

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

Central Region

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**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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February 12, 2025

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

Attention: Eddy Wu, Director of Environmental Services

***RE: January 30, 2025 Inspection – Markham Distribution System Inspection  
Report, DWS # 220004162***

Please find enclosed the Ministry of the Environment, Conservation and Parks Inspection Report for the Markham Distribution System (Drinking Water System # 220004162) inspection. The compliance assessment took place on January 30, 2025.


The primary focus of this inspection was to confirm compliance with Ministry of the Environment, Conservation and Parks legislation and control documents, as well as conformance with Ministry drinking water related policies for the inspection period. The Ministry is implementing a rigorous and comprehensive approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as water system management practices.

Section 19 of the Safe Drinking Water Act (Standard of Care) creates a number of 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 councilors, 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 Councils" found under "Resources" on the Drinking Water Ontario website at [www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater).

The IRR is a summarized quantitative measure of the drinking water system's annual inspection and is published in the Ministry's Chief Drinking Water Inspector's Annual Report. The Risk Methodology document describes the risk rating methodology which has been applied to the findings of the Ministry's municipal residential drinking water system inspection results.

I would like to thank the Region of York staff for the assistance afforded to me during this compliance assessment. If you have any questions or concerns, please contact me or Donna Staniscia, Water Compliance Supervisor, Central Region at (705) 220-1773.

Yours truly,



Vlastimil Packa, PhD.  
Water Compliance Officer | Provincial Officer Badge # 1507  
Toronto, York/Durham, Halton/Peel  
Drinking Water and Environmental Compliance Division  
Ministry of the Environment, Conservation and Parks  
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*Catalina Ching, Water Quality Coordinator, City of Markham*  
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*York Public Health Inspectors*



Ministry of the Environment, Conservation and Parks  
Drinking Water Inspection

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**APPENDIX B  
INSPECTION RATING RECORD**



**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 30, 2025  
Site Inspection Date: January 30, 2025  
Inspection End Date: February 05, 2025  
Inspected By: Vlastimil Packa  
Badge #: 1507



(signature)



## INTRODUCTION

### Purpose

This announced, focused inspection was conducted to confirm compliance with Ministry of the Environment, Conservation and Parks' (MECP) legislation and conformance with ministry drinking water policies and guidelines.

### Scope

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 and the operation of the system.

The inspection of the drinking water system included both the physical inspection of the component parts of the system listed in section 4 "Systems Components" of the report and the review of data and documents associated with the operation of the drinking water system during the review period.

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.

The 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.

### Facility Contacts and Dates

The drinking water system is owned and operated by the Corporation of the City of Markham. The system serves an estimated population of 362,445 and is categorized as a Large Municipal Residential System. Information reviewed for this inspection covered the time period of January 23, 2024, to January 17, 2025.

### Systems/Components

The following sites were visited as part of the inspection of the drinking water system:

Markham Operation Office

### Permissions/Approvals

This drinking water system was subject to specific conditions contained within the following permissions and/or approvals (please note this list is not exhaustive) at the time of the inspection in addition to the requirements of the SDWA and its regulations:



1. Ministry of the Environment, Conservation and Parks Municipal Drinking Water License (MDWL) Number 021-101, issue 11, dated October 16, 2023 (revoked); and issue 12, dated June 13, 2024 (current).
2. Ministry of the Environment, Conservation and Parks Drinking Water Works Permit (DWWP) Number 021-201, issue 4, dated July 19, 2019 (revoked); and issue 5, dated June 13, 2024 (current).

## **NON-COMPLIANCE**

This should not be construed as a confirmation of full compliance with all potential applicable legal requirements. 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.

## **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	DWMR1018001	Question Type	Legislative
<b>Legislative Requirement(s):</b> SDWA   31   (1);			
<b>Question:</b> Did the owner ensure that equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> The owner ensured that equipment was installed as required.			
The System description contained within Schedule A of the Drinking Water Works Permit (DWWP) indicates that the system consists of three primary pressure districts and approximately 1081 kilometers of watermains and transmission mains. Minor modifications to the System have been documented on "Record of Watermains Authorized as a Future Alteration Form 1" form that were available for review at the time of the inspection.			

Question ID	DWMR1020001	Question Type	Legislative
<b>Legislative Requirement(s):</b> SDWA   31   (1);			
<b>Question:</b> Were Form 1 documents prepared as required?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Form 1 documents were prepared as required.			
Eight (8) Forms 1 were required for the drinking water system (DWS) during the review period. All the forms were reviewed, and they were in compliance with the requirements prescribed in Schedule B, Condition 3.0 of the current DWWP issued for the system. All forms were signed by a Licensed Engineer Practitioner.			

