

Ministry of the Environment,  
Conservation and Parks

Ministère de l'Environnement, de la  
Protection de la nature et des Parcs

Southwestern Region

Direction régionale du Sud-Ouest

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File# SI-ES-TE-540

February 6, 2023

Town of Tecumseh  
917 Lesperance Road  
Tecumseh, ON  
N8N 1W9

Attention: Margaret Misk-Evans, CAO  
[mevans@tecumseh.ca](mailto:mevans@tecumseh.ca)

Re: Tecumseh Water Distribution System  
O.Reg. 170/03 Inspection Report

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Please find enclosed the Drinking Water System Inspection Report for the Tecumseh Distribution System (DWS#260004969). The review period for this inspection was from January 1 to December 31, 2022. There were no Non-Compliance/Non-Conformance Items identified during this review period.

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 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 on the Drinking Water Ontario website at [www.ontario.ca/drinkingwater](http://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 (II&E) Secretariat and advice of internal/external risk experts. The Inspection Summary Rating

Record (IRR), included as Appendix B of the inspection report, provides the Ministry, the system owner and the local Public Health Units 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. If you have any questions or concerns regarding the rating, please contact Marc Bechard, Water Compliance Supervisor, at (519) 490-0761.

Likewise, if you have any questions or concerns regarding this report, please call me at (226) 280-1556.

Yours truly,



Neil Gilbert, P.Eng.  
Provincial Officer – Water Inspector  
Southwestern Region  
Ministry of the Environment, Conservation and Parks  
Sarnia District – Windsor Area Office

Encl.

cc: Dr. Shanker Nesathurai, Medical Officer of Health, Windsor-Essex County HU, [shnesathurai@wechu.org](mailto:shnesathurai@wechu.org)  
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TECUMSEH DISTRIBUTION SYSTEM

## Inspection Report

System Number: 260004969  
Entity: THE CORPORATION OF THE  
TOWN OF TECUMSEH  
Inspection Start Date: 01/19/2023  
Inspection End Date: 01/27/2023  
Inspected By: Neil Gilbert  
Badge #: 1072

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(signature)

### **NON-COMPLIANCE/NON-CONFORMANCE ITEMS**

This should not be construed as a confirmation of full compliance with all potential applicable legal requirement and 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	MRDW1001001	Question Type	Information
<b>Question:</b> What was the scope of this inspection?			
<b>Legislative Requirement</b>	Not Applicable		
<b>Observation</b>			
<p>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. The review period for this inspection was from January 1 to December 31, 2022.</p>			

Question ID	MRDW1000001	Question Type	Information
<b>Question:</b> Does this drinking water system provide primary disinfection?			
<b>Legislative Requirement</b>	Not Applicable		
<b>Observation</b>  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	MRDW1020001	Question Type	Legislative
<b>Question:</b> 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?			
<b>Legislative Requirement</b>		SDWA   31   (1);	
<b>Observation</b> 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.			

Question ID	MRDW1025001	Question Type	Legislative
<b>Question:</b> 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?			
<b>Legislative Requirement</b>	SDWA   31   (1);		
<b>Observation</b> All parts of the drinking water system were disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit.			

Question ID	MRDW1033001	Question Type	Legislative
<b>Question:</b> Is the secondary disinfectant residual measured as required for the large municipal residential distribution system?			
<b>Legislative Requirement</b>	SDWA   O. Reg. 170/03   7-2   (3); SDWA   O. Reg. 170/03   7-2   (4);		
<b>Observation</b>  The secondary disinfectant residual was measured as required for the large municipal residential distribution system. As per O.Reg. 170/03 s 7-2 (3), the owner/operating authority of a system that provides secondary disinfection shall ensure that at least seven distribution samples are taken each week and are tested immediately for, (a) free chlorine residual, if the system provides chlorination and does not provide chloramination; or (b) combined chlorine residual, if the system provides chloramination. The following rules apply to the distribution samples referred above unless at least one sample is taken on each day of the week: At least four of the samples must be taken on one day of the week, at least 48 hours after the last sample was taken in the previous			



week. Then, at least three of the samples must be taken on a second day of the week, at least 48 hours after the last sample was taken on the first day of the sampling week. When more than one sample is taken on the same day of the week then each sample must be taken from a different location.

During the inspection review period (January 1 to December 31, 2022) at least seven distribution samples were collected each week using the 4/3 rule and tested for free chlorine residuals.

Question ID	MRDW1099001	Question Type	Information
<b>Question:</b> 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)?			
<b>Legislative Requirement</b>		Not Applicable	
<b>Observation</b> 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).			

Question ID	MRDW1081001	Question Type	Legislative
<b>Question:</b> For LMR systems, are all microbiological water quality monitoring requirements for distribution samples being met?			
<b>Legislative Requirement</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);		
<b>Observation</b> All microbiological water quality monitoