



Attachment 'A'

The Ontario Ministry of the Environment, Conservation and Parks
Markham Distribution System
Drinking Water Inspection Report
January 30, 2024

Dated: April 30, 2024

Ministry of Environment,
Conservation and Parks
*Drinking Water and Environmental
Compliance Division*

Ministère de l'Environnement,
de la Protection de la nature et des Parcs
*Division de la conformité en matière d'eau
potable et d'environnement*



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File: SI-YO-MA-TO-540
Markham Distribution System

March 1, 2024

City of Markham
101 Town Centre Blvd
Markham, On
L3R 9W3

Attention: Eddy Wu, Director of Environmental Services

**RE: January 30, 2024 Inspection – Markham Distribution System Inspection
Report, # 220004162**

Enclosed is a copy of the inspection report prepared for the Markham Distribution System under the Ministry's focused inspection protocol to assess compliance with Safe Drinking Water Act legislation. The report is based on conditions encountered at the time of inspection, and subsequent follow-up.

“Actions Required” are linked to incidents of non-compliance with regulatory requirements contained within the Act, a regulation, or site-specific approvals, licenses, permits, orders or instructions. Such violations could result in the issuance of mandatory abatement instruments including Orders, tickets, penalties, or referrals to the ministry's Investigations and Enforcement Branch.

“Recommended Actions” convey information that the owner or operating authority should consider implementing in order to advance efforts already in place to address such issues as emergency preparedness, the availability of information to consumers, and conformance with existing and emerging industrial standards. Please note that items which appear as recommended actions do not, in themselves, constitute violations.

Section 19 of the Safe Drinking Water Act (Standard of Care) creates several obligations for individuals who exercise decision-making authority over municipal drinking water

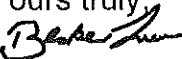
systems. Please be aware that the Ministry has encouraged such individuals, particularly municipal councillors, to take steps to be better informed about the drinking water systems over which they have decision-making authority. These steps could include asking for a copy of this inspection report and a review of its findings. Further information about Section 19 can be found in "Taking Care of Your Drinking Water: A guide for members of municipal council" found under "Resources" on the Drinking Water Ontario website at www.ontario.ca/drinkingwater.

In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (I&E) Secretariat and advice of internal/external risk experts.

The Inspection Summary Rating Record (IRR) provides the Ministry, the system owner and the local Public Health Unit with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspectors' Annual Report.

Please note that due to a change in IT systems, the IRR cannot be generated at the same time as the inspection report. The IRR will be sent separately and prior to any public release (typically within 1-2 month of the completion of the inspection).

I would like to thank the City of Markham staff for the assistance afforded to me during this compliance assessment. If you have any questions or concerns please contact myself or Lorilyn Wild, Water Compliance Supervisor, Central Region at (647) 973-1714.

Yours truly,


Blake Turner
Water Inspector | Provincial Officer Badge #1909
Drinking Water and Environmental Compliance Division
Ministry of the Environment Conservation and Parks
289-980-0694

ec:

Helena Frantzke, Water Quality Coordinator, City of Markham
Peter Solymos, Water Quality Supervisor, City of Markham
Don Ford, Senior Manager, Hydrogeology, Toronto and Region Conservation Authority
Demetra Koros, Water Supervisor, Ministry of the Environment Conservation and Parks
York Public Health Inspectors



Ministry of the Environment, Conservation and Parks
Drinking Water Inspection

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MARKHAM DISTRIBUTION SYSTEM
Physical Address: 101 TOWN CENTRE BLVD
N, , MARKHAM, ON L3R
9W3

INSPECTION REPORT

System Number: 220004162
Entity: THE CORPORATION OF THE
CITY OF MARKHAM
Inspection Start Date: January 22, 2024
Inspection End Date: February 22, 2024
Inspected By: Blake Turner
Badge #: 1909
Inspected By: Demetra Koros
Badge #: 1568

(signature)

NON-COMPLIANCE

The following item(s) have been identified as non-compliance, based on a "No" response captured for a legislative question(s). For additional information on each question see the Inspection Details section of the report.

Ministry Program: DRINKING WATER | **Regulated Activity:** DW Municipal Residential

Item	Question	Compliance Response/Corrective Action(s)
NC-1	<p>Question ID: DWMR1104000</p> <p>Were all required verbal notifications of adverse water quality incidents immediately provided as per O. Reg. 170/03 16-6?</p>	<p>All required notifications of adverse water quality incidents were not immediately provided as per O. Reg. 170/03 16-6.</p> <p>Schedule 16-6 of O.Reg. 170/03 requires immediate reporting of Schedule 16-4 observations to be given by speaking in person or by telephone. The immediate report must be given to the medical officer of health, and to the Ministry.</p> <p>Schedule 16-4 of O.Reg. 170/03 requires the system to report other observations, if they believe water directed to users has not been disinfected in accordance with the Procedure for Disinfection of Drinking Water in Ontario.</p> <p>The system reported a watermain break that met the criteria of a Schedule 16-4 reportable observation. The system provided an immediate notification to the Ministry, but failed to notify the medical officer of health immediately after the observation was made.</p> <p>The system provided an updated 16b Response to Adverse Water Quality Test Results SOP, as well as a new notification checklist to be used in adverse water quality incident response. Operators have been trained to use both documents in response to an adverse water quality incident. The proactive work the system has completed suffices all required actions that would be issued. The system is encouraged to continually educate and train operators and continue with the after action review process.</p>

RECOMMENDATIONS

This should not be construed as a confirmation of full conformance with all potential applicable BMPs. These inspection findings are limited to the components and/or activities that were assessed, and the legislative framework(s) that were applied. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

If you have any questions related to this inspection, please contact the signed Provincial Officer.

INSPECTION DETAILS

This section includes all questions that were assessed during the inspection.

Ministry Program: DRINKING WATER | **Regulated Activity:** DW Municipal Residential

Question ID	DWMR1001000	Question Type	Information
<p>Legislative Requirement(s): Not Applicable</p> <p>Question: What was the scope of this inspection?</p> <p>Compliance Response(s)/Corrective Action(s)/Observation(s): The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices.</p> <p>This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O. Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.</p> <p>This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.</p> <p>This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O. Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.</p> <p>This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.</p> <p>An unannounced inspection of the Markham Distribution System (the System) commenced on January 22, 2023 with a review of documents followed by a site visit of the operations centre on January 30, 2023. The System serves an estimated population of 356,060. The System is categorized as a Large Municipal Residential System, owned and operated by the City of Markham (the City) and operates under the Drinking Water System (DWS) number 220004162.</p>			

The City receives treated water from the City of Toronto and the Region of Peel. York Region provides water storage, pressure boosting, and acts as a wholesaler for the water to the System. The City of Toronto, Region of Peel and York Region treatment and distribution systems are inspected separately from the Markham Distribution System.

Data was reviewed for the inspection period of January 27, 2023 to January 22, 2024.

Documents reviewed in association with this report included, but were not limited to:

1. MECP Municipal Drinking Water License (MDWL) number 021-101, issue 10 dated May 20, 2021
2. MECP Drinking Water Permit (DWWP) number 021-201, issue 4 dated July 22, 2019

Question ID	DWMMR1000000	Question Type	Information
Legislative Requirement(s): Not Applicable			
Question: Does this drinking water system provide primary disinfection?			
Compliance Response(s)/Corrective Action(s)/Observation(s): This drinking water system provides for only secondary disinfection and distribution of water. Primary disinfection is undertaken by another regulated drinking water system which provides treated water to this drinking water system.			

Question ID	DWMMR1018000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Has the owner ensured that all equipment is installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.			
Schedule A of the DWWP indicates that watermains in the distribution system comprise those set out in the December 2018 "Distribution System Map – Markham Distribution System" document.			

Question ID	DWMMR1020000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			

Question:

Is the owner/operating authority able to demonstrate that, when required during the inspection period, Form 1 documents were prepared in accordance with their Drinking Water Works Permit?

Compliance Response(s)/Corrective Action(s)/Observation(s):

The owner/operating authority was in compliance with the requirement to prepare Form 1 documents as required by their Drinking Water Works Permit during the inspection period.

There were nine (9) Form 1 documents (Record of Watermains Authorized as Future Alteration) prepared for the System during the inspection period. These were for the addition of new watermains and watermain replacement.

Question ID	DWWMR1025000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Were all parts of the drinking water system that came in contact with drinking water (added, modified, replaced or extended) disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All parts of the drinking water system were disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit.			
City of Markham staff utilize the Operations and Maintenance (O&M) 4.1.00 Revision 13.0, dated February 26, 2021 for Watermain Repairs and/ or Modifications. Watermain break and commissioning records showed that the disinfection procedures were followed for the inspection period.			

Question ID	DWWMR1027000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Does the owner have evidence indicating that all chemicals and materials which come in contact with water within the drinking water system have met all applicable AWWA and ANSI standards in accordance with the DWWP and MDWL issued under Part V of the SDWA?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner had evidence indicating that all chemicals and materials that come in contact with water within the drinking water system met the AWWA and ANSI standards in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.			

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Question ID	DWMR1033000	Question Type	Legislative
<p>Legislative Requirement(s): SDWA O. Reg. 170/03 7-2 (3); SDWA O. Reg. 170/03 7-2 (4);</p> <p>Question: Is the secondary disinfectant residual measured as required for the large municipal residential distribution system?</p> <p>Compliance Response(s)/Corrective Action(s)/Observation(s): The secondary disinfectant residual was measured as required for the large municipal residential distribution system.</p> <p>Distribution chlorine residuals are measured by two (2) continuous on-line analysers. Additionally, operations staff collect grab samples using hand-held units when conducting microbiological sampling, weekly dead-end hydrant flushing, and when there are watermain breaks.</p>			

Question ID	DWMR1049000	Question Type	BMP
<p>Legislative Requirement(s): Not Applicable</p> <p>Question: Do records confirm that disinfectant residuals are routinely checked at the extremities and dead ends of the distribution system?</p> <p>Compliance Response(s)/Corrective Action(s)/Observation(s): Records confirmed that disinfectant residuals were routinely checked at the extremities and dead ends of the distribution system.</p>			

Question ID	DWMR1036000	Question Type	Legislative
<p>Legislative Requirement(s): SDWA O. Reg. 170/03 6-7 (1);</p> <p>Question: Where continuous monitoring equipment is not used for chlorine residual analysis, are samples tested using an acceptable portable device?</p> <p>Compliance Response(s)/Corrective Action(s)/Observation(s): Samples for chlorine residual analysis were tested using an acceptable portable device.</p>			

Question ID	DWMR1035000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10;			
Question: Are operators examining continuous monitoring test results and are they examining the results within 72 hours of the test?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.			
The Standard Operating Procedure (SOP) O&M 5.6.00 Continuous Chlorine Analyzer - Monitoring, last revised October 31, 2022 was provided for review. This procedure details that the Waterworks Supervisors, or back up person, are to review the data results from the continuous chlorine analyzers within 72 hours and sign off on the report. Documentation provided, indicated that test results are examined and reviewed every 72 hours.			

Question ID	DWMR1038000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 6-5 (1)1-4;			
Question: Is continuous monitoring equipment that is being utilized to fulfill O. Reg. 170/03 requirements performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.			
Two (2) continuous chlorine analyzers are used to monitor the secondary disinfection residual in the system. Results, as well as the date, time, and location of the test are recorded every two minutes.			

Question ID	DWMR1037000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10; SDWA O. Reg. 170/03 6-5 (1.1);			
Question: Are all continuous monitoring equipment utilized for sampling and testing required by O. Reg. 170/03, or MDWL or DWWP or order, equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6?			

Compliance Response(s)/Corrective Action(s)/Observation(s):

All continuous monitoring equipment utilized for sampling and testing required by O. Reg. 170/03, or Municipal Drinking Water Licence or Drinking Water Works Permit or order, were equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6.

The minimum combined chlorine residual to meet secondary disinfection requirements in the system is 0.25 mg/L. The SOP for Continuous Chlorine Analyzer Monitoring, stipulates the alarm setpoints, there are four set points described in this SOP.. In the event of a combined chlorine residual reading that is ≤ 0.40 mg/L, ≥ 2.10 mg/L, ≤ 0.25 mg/L, or ≥ 3.00 mg/L; or a loss of communication (e.g. loss of power) at either of the continuous analyzers in the system an alarm is sent to the SCADA standby phone, and all Waterworks Supervisor's cell phones.

Question ID	DWMMR1040000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10;			
Question: Are all continuous analysers calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.			
Certificates of Instrument Performance were provided for review as part of the inspection. ClearTech completed calibration certificates for handheld analyzers. Continuous analyzers for chlorine were last serviced and calibrated on July 21, 2023. Review of chlorine residual records revealed that continuous analyzers are verified by operators every 2-3 days. Adjustments are made to the analyzers as needed.			

Question ID	DWMMR1108000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10; SDWA O. Reg. 170/03 6-5 (1.1);			
Question: Where continuous monitoring equipment used for the monitoring of free chlorine residual, total chlorine residual, combined chlorine residual or turbidity, required by O. Reg. 170/03, an Order, MDWL, or DWWP issued under Part V, SDWA, has triggered an alarm or an automatic shut-off, did a qualified person respond in a timely manner and take appropriate actions?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Where required continuous monitoring equipment used for the monitoring of chlorine residual			

and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.

Question ID	DWMR1099000	Question Type	Information
Legislative Requirement(s): Not Applicable			
Question: Do records show that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O. Reg. 169/03)?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O. Reg. 169/03).			
During the inspection review period there were 14 distribution samples that resulted in exceedances of the Ontario Drinking Water Quality Standards.			

Question ID	DWMR1081000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 10-2 (1); SDWA O. Reg. 170/03 10-2 (2); SDWA O. Reg. 170/03 10-2 (3);			
Question: For LMR systems, are all microbiological water quality monitoring requirements for distribution samples being met?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All microbiological water quality monitoring requirements prescribed by legislation for distribution samples in a large municipal residential system were being met.			
Schedule 10-2 of O. Reg. 170/03 requires the System to collect at least 100 distribution samples, plus one additional sample for every 10,000 people served by the system, every month with at least three samples taken each week. The system serves a population of 356,060 and collects a total of 136 distribution samples per month. The distribution samples are to be tested for E. Coli and total coliforms. Additionally, 25% of the samples collected are required to be tested heterotrophic plate count.			

Question ID	DWMR1096000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 6-3 (1);			

Question:

Do records confirm that chlorine residual tests are being conducted at the same time and at the same location that microbiological samples are obtained?

Compliance Response(s)/Corrective Action(s)/Observation(s):

Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.

Question ID	DWMR1086000	Question Type	Legislative
<p>Legislative Requirement(s): SDWA O. Reg. 170/03 13-6.1 (1); SDWA O. Reg. 170/03 13-6.1 (2); SDWA O. Reg. 170/03 13-6.1 (3); SDWA O. Reg. 170/03 13-6.1 (4); SDWA O. Reg. 170/03 13-6.1 (5); SDWA O. Reg. 170/03 13-6.1 (6);</p> <p>Question: Are all haloacetic acid water quality monitoring requirements prescribed by legislation conducted within the required frequency and at the required location?</p> <p>Compliance Response(s)/Corrective Action(s)/Observation(s): All haloacetic acid water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.</p> <p>Schedule 13-6 stipulates that one distribution sample is to be taken quarterly, from a point that is likely to have an elevated potential for the formation of haloacetic acids. Review of sample records confirmed that samples were collected at an appropriate location in the distribution system, and on the following dates: February 7, 2023, June 6, 2023, August 30, 2023, and, November 30, 2023.</p>			

Question ID	DWMR1087000	Question Type	Legislative
<p>Legislative Requirement(s): SDWA O. Reg. 170/03 13-6 (1); SDWA O. Reg. 170/03 13-6 (2); SDWA O. Reg. 170/03 13-6 (3); SDWA O. Reg. 170/03 13-6 (4); SDWA O. Reg. 170/03 13-6 (5); SDWA O. Reg. 170/03 13-6 (6);</p> <p>Question: Have all trihalomethane water quality monitoring requirements prescribed by legislation been conducted within the required frequency and at the required location?</p> <p>Compliance Response(s)/Corrective Action(s)/Observation(s): All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.</p> <p>Schedule 13-6 stipulates that one distribution sample is to be taken quarterly, from a point</p>			

that is likely to have an elevated potential for the formation of trihalomethanes. Review of sample records confirmed that samples were collected at an appropriate location in the distribution system, and on the following dates:

February 7, 2023,
June 6, 2023,
August 30, 2023, and,
November 30, 2023.

Question ID	DWMMR1092000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 6-2;			
Question: Has the owner ensured that water samples are taken at the prescribed location?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner ensured that water samples were taken at the prescribed location.			

Question ID	DWMMR1094000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Are all water quality monitoring requirements imposed by the MDWL and DWWP being met?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met.			
The MDWL states that nitrosodimethylamine (NDMA) is to be sampled quarterly from the farthest point in the distribution system.			

Question ID	DWMMR1095000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 15.1-10; SDWA O. Reg. 170/03 15.1-4 (1); SDWA O. Reg. 170/03 15.1-5 (1); SDWA O. Reg. 170/03 15.1-5 (10); SDWA O. Reg. 170/03 15.1-5 (11); SDWA O. Reg. 170/03 15.1-5 (12); SDWA O. Reg. 170/03 15.1-5 (2); SDWA O. Reg. 170/03 15.1-5 (3); SDWA O. Reg. 170/03 15.1-5 (4); SDWA O. Reg. 170/03 15.1-5 (5); SDWA O. Reg. 170/03 15.1-5 (6); SDWA O. Reg. 170/03 15.1-5 (7); SDWA O. Reg. 170/03 15.1-5 (8); SDWA O. Reg. 170/03 15.1-5 (9); SDWA O. Reg. 170/03 15.1-7 (1); SDWA O. Reg. 170/03 15.1-7 (2); SDWA O. Reg. 170/03 15.1-7 (3); SDWA O. Reg. 170/03 15.1-7 (4); SDWA O. Reg. 170/03 15.1-9 (1); SDWA O. Reg. 170/03 15.1-9 (2); SDWA O. Reg. 170/03 15.1-9 (3); SDWA O. Reg. 170/03			

15.1-9 | (4); SDWA | O. Reg. 170/03 | 15.1-9 | (5); SDWA | O. Reg. 170/03 | 15.1-9 | (6); SDWA | O. Reg. 170/03 | 15.1-9 | (7); SDWA | O. Reg. 170/03 | 15.1-9 | (8); SDWA | O. Reg. 170/03 | 15.1-9 | (9);

Question:

Have all lead sampling requirements prescribed by Schedule 15.1 of O. Reg. 170/03 been met?

Compliance Response(s)/Corrective Action(s)/Observation(s):

All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.

The system possesses Lead Sample Regulatory Relief under Schedule D of their MDWL. The system has taken the required amount of lead samples as per 1.3 Schedule D of the MDWL.

Question ID	DWMR1098000	Question Type	Legislative
<p>Legislative Requirement(s): SDWA O. Reg. 170/03 13 (1); SDWA O. Reg. 170/03 13 (2); SDWA O. Reg. 170/03 13 (3);</p> <p>Question: Has the owner indicated that the required records are kept and will be kept for the required time period?</p> <p>Compliance Response(s)/Corrective Action(s)/Observation(s): The owner indicated that the required records are kept and will be kept for the required time period.</p> <p>The owner has a control of records document that outlines the required retention period of prescribed documents. The retention document is in compliance with the requirements outlined in Schedule 13 of O.Reg. 170/03.</p>			

Question ID	DWMR1101000	Question Type	Legislative
<p>Legislative Requirement(s): SDWA O. Reg. 170/03 17-1; SDWA O. Reg. 170/03 17-10 (1); SDWA O. Reg. 170/03 17-11; SDWA O. Reg. 170/03 17-12; SDWA O. Reg. 170/03 17-13; SDWA O. Reg. 170/03 17-14; SDWA O. Reg. 170/03 17-2; SDWA O. Reg. 170/03 17-3; SDWA O. Reg. 170/03 17-4; SDWA O. Reg. 170/03 17-5; SDWA O. Reg. 170/03 17-6; SDWA O. Reg. 170/03 17-9;</p> <p>Question: For LMR Systems, have corrective actions (as per Schedule 17 of O. Reg. 170/03) been taken to address adverse conditions, including any other steps as directed by the Medical Officer of Health?</p>			

Compliance Response(s)/Corrective Action(s)/Observation(s):

Corrective actions (as per Schedule 17), including any other steps that were directed by the Medical Officer of Health, had been taken to address adverse conditions.

During the inspection review period, there were Nineteen (19) adverse water quality incidents (AWQIs) reported.

One (1) AWQI was due to a category 2 watermain break that potentially directed untreated water to users. The break was repaired, the system flushed and disinfection was restored. Samples were taken and met the Ontario Drinking Water Quality Standards (ODWQS).

Four (4) AWQIs were due to a chlorine residual being below the regulatory limit. The residual was restored through flushing.

Fourteen (14) AWQIs were due to test results not meeting the microbiological standards of the Ontario Drinking Water Quality Standards (ODWQS) in the distribution system. Resamples were collected in each incident until two sets met the ODWQS.

Question ID	DWMR1104000	Question Type	Legislative
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Legislative Requirement(s):

SDWA | O. Reg. 170/03 | 16-6 | (1); SDWA | O. Reg. 170/03 | 16-6 | (2); SDWA | O. Reg. 170/03 | 16-6 | (3); SDWA | O. Reg. 170/03 | 16-6 | (3.1); SDWA | O. Reg. 170/03 | 16-6 | (3.2); SDWA | O. Reg. 170/03 | 16-6 | (4); SDWA | O. Reg. 170/03 | 16-6 | (5); SDWA | O. Reg. 170/03 | 16-6 | (6);

Question:

Were all required verbal notifications of adverse water quality incidents immediately provided as per O. Reg. 170/03 16-6?

Compliance Response(s)/Corrective Action(s)/Observation(s):

All required notifications of adverse water quality incidents were not immediately provided as per O. Reg. 170/03 16-6.

Schedule 16-6 of O.Reg. 170/03 requires immediate reporting of Schedule 16-4 observations to be given by speaking in person or by telephone. The immediate report must be given to the medical officer of health, and to the Ministry.

Schedule 16-4 of O.Reg. 170/03 requires the system to report other observations, if they believe water directed to users has not been disinfected in accordance with the Procedure for Disinfection of Drinking Water in Ontario.

The system reported a watermain break that met the criteria of a Schedule 16-4 reportable observation. The system provided an immediate notification to the Ministry, but failed to notify the medical officer of health immediately after the observation was made.

The system provided an updated 16b Response to Adverse Water Quality Test Results SOP, as well as a new notification checklist to be used in adverse water quality incident response. Operators have been trained to use both documents in response to an adverse water quality incident. The proactive work the system has completed suffices all required actions that would be issued. The system is encouraged to continually educate and train operators and continue with the after action review process.

Question ID	DWMR1105000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 16-7 (1); SDWA O. Reg. 170/03 16-7 (2); SDWA O. Reg. 170/03 16-7 (3); SDWA O. Reg. 170/03 16-7 (4); SDWA O. Reg. 170/03 16-7 (5);			
Question: Were all required written notices of adverse water quality incidents provided as per O. Reg. 170/03 16-7?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All required written notices of adverse water quality incidents were provided as per O. Reg. 170/03 16-7.			

Question ID	DWMR1106000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 16-9 (1); SDWA O. Reg. 170/03 16-9 (2);			
Question: Were all required written notices of issue resolution provided as per O. Reg. 170/03 16-9?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All required written notices of issue resolution were provided as per O. Reg. 170/03 16-9.			

Question ID	DWMR1110000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 11 (6);			
Question: Was an Annual Report containing the required information prepared by February 28 of the following year?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The Annual Report containing the required information was prepared by February 28th of the following year.			

Question ID	DWMR1056000	Question Type	Information
Legislative Requirement(s): Not Applicable			
Question: Has the donor provided an Annual Report to the owner of this receiver drinking water system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The donor provided an Annual Report to the owner of this receiver drinking water system.			

Question ID	DWMR1111000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 22-2 (1); SDWA O. Reg. 170/03 22-2 (2); SDWA O. Reg. 170/03 22-2 (3); SDWA O. Reg. 170/03 22-2 (4);			
Question: Have Summary Reports for municipal council been completed on time, include the required content, and distributed in accordance with the regulatory requirements?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.			

Question ID	DWMR1045000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Has the owner updated the document describing the distribution components within 12 months of completion of alterations to the system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner had up-to-date documents describing the distribution components as required.			

Question ID	DWMR1046000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Is there a backflow prevention program, policy and/or bylaw in place that addresses cross			

connections and connections to high hazard facilities?

Compliance Response(s)/Corrective Action(s)/Observation(s):

There was a backflow prevention program, policy and/or bylaw in place.

Question ID	DWMMR1053000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Is the Owner able to maintain proper pressures in the distribution system and is pressure monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner was able to maintain proper pressures in the distribution system and pressure was monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate.			

Question ID	DWMMR1048000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Has the owner implemented a program for the flushing of watermains as per industry standards?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner had implemented a program for the flushing of watermains as per industry standards.			

Question ID	DWMMR1050000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Is there a program in place for inspecting and exercising valves?			
Compliance Response(s)/Corrective Action(s)/Observation(s): There was a program in place for inspecting and exercising valves.			

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Question ID	DWMMR1051000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Is there a program in place for inspecting and operating hydrants?			
Compliance Response(s)/Corrective Action(s)/Observation(s): There was a program in place for inspecting and operating hydrants.			

Question ID	DWMMR1052000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Is there a by-law or policy in place limiting access to hydrants?			
Compliance Response(s)/Corrective Action(s)/Observation(s): There was a by-law or policy in place limiting access to hydrants.			

