2025 (AWQI # 169120)</b>	<b>Total Coliform</b>	<b>3</b>	<b>Colony Forming units per 100 millilitres</b>	<b>Flush Mains and Resample</b>	<b>July 22, 2025</b>
<b>July 22, 2025 (AWQI # 169121)</b>	<b>Total Coliform</b>	<b>1</b>	<b>Colony Forming</b>	<b>Flush Mains and Resample</b>	<b>July 22, 2025</b>



			units per 100 millilitres		
July 22, 2025 (AWQI # 169122)	Total Coliform	3	Colony Forming units per 100 millilitres	Flush Mains and Resample	July 22, 2025
July 23, 2025 (AWQI # 169147)	Total Coliform	1	Colony Forming units per 100 millilitres	Flush Mains and Resample	July 23, 2025
August 5, 2025 (AWQI #169333)	Low Chlorine	0.22	Milligrams per litre	Flush Mains and Resample	August 5, 2025
August 19, 2025 (AWQI # 169486)	Total Coliform	2	Colony Forming units per 100 millilitres	Flush Mains and Resample	August 19, 2025
August 19, 2025 (AWQI # 169487)	Total Coliform	48	Colony Forming units per 100 millilitres	Flush Mains and Resample	August 19, 2025
August 20, 2025 (AWQI #169500)	Total Coliform	1	Colony Forming units per 100 millilitres	Flush Mains and Resample	August 20, 2025
September 2, 2025 (AWQI #169715)	On-Site Observation (CAT 2)	N/A	N/A	Repair Watermain, Flush Mains and Resample	September 4, 2025
September 13, 2025 (AWQI # 169889)	Total Coliform	2	Colony Forming units per 100 millilitres	Flush Mains and Resample	September 13, 2025
September 16, 2025 (AWQI #169964)	Total Coliform	9	Colony Forming units per 100 millilitres	Flush Mains and Resample	September 16, 2025
September 16, 2025 (AWQI #169965)	NDOGN	N/A	N/A	Flush Mains and Resample	September 16, 2025
September 18, 2025 (AWQI # 169988)	Total Coliform	2	Colony Forming units per 100 millilitres	Flush Mains and Resample	September 18, 2025
September 20, 2025 (AWQI #170017)	Total Coliform	1	Colony Forming	Flush Mains and Resample	September 20, 2025



			units per 100 millilitres		
September 21, 2025 (AWQI #170050)	Total Coliform	3	Colony Forming units per 100 millilitres	Flush Mains and Resample	September 21, 2025
September 22, 2025 (AWQI #170052)	Total Coliform	1	Colony Forming units per 100 millilitres	Flush Mains and Resample	September 22, 2025
September 22, 2025 (AWQI #170053)	Total Coliform	1	Colony Forming units per 100 millilitres	Flush Mains and Resample	September 22, 2025
September 23, 2025 (AWQI #170070)	NDOGN	N/A	N/A	Flush Mains and Resample	September 23, 2025
September 23, 2025 (AWQI #170071)	NDOGN	N/A	N/A	Flush Mains and Resample	September 23, 2025
September 23, 2025 (AWQI #170072)	NDOGN	N/A	N/A	Flush Mains and Resample	September 23, 2025
September 24, 2025 (AWQI #170096)	Total Coliform	6	Colony Forming units per 100 millilitres	Flush Mains and Resample	September 24, 2025
September 24, 2025 (AWQI #170097)	Total Coliform	51	Colony Forming units per 100 millilitres	Flush Mains and Resample	September 24, 2025
October 7, 2025 (AWQI #170266)	NDOGN	N/A	N/A	Flush Mains and Resample	October 7, 2025
October 15, 2025 (AWQI # 170393)	NDOGN	N/A	N/A	Flush Mains and Resample	October 15, 2025
October 28, 2025 (AWQI #170582)	Total Coliform	1	Colony Forming units per 100 millilitres	Flush Mains and Resample	October 28, 2025
October 30, 2025 (AWQI #170599)	Total Coliform	1	Colony Forming units per 100 millilitres	Flush Mains and Resample	October 30, 2025
October 31, 2025 (AWQI #170608)	Total Coliform	5	Colony Forming units per 100 millilitres	Flush Mains and Resample	October 31, 2025
November 2, 2025 (AWQI #170620)	Total Coliform	1	Colony Forming	Flush Mains and Resample	November 2, 2025



			units per 100 millilitres		
November 4, 2025 (AWQI # 170664)	Total Coliform	4	Colony Forming units per 100 millilitres	Flush Mains and Resample	November 4, 2025
December 15, 2025 (AWQI # 171067)	Total Coliform	1	Colony Forming units per 100 millilitres	Flush Mains and Resample	December 15, 2025

**Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.**

	Number of Samples	Range of E.coli Or Fecal Results (minimum #) - (maximum #)	Range of Total Coliform Results (minimum #) - (maximum #)	Number of HPC Samples	Range of HPC Results (minimum #) - (maximum #)
Raw	N/A				
Treated	N/A				
Distribution	1,856	0	0 – 160	618	0 - 2100

**Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.**

	Number of Grab Samples	Range of Results (minimum #)-(maximum #) (in milligrams per litre)
Turbidity	Not applicable	
Chlorine	8,760 (Chlorine Analyzer) 4,151(Grab)	Combined: 0.08.mg/L – 2.08
Fluoride (If the DWS provides fluoridation)	Not applicable	

*NOTE: For continuous monitors use 8760*

*NOTE: Record the unit of measure if it is not milligrams per litre.*

**Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.**

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
N/A				



**Summary of Inorganic parameters tested during this reporting period or the most recent sample results**

<u>Parameter</u>	<u>Sample Date</u>	<u>Result Value</u> (measured in micrograms per litre)	<u>Exceedance</u>
Antimony	February 25, 2025	less than 0.50	No
Arsenic	February 25, 2025	less than 1.0	No
Barium	February 25, 2025	20	No
Boron	February 25, 2025	21	No
Cadmium	February 25, 2025	less than 0.090	No
Chromium	February 25, 2025	less than 5.0	No
*Lead	August 12, 2025	See Summary Below	No
Mercury	February 25, 2025	less than 0.1 mg/L	No
Selenium	February 25, 2025	less than 2.0	No
Sodium	January 7, 2025	15000	No
Uranium	February 25, 2025	0.34	No
Fluoride	January 7, 2025	0.69 mg/L	No
Nitrite	November 18, 2025	less than 1.0	No
Nitrate	November 18, 2025	Less than 10.0	No

**\*Summary of Lead testing under Schedule 15.1 during this reporting period**

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

<u>Location Type</u>	<u>Number of Samples</u>	<u>Range of Lead Results</u> (minimum to maximum)	<u>Number of Exceedances</u>
Plumbing	0	Not applicable	Not applicable
Distribution	20	All results were less than 0.0005 milligrams per litre	0

The City of Markham was granted relief from regulatory requirements contained in Schedule 15.1 of O. Reg. 170/03. This includes no lead testing from plumbing servicing of private residences, no lead testing from plumbing servicing non-residential buildings and reduced lead testing from distribution locations (10 per period). This reduced sampling was granted for the two periods of sampling in 2023, December 15, 2022 to April 15, 2023 and June 15, 2023 to October 15, 2023.

**Summary of Organic parameters sampled during this reporting period or the most recent sample results**

<u>Parameter</u>	<u>Sample Date</u>	<u>Result Value</u> (measured in micrograms per litre)	<u>Exceedance</u>
Alachlor	February 25, 2025	less than 0.50	No
Atrazine + Metabolites	February 25, 2025	less than 1.0	No



Azinphos-methyl (Guthion)	February 25, 2025	less than 2.0	No
Benzene	February 25, 2025	less than 0.10	No
Benzo(a)pyrene	February 25, 2025	less than 0.0050	No
Bromoxynil	February 25, 2025	less than 0.50	No
Carbaryl	February 25, 2025	less than 5.0	No
Carbofuran	February 25, 2025	less than 5.0	No
Carbon Tetrachloride	February 25, 2025	less than 0.10	No
Chlorpyrifos	February 25, 2025	less than 1.0	No
Diazinon	February 25, 2025	less than 1.0	No
Dicamba	February 25, 2025	less than 1.0	No
1,2-Dichlorobenzene	February 25, 2025	less than 0.20	No
1,4-Dichlorobenzene	February 25, 2025	less than 0.20	No
1,2-Dichloroethane	February 25, 2025	less than 0.20	No
1,1-Dichloroethylene	February 25, 2025	less than 0.10	No
Dichloromethane	February 25, 2025	less than 0.50	No
2-4 Dichlorophenol	February 25, 2025	less than 0.25	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	February 25, 2025	less than 1.0	No
Diclofop-methyl	February 25, 2025	less than 0.90	No
Dimethoate	February 25, 2025	less than 2.5	No
Diquat	February 25, 2025	less than 7.0	No
Diuron	February 25, 2025	less than 10.0	No
Glyphosate	February 25, 2025	less than 10.0	No
<b><u>Parameter</u></b>	<b><u>Sample Date</u></b>	<b><u>Result Value</u></b> (measured in micrograms per litre)	<b><u>Exceedance</u></b>
Haleoacetic Acids (HAA)	Running Annual Average of Quarterly Results	5.0	No
Malathion	February 25, 2025	less than 5.0	No
Metolachlor	February 25, 2025	less than 0.5	No
Metribuzin	February 25, 2025	less than 5.0	No
Monochlorobenzene	February 25, 2025	less than 0.10	No
Nitrosodimethylamine (NDMA)	Running Annual Average of Quarterly Results	0.00090	No
Paraquat	February 25, 2025	less than 1.0	No
Pentachlorophenol	February 25, 2025	less than 0.50	No
Phorate	February 25, 2025	less than 0.50	No
Picloram	February 25, 2025	less than 5.0	No
Polychlorinated Biphenyls(PCB)	February 25, 2025	less than 0.05	No
Prometryne	February 25, 2025	less than 0.25	No
Simazine	February 25, 2025	less than 1.0	No
THM (NOTE: show latest annual average)	Running Annual Average of Quarterly Results	12.34	No



Terbufos	February 25, 2025	less than 0.50	No
Tetrachloroethylene	February 25, 2025	less than 0.10	No
2,3,4,6-Tetrachlorophenol	February 25, 2025	less than 0.50	No
Triallate	February 25, 2025	less than 1.0	No
Trichloroethylene	February 25, 2025	less than 0.10	No
2,4,6-Trichlorophenol	February 25, 2025	less than 0.05	No
Trifluralin	February 25, 2025	less than 1.0	No
Vinyl Chloride	February 25, 2025	less than 0.20	No
MCPA	February 25, 2025	less than 10.0	No

**List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.**

Parameter	Result Value	Unit of Measure	Date of Sample
None			