Question ID	DWMR1025001	Question Type	Legislative
<b>Legislative Requirement(s):</b> SDWA   31   (1);			
<b>Question:</b> Were all parts of the drinking water system that came in contact with drinking water disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works			

Permit?
<p><b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> All parts of the drinking water system were disinfected as required.</p> <p>The Watermain Break Procedure was reviewed. The Procedure appears to be in accordance with the requirements stipulated in the Ontario Watermain Disinfection Procedure, listed in Schedule B, Condition 2.3 of the DWWP.</p>

<b>Question ID</b>	DWMMR1033001	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> SDWA   O. Reg. 170/03   7-2   (3); SDWA   O. Reg. 170/03   7-2   (4);			
<b>Question:</b> Was secondary disinfectant residual tested as required for the large municipal residential distribution system?			
<p><b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Secondary disinfectant residual was tested as required.</p> <p>Distribution chlorine residuals are measured by two (2) continuous on-line analyzers. Additionally, operations staff collect grab samples using a hand-held unit when conducting microbiological sampling, weekly dead-end hydrant flushing, and when there are watermain breaks.</p>			

<b>Question ID</b>	DWMMR1035001	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> SDWA   O. Reg. 170/03   6-5   (1)1-4;			
<b>Question:</b> Were operators examining continuous monitoring test results and did they examine the results within 72 hours of the test?			
<p><b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Operators were examining continuous monitoring test results as required.</p> <p>The City has a procedure in its operations manual "Continuous Chlorine Analyzer monitoring" which indicates that the data results from the analyzer must be reviewed within 72 hour period after the previous review by the operator.</p> <p>The SCADA generates chlorine residual records and sends them to the ORO (Overall Responsible Operator) for the day, on daily basis, for review. The ORO enters any concern regarding the records in their "Supervisor's logbook" after reviewing the records. The documentation provided, indicated that test results are examined and reviewed every 72 hours.</p>			

Question ID	DWMR1038001	Question Type	Legislative
<b>Legislative Requirement(s):</b> SDWA   O. Reg. 170/03   6-5   (1)1-4;			
<b>Question:</b> Was continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements performing tests for the parameters with at least the minimum frequency and recording data with the prescribed format?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> 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 and recording data with the prescribed format.  All continuous monitoring equipment are equipped with high- and low-level alarms and are performing tests at a frequency that exceeds the set points specified in the Table in Schedule 6 of Ontario Regulation 170/03.			

Question ID	DWMR1037001	Question Type	Legislative
<b>Legislative Requirement(s):</b> SDWA   O. Reg. 170/03   6-5   (1)5-10; SDWA   O. Reg. 170/03   6-5   (1.1);			
<b>Question:</b> Were 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, equipped with alarms or shut-off mechanisms that satisfied the standards described in Schedule 6?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> All required continuous monitoring equipment utilized for sampling and testing were equipped with alarms or shut-off mechanisms that satisfied the standards  All continuous monitoring equipment are equipped with high- and low-level alarms and are performing tests at a frequency that exceeds the set points specified in the Table in Schedule 6 of Ontario Regulation 170/03. Online chlorine analyzers are required to record total and free chlorine residual values at least every hour (60 minutes) with a minimum alarm standard of 0.25 mg/L. The two chlorine online analyzers currently operating at the DWS record values every 2.5 minutes with minimum alarms standards set at equal or less than 0.40 mg/L.			

Question ID	DWMR1040001	Question Type	Legislative
<b>Legislative Requirement(s):</b> SDWA   O. Reg. 170/03   6-5   (1)1-4; SDWA   O. Reg. 170/03   6-5   (1)5-10;			
<b>Question:</b> Were 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 as required.

Clartech certificates of instrument performance were provided for review as part of the inspection. Continuous analyzers for chlorine were last serviced and calibrated on July 9, 2024.

<b>Question ID</b>	DWMR1108001	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> SDWA   O. Reg. 170/03   6-5   (1)5-10; SDWA   O. Reg. 170/03   6-5   (1.1);			
<b>Question:</b> 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, Municipal Drinking Water Licence, Drinking Water Works Permit, or order triggered an alarm or an automatic shut-off, did a qualified person respond as required and take appropriate actions?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> A qualified person responded as required and took appropriate actions.  A review of continuous monitoring records and logbooks suggest that when an alarm or automatic shut-off devices was triggered that a certified operator responded and took appropriate actions.			

<b>Question ID</b>	DWMR1099001	<b>Question Type</b>	Information
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Do records show that water provided by the drinking water system met the Ontario Drinking Water Quality Standards?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Records showed that not all water sample results met the Ontario Drinking Water Quality Standards.  On fourteen (14) occasions, samples exceeded the Ontario Drinking Water Quality Standards during the inspection review period. On three (3) occasions samples exceeded both EC and TC, on eleven (11) occasions samples exceeded TC limits. All corrective actions, including resampling and reporting was complied with as required			

<b>Question ID</b>	DWMR1081001	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> 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:**

Were distribution microbiological sampling requirements prescribed by Schedule 10-2 of O. Reg. 170/03 for large municipal residential systems met?

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

Distribution microbiological sampling requirements were 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 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.

The DWS reported a population of 362,445 persons. A review of data shows that more than 136 distribution samples were collected each month, with a minimum of three samples collected each week. The samples were submitted for E. coli and Total Coliform testing with more than minimum required HPC number of tests. The sample locations were evenly rotated amongst the dedicated sample stations, hydrants and auto flushers. The locations of the sampling stations cover the entirety of the distribution system.

<b>Question ID</b>	DWMR1096001	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> SDWA   O. Reg. 170/03   6-3   (1);			
<b>Question:</b> Did records confirm that chlorine residual tests were conducted at the same time and location as microbiological samples?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Records confirmed that chlorine residual tests were conducted as required.			
A review of the chain of custody forms for samples collected during the inspection review period indicate that chlorine residual tests are being conducted at the same time and location that microbiological samples are taken			

<b>Question ID</b>	DWMR1086001	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> 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);			
<b>Question:</b> Were haloacetic acid sampling requirements prescribed by Schedule 13-6 of O. Reg. 170/03 met?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Haloacetic acid sampling requirements were met.			



During the inspection review period, samples were collected and tested for HAA during the following months:

- February 2024
- May 2024
- August 2024
- November 2024

Question ID	DWMR1087001	Question Type	Legislative
<b>Legislative Requirement(s):</b> 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);			
<b>Question:</b> Were trihalomethane sampling requirements prescribed by Schedule 13-6 of O. Reg. 170/03 met?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Trihalomethane sampling requirements were met.  During the inspection review period, samples were collected and tested for THM during the following months: - February 2024 - May 2024 - August 2024 - November 2024			

Question ID	DWMR1094001	Question Type	Legislative
<b>Legislative Requirement(s):</b> SDWA   31   (1);			
<b>Question:</b> Were water quality sampling requirements imposed by the Municipal Drinking Water Licence and Drinking Water Works Permit met?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Water quality sampling requirements were met.  The MDWL requires that the samples be collected quarterly for Nitrosodimethylamines (NDMA) at the farthest point in the distribution system. During the inspection review period, samples were collected and tested for NDMA during the following months: - February 2024 - May 2024 - August 2024 - November 2024			

Question ID	DWMR1104001	Question Type	Legislative
<b>Legislative Requirement(s):</b> 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);			
<b>Question:</b> Were immediate verbal notification requirements for adverse water quality incidents met?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Immediate verbal notification requirements for adverse water quality incidents were met.  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 City of Markham provided written notices of adverse water quality within 24 hours of the verbal notifications, as required.			

Question ID	DWMR1101001	Question Type	Legislative
<b>Legislative Requirement(s):</b> 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;			
<b>Question:</b> For large municipal residential systems, were corrective actions, including any steps directed by the Medical Officer of Health, taken to address adverse conditions?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Corrective actions were taken to address adverse conditions.  A review of Section 2A - Written Notice by Drinking Water System and Section 2B - Notice of Issue Resolution paperwork submitted by the System to the Ministry indicates that corrective actions were taken as per Schedule 17 of O.Reg. 170/03, and as directed by the Medical Officer of Health.			

Question ID	DWMR1060001	Question Type	Legislative
<b>Legislative Requirement(s):</b> SDWA   31   (1);			
<b>Question:</b> Did the operations and maintenance manual(s) meet the requirements of the Municipal			

Drinking Water Licence?

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

The operations and maintenance manual(s) met the requirements of the Municipal Drinking Water Licence.

The operations and maintenance manual were reviewed as part of this inspection and it meets the requirements of the MDWL, as listed in Condition 16 of Schedule B of the MDWL.

<b>Question ID</b>	DWMR1062001	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> SDWA   O. Reg. 170/03   7-5;			
<b>Question:</b> Did records or other record keeping mechanisms confirm that operational testing not performed by continuous monitoring equipment was done by a certified operator, water quality analyst, or person who met the requirements of Schedule 7-5 of O. Reg. 170/03?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was done by a certified operator, water quality analyst, or person who met the requirements of Schedule 7-5 of O. Reg. 170/03.  Chain of Custody (COC) forms were reviewed, and all chlorine residual testing is done by a certified operator.			

<b>Question ID</b>	DWMR1071001	<b>Question Type</b>	BMP
<b>Legislative Requirement(s):</b> Not Applicable			
<b>Question:</b> Did the owner provide security measures to protect components of the drinking water system?			
<b>Compliance Response(s)/Corrective Action(s)/Observation(s):</b> The owner provided security measures to protect components of the drinking water system.  Equipment and vehicles are secure at the City's operation center where there is a security system and cameras. The city has Backflow Prevention Bylaw 2012-27 in place, which reduces the chance of water contamination through backflow incidents at cross connections. By-law #2019-53, Water Use was also provided for review, which limits access to hydrants.			

<b>Question ID</b>	DWMR1073001	<b>Question Type</b>	Legislative
<b>Legislative Requirement(s):</b> SDWA   O. Reg. 128/04   23   (1);			

**Question:**

Was an overall responsible operator designated for all subsystems which comprise the drinking water system?

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

An overall responsible operator was designated for all subsystem.

System Level Document 11— Personal Coverage, Revision 8.0, was provided for review as part of the inspection. This procedure details that the Overall Responsible Operator (ORO) is designated to be the Operation & Maintenance Manager, or the Waterworks Supervisors who are assigned as stand-by ORO on a rotational basis.

<b>Question ID</b>	DWMR1074001	<b>Question Type</b>	Legislative
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**Legislative Requirement(s):**

SDWA | O. Reg. 128/04 | 25 | (1);

**Question:**

Were operators-in-charge designated for all subsystems which comprise the drinking water system?

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

Operators-in-charge were designated for all subsystems.

System Level Document 11— Personal Coverage, Revision 8.0, was provided for review as part of the inspection. This procedure details that all operators who possess a certification of Class 1 or higher are designated as operators-in-charge for the system.

<b>Question ID</b>	DWMR1075001	<b>Question Type</b>	Legislative
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**Legislative Requirement(s):**

SDWA | O. Reg. 128/04 | 22;

**Question:**

Were all operators certified as required?

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

All operators were certified as required.

Licenses were reviewed at the OWWCO website

<b>Question ID</b>	DWMR1076001	<b>Question Type</b>	Legislative
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**Legislative Requirement(s):**

SDWA | O. Reg. 170/03 | 1-2 | (2);

**Question:**

Were adjustments to the treatment equipment only made by certified operators?

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

Adjustments to the treatment equipment were only made by certified operators.

Logbooks were reviewed and all of the entries were completed by certified operators.

# 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](mailto:waterforms@ontario.ca).

For more information on Ontario's drinking water visit [www.ontario.ca/page/drinking-water](http://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](#)

Ministry of the Environment, Conservation and Parks - Inspection Summary Rating Record (Reporting Year - 2024-25)

<b>DWS Name:</b> MARKHAM DISTRIBUTION SYSTEM
<b>DWS Number:</b> 220004162
<b>DWS Owner:</b> THE CORPORATION OF THE CITY OF MARKHAM
<b>Municipal Location:</b> MARKHAM
<b>Regulation:</b> O.REG. 170/03
<b>DWS Category:</b> DW Municipal Residential
<b>Type of Inspection:</b> Focused
<b>Compliance Assessment Start Date:</b> Jan-30-2025
<b>Ministry Office:</b> York Durham District Office

**Maximum Risk Rating:** 317

Inspection Module	Non Compliance Risk (X out of Y)
Certification and Training	0/42
Logbooks	0/14
Operations Manuals	0/14
Reporting & Corrective Actions	0/66
Treatment Processes	0/130
Water Quality Monitoring	0/51
<b>Overall - Calculated</b>	<b>0/317</b>

<b>Inspection Risk Rating:</b>	<b>0.00%</b>
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<b>Final Inspection Rating:</b>	<b>100.00%</b>
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Ministry of the Environment, Conservation and Parks - Detailed Inspection Rating Record (Reporting Year - 2024-25)

<b>DWS Name:</b>	MARKHAM DISTRIBUTION SYSTEM
<b>DWS Number:</b>	220004162
<b>DWS Owner Name:</b>	THE CORPORATION OF THE CITY OF MARKHAM
<b>Municipal Location:</b>	MARKHAM
<b>Regulation:</b>	O.REG. 170/03
<b>DWS Category:</b>	DW Municipal Residential
<b>Type of Inspection:</b>	Focused
<b>Compliance Assessment Start Date:</b>	Jan-30-2025
<b>Ministry Office:</b>	York Durham District Office

*All legislative requirements were met. No detailed rating scores.*

Maximum Question Rating: 317

Inspection Risk Rating:	0.00%
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<b>FINAL INSPECTION RATING:</b>	<b>100.00%</b>
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# 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.

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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**.

**TABLE 1:**

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

**TABLE 2:**

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 (4×8) and the lowest would be 0 (0×1).

**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).

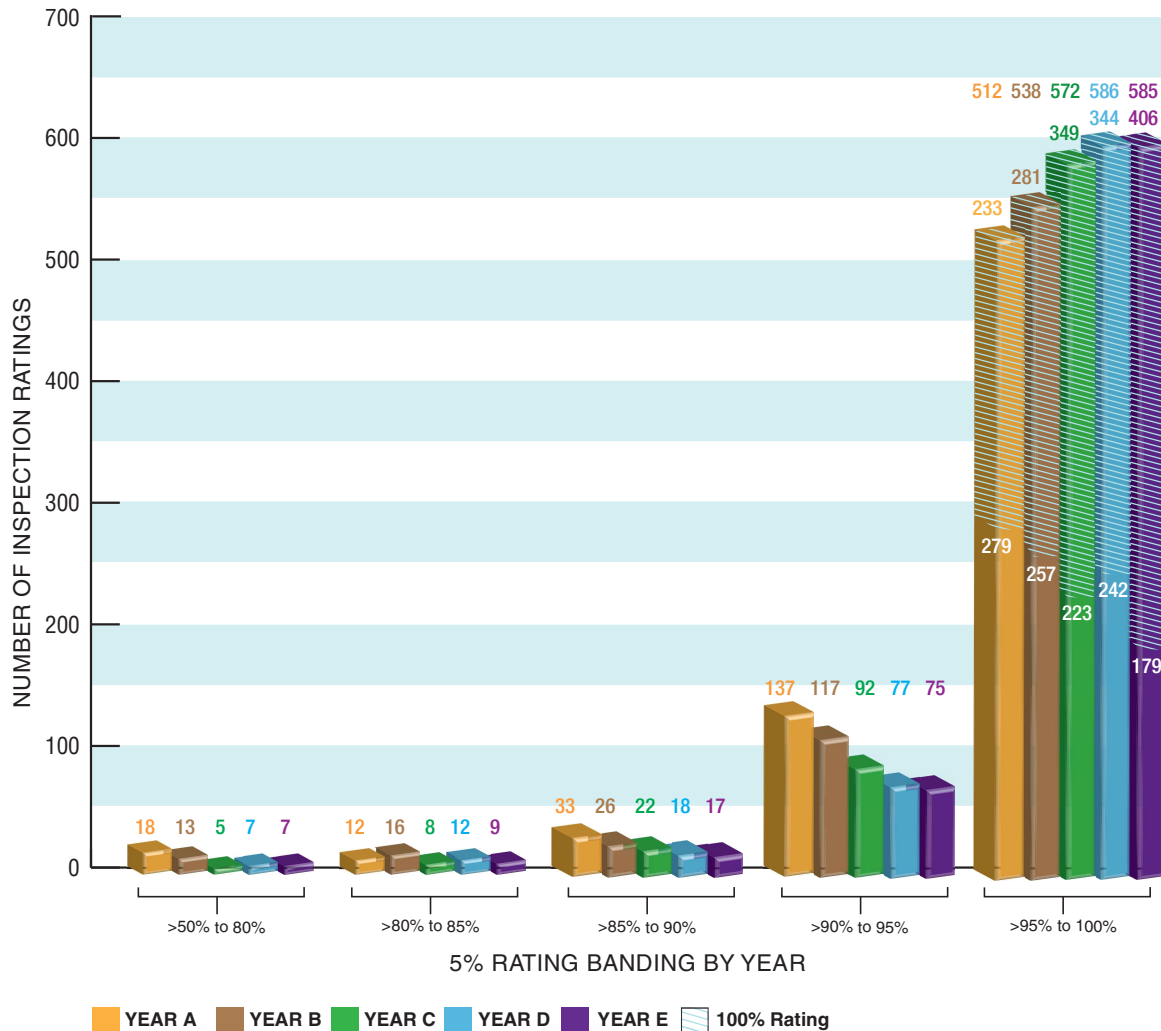
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

## 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](http://www.ontario.ca/drinkingwater)