Question ID	DWMMR1058000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 28;			
Question: Do operators and maintenance personnel have ready access to operations and maintenance manuals?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Operators and maintenance personnel had ready access to operations and maintenance manuals. Operations and maintenance manuals are accessed via operators field tablets.			

Question ID	DWMMR1059000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 28;			
Question: Do the operations and maintenance manuals contain plans, drawings and process			

descriptions sufficient for the safe and efficient operation of the system?

Compliance Response(s)/Corrective Action(s)/Observation(s):

The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.

Maps depicting the City of Markham micro sampling locations, and the Markham water distribution system, including valve and hydrant locations were provided for review as part of the inspection. An overview map of the Markham Distribution System was reviewed, dated January 2024. Operators have access to up-to-date versions of maps via their field tablets.

Question ID	DWMR1060000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Do the operations and maintenance manuals meet the requirements of the DWWP and MDWL issued under Part V of the SDWA?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.			
Condition 16.0 of Schedule B of the MDWL, lists the items to be included in the operations and maintenance manual.			

Question ID	DWMR1061000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 27 (1); SDWA O. Reg. 128/04 27 (2); SDWA O. Reg. 128/04 27 (3); SDWA O. Reg. 128/04 27 (4); SDWA O. Reg. 128/04 27 (5); SDWA O. Reg. 128/04 27 (6); SDWA O. Reg. 128/04 27 (7);			
Question: Are logbooks properly maintained and contain the required information?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Logbooks were properly maintained and contained the required information.			

Question ID	DWMR1062000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 7-5;			

Question:

Do records or other record keeping mechanisms confirm that operational testing not performed by continuous monitoring equipment is being done by a certified operator, water quality analyst, or person who meets the requirements of O. Reg. 170/03 7-5?

Compliance Response(s)/Corrective Action(s)/Observation(s):

Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.

Question ID	DWMMR1063000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 6-10 (1);			
Question: For every required operational test and for every required sample, is a record made of the date, time, location, name of the person conducting the test and result of the test?			
Compliance Response(s)/Corrective Action(s)/Observation(s): For every required operational test and every required sample, a record was made of the date, time, location, name of the person conducting the test and result of the test.			

Question ID	DWMMR1064000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 26 (2);			
Question: Did the operator-in-charge ensure that records were maintained of all adjustments made to the processes within his or her responsibility?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The operator-in-charge ensured that records were maintained of all adjustments made to the processes within his or her responsibility.			

Question ID	DWMMR1065000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 27 (6);			
Question: Are logs and other record keeping mechanisms available for at least five (5) years?			

Compliance Response(s)/Corrective Action(s)/Observation(s):

Logs or other record keeping mechanisms were available for at least five (5) years.

Question ID	DWMMR1067000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Are clean-up equipment and materials in place for the clean up of spills?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Clean-up equipment and materials were in place for the clean up of spills.			
Spill kits and clean-up equipment and supplies are located in the the facility operations centre.			

Question ID	DWMMR1071000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Has the owner provided security measures to protect components of the drinking water system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner had provided security measures to protect components of the drinking water system.			
The City of Markham has provided multiple forms of security to operations building of the system. The building possess internal and external cameras. Illegal entry and alarms are registered within the building security system. All facility doors are locked internally and a pass key is required for entry to the main entrance of the building.			

Question ID	DWMMR1072000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Has the owner and/or operating authority undertaken efforts to promote water conservation and reduce water losses in their system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner and/or operating authority undertook efforts to promote water conservation and			

reduce water losses in their system.

Question ID	DWMMR1073000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 23 (1);			
Question: Has the overall responsible operator been designated for all subsystems which comprise the drinking water system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The overall responsible operator had been designated for each subsystem.			

Question ID	DWMMR1078000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 23 (1); SDWA O. Reg. 128/04 23 (2); SDWA O. Reg. 128/04 23 (4); SDWA O. Reg. 128/04 23 (6); SDWA O. Reg. 128/04 23 (7);			
Question: In instances where the overall responsible operator was unable to act, was an adequately certified operator designated to act in place of the overall responsible operator?			
Compliance Response(s)/Corrective Action(s)/Observation(s): An adequately licenced operator was designated to act in place of the overall responsible operator when the overall responsible operator was unable to act.			

Question ID	DWMMR1074000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 25 (1);			
Question: Have operators-in-charge been designated for all subsystems which comprise the drinking water system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Operators-in-charge had been designated for all subsystems which comprise the drinking water system.			

Question ID	DWMR1075000	Question Type	Legislative
<p>Legislative Requirement(s): SDWA O. Reg. 128/04 22;</p> <p>Question: Do all operators possess the required certification?</p> <p>Compliance Response(s)/Corrective Action(s)/Observation(s): All operators possessed the required certification.</p>			

Question ID	DWMR1076000	Question Type	Legislative
<p>Legislative Requirement(s): SDWA O. Reg. 170/03 1-2 (2);</p> <p>Question: Do only certified operators make adjustments to the treatment equipment?</p> <p>Compliance Response(s)/Corrective Action(s)/Observation(s): Only certified operators made adjustments to the treatment equipment.</p>			



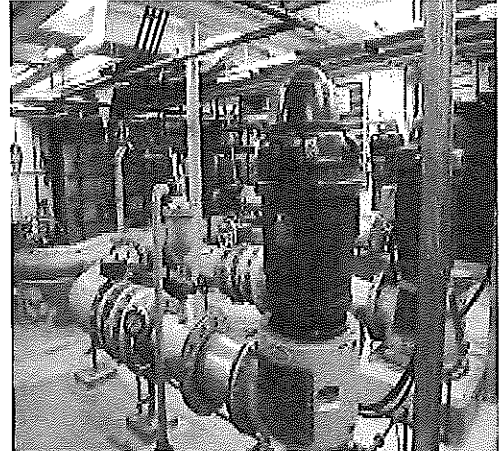
**APPENDIX A
STAKEHOLDER APPENDIX**

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles below or use your web browser to search for their titles. Contact the Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/page/drinking-water



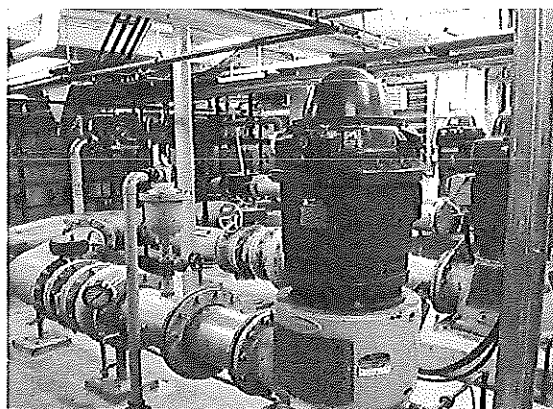
Click on the publication below to access it

- [Drinking Water System Profile Information Form - 012-2149E](#)
- [Laboratory Services Notification Form – 012-2148E](#)
- [Adverse Test Result Notification Form – 012-4444E](#)
- [Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils](#)
- [Procedure for Disinfection of Drinking Water in Ontario](#)
- [Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids](#)
- [Filtration Processes Technical Bulletin](#)
- [Ultraviolet Disinfection Technical Bulletin](#)
- [Guide for Applying for Drinking Water Works Permit Amendments, & License Amendments](#)
- [Certification Guide for Operators and Water Quality Analysts](#)
- [Training Requirements for Drinking Water Operator](#)
- [Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption](#)
- [Drinking Water System Contact List – 7128E01](#)
- [Ontario's Drinking Water Quality Management Standard - Pocket Guide](#)
- [2020 Watermain Disinfection Procedure](#)
- [List of Licensed Laboratories](#)

Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment. Pour accéder à ces documents en ligne, cliquez sur leur titre ci-dessous ou faites une recherche à l'aide de votre navigateur Web.

Communiquez avec le ministère au 1-866-793-2588, ou encore à waterforms@ontario.ca si vous avez des questions ou besoin d'aide.



Pour plus de renseignements sur l'eau potable en Ontario, consultez le site www.ontario.ca/fr/page/eau-potable

Cliquez sur la publication pour y accéder

- [Renseignements sur le profil du réseau d'eau potable - 012-2149F](#)
- [Avis de demande de services de laboratoire – 012-2148F](#)
- [Avis de résultats d'analyse insatisfaisants et de règlement des problèmes – 012-4444F](#)
- [Prendre soin de votre eau potable - Un guide destiné aux membres des conseils municipaux](#)
- [Marche à suivre pour désinfecter l'eau potable en Ontario](#)
- [Stratégies pour minimiser les trihalométhanes et les acides haloacétiques de sous-produits de désinfection](#)
- [Filtration Processes Technical Bulletin \(en anglais seulement\)](#)
- [Ultraviolet Disinfection Technical Bulletin \(en anglais seulement\)](#)
- [Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable](#)
- [Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable](#)
- [Exigences d'exploitant d'eau potable en formation](#)
- [Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption](#)
- [Liste des personnes-ressources du réseau d'eau potable](#)
- [L'eau potable en Ontario - Norme de gestion de la qualité - Guide de poche](#)
- [2020 Watermain Disinfection Procedure \(en anglais seulement\)](#)
- [Laboratoires autorisés](#)



**APPENDIX B
INSPECTION RATING RECORD**

Ministry of the Environment, Conservation and Parks - Inspection Summary Rating Record (Reporting Year - 2023-24)

DWS Name: MARKHAM DISTRIBUTION SYSTEM
DWS Number: 220004162
DWS Owner: THE CORPORATION OF THE CITY OF MARKHAM
Municipal Location: MARKHAM

Regulation: O.REG. 170/03
DWS Category: DW Municipal Residential
Type of Inspection: Detailed
Inspection Date: Jan-22-2024
Ministry Office: York Durham District Office

Maximum Risk Rating: 426

Inspection Module	Non Compliance Risk (X out of Y)
Certification and Training	0/49
Distribution System	0/4
Logbooks	0/30
Operations Manuals	0/42
Reporting & Corrective Actions	21/84
Treatment Processes	0/146
Water Quality Monitoring	0/71
Overall - Calculated	21/426

Inspection Risk Rating: 4.93%

Final Inspection Rating: 95.07%

Ministry of the Environment, Conservation and Parks - Detailed Inspection Rating Record (Reporting Year - 2023-24)

DWS Name: MARKHAM DISTRIBUTION SYSTEM
DWS Number: 220004162
DWS Owner Name: THE CORPORATION OF THE CITY OF MARKHAM
Municipal Location: MARKHAM

Regulation: O.REG. 170/03
DWS Category: DW Municipal Residential
Type of Inspection: Detailed
Inspection Date: Jan-22-2024
Ministry Office: York Durham District Office

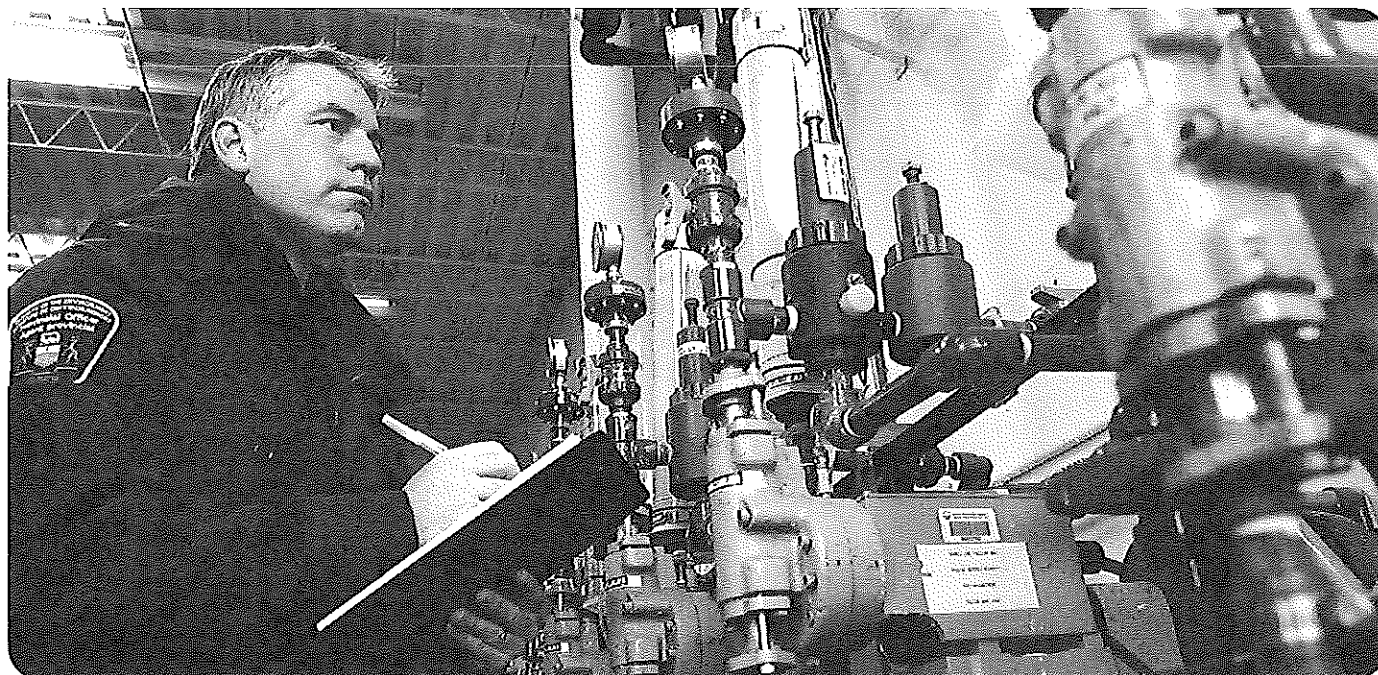
Non-Compliance Question(s)	Non Compliance Risk
Reporting & Corrective Actions	
Were all required verbal notifications of adverse water quality incidents immediately provided as per O. Reg. 170/03 16-6?	21
Overall - Total	21

Maximum Question Rating: 426

Inspection Risk Rating: 4.93%

FINAL INSPECTION RATING: 95.07%

APPLICATION OF THE RISK METHODOLOGY USED FOR MEASURING MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEM INSPECTION RESULTS



The Ministry of the Environment (MOE) has a rigorous and comprehensive inspection program for municipal residential drinking water systems (MRDWS). Its objective is to determine the compliance of MRDWS with requirements under the Safe Drinking Water Act and associated regulations. It is the responsibility of the municipal residential drinking water system owner to ensure their drinking water systems are in compliance with all applicable legal requirements.

This document describes the risk rating methodology, which has been applied to the findings of the Ministry's MRDWS inspection

results since fiscal year 2008-09. The primary goals of this assessment are to encourage ongoing improvement of these systems and to establish a way to measure this progress.

MOE reviews the risk rating methodology every three years.

The Ministry's Municipal Residential Drinking Water Inspection Protocol contains 15 inspection modules consisting of approximately 100 regulatory questions. Those protocol questions are also linked to definitive guidance that ministry inspectors use when conducting MRDWS inspections.

ontario.ca/drinkingwater

The questions address a wide range of regulatory issues, from administrative procedures to drinking water quality monitoring. The inspection protocol also contains a number of non-regulatory questions.

A team of drinking water specialists in the ministry assessed each of the inspection protocol regulatory questions to determine the risk (not complying with the regulation) to the delivery of safe drinking water. This assessment was based on established provincial risk assessment principles, with each question receiving a risk rating referred to as the Question Risk Rating. Based on the number of areas where a system is deemed to be non-compliant during the inspection, and the significance of these areas to administrative, environmental, and health consequences, a risk-based inspection rating is calculated by the ministry for each drinking water system.

It is important to be aware that an inspection rating less than 100 per cent does not mean the drinking water from the system is unsafe. It shows areas where a system's operation can improve. The ministry works with owners and operators of systems to make sure they know what they need to do to achieve full compliance.

The inspection rating reflects the inspection results of the specific drinking water system for the reporting year. Since the methodology is applied consistently over a period of years, it serves as a comparative measure both provincially and in relation to the individual system. Both the drinking water system and the public are able to track the performance over time, which encourages continuous improvement and allows systems to identify specific areas requiring attention.

The ministry's annual inspection program is an important aspect of our drinking water safety net. The ministry and its partners share a common commitment to excellence and we continue to work toward the goal of 100 per cent regulatory compliance.

Determining Potential to Compromise the Delivery of Safe Water

The risk management approach used for MRDWS is aligned with the Government of Ontario's Risk Management Framework. Risk management is a systematic approach to identifying potential hazards, understanding the likelihood and consequences of the hazards, and taking steps to reduce their risk if necessary and as appropriate.

The Risk Management Framework provides a formula to be used in the determination of risk:

$$\text{RISK} = \text{LIKELIHOOD} \times \text{CONSEQUENCE}$$

(of the consequence)

Every regulatory question in the inspection protocol possesses a likelihood value (L) for an assigned consequence value (C) as described in **Table 1** and **Table 2**.

Likelihood of Consequence Occurring	Likelihood Value
0% - 0.99% (Possible but Highly Unlikely)	L = 0
1 - 10% (Unlikely)	L = 1
11 - 49% (Possible)	L = 2
50 - 89% (Likely)	L = 3
90 - 100% (Almost Certain)	L = 4

Consequence	Consequence Value
Medium Administrative Consequence	C = 1
Major Administrative Consequence	C = 2
Minor Environmental Consequence	C = 3
Minor Health Consequence	C = 4
Medium Environmental Consequence	C = 5
Major Environmental Consequence	C = 6
Medium Health Consequence	C = 7
Major Health Consequence	C = 8

The consequence values (0 through 8) are selected to align with other risk-based programs and projects currently under development or in use within the ministry as outlined in **Table 2**.

The Question Risk Rating for each regulatory inspection question is derived from an evaluation of every identified consequence and its corresponding likelihood of occurrence:

- All levels of consequence are evaluated for their potential to occur
- Greatest of all the combinations is selected.

The Question Risk Rating quantifies the risk of non-compliance of each question relative to the others. Questions with higher values are those with a potentially more significant impact on drinking water safety and a higher likelihood of occurrence. The highest possible value would be 32 (4x8) and the lowest would be 0 (0x1).

Table 3 presents a sample question showing the risk rating determination process.

TABLE 3:							
Does the Operator in Charge ensure that the equipment and processes are monitored, inspected and evaluated?							
Risk = Likelihood × Consequence							
C=1	C=2	C=3	C=4	C=5	C=6	C=7	C=8
Medium Administrative Consequence	Major Administrative Consequence	Minor Environmental Consequence	Minor Health Consequence	Medium Environmental Consequence	Major Environmental Consequence	Medium Health Consequence	Major Health Consequence
L=4 (Almost Certain)	L=1 (Unlikely)	L=2 (Possible)	L=3 (Likely)	L=3 (Likely)	L=1 (Unlikely)	L=3 (Likely)	L=2 (Possible)
R=4	R=2	R=6	R=12	R=15	R=6	R=21	R=16

Application of the Methodology to Inspection Results

Based on the results of a MRDWS inspection, an overall inspection risk rating is calculated. During an inspection, inspectors answer the questions related to regulatory compliance and input their “yes”, “no” or “not applicable” responses into the Ministry’s Laboratory and Waterworks Inspection System (LWIS) database. A “no” response indicates non-compliance. The maximum number of regulatory questions asked by an inspector varies by: system (i.e., distribution, stand-alone); type of inspection (i.e., focused, detailed); and source type (i.e., groundwater, surface water).

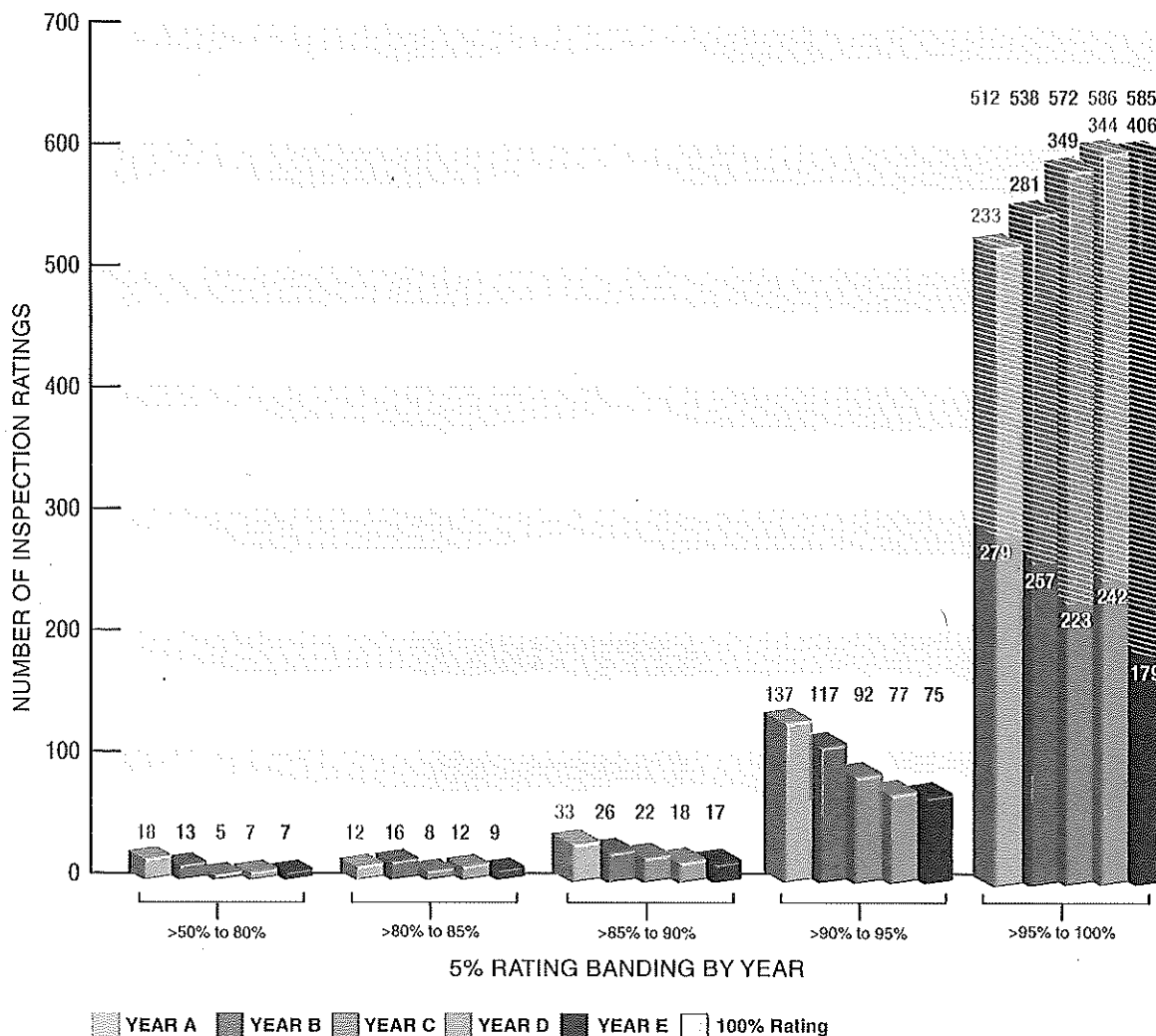
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

Application of the Methodology for Public Reporting

The individual MRDWS Total Inspection Ratings are published with the ministry's Chief Drinking Water Inspector's Annual Report.

Figure 1 presents the distribution of MRDWS ratings for a sample of annual inspections. Individual drinking water systems can compare against all the other inspected facilities over a period of inspection years.

Figure 1: Year Over Year Distribution of MRDWS Ratings



Reporting Results to MRDWS Owners/Operators

A summary of inspection findings for each system is generated in the form of an Inspection Rating Record (IRR). The findings are grouped into the 15 possible modules of the inspection protocol,

which would provide the system owner/operator with information on the areas where they need to improve. The 15 modules are:

- | | | | |
|-------------------------|---------------------------------|--|--|
| 1. Source | 5. Treatment Process Monitoring | 9. Logbooks | 13. Water Quality Monitoring |
| 2. Permit to Take Water | 6. Process Wastewater | 10. Contingency and Emergency Planning | 14. Reporting, Notification and Corrective Actions |
| 3. Capacity Assessment | 7. Distribution System | 11. Consumer Relations | 15. Other Inspection Findings |
| 4. Treatment Processes | 8. Operations Manuals | 12. Certification and Training | |

For further information, please visit www.ontario.ca/drinkingwater



APPENDIX C
Drinking Water System
Components

DWS Component Information Report for 220004162

as of 29-FEB-2024

Drinking Water System Profile Information

DWS #	220004162
MOE Assigned Name	Markham Distribution System
Category	LMRS
Regulation	O.REG 170/03
DWS Type	Distribution System
Source Type	Distribution
Address	101 Town Centre Boulevard North, Markham, Ontario, L3R 9W3, Canada
Region	Central Region
District	York-Durham District
Municipality	Markham
Public Health Unit	York Region Health Services Department

LWIS Component Name	LWIS Component Type	LWIS Component Sub-Type	Component Address	Comments
Markham Operation Office	Other	Other	8100 Warden Ave, Unit: Markham,	<p>The Markham Distribution System is owned and operated by the City of Markham, and receives treated water from the City of Toronto and the Region of Peel. The trunk transmission lines, pumping stations, and water storage facilities located within the City of Markham are owned and operated by the Region of York and the City of Toronto. The Region of York and the City of Toronto measures and monitors the distribution water flows and volumes directed to the City of Markham through the use of 22 flow meters located along the Richmond Hill, Vaughan, Stouffville, Toronto and Markham boundaries.</p> <p>The Markham Distribution System provides potable water to approximately 356,060 residents of Markham and consists of approximately 1,098 km of watermains, 8,873 hydrants, 11,242 valves, 107 sampling stations and 84,330 service connections.</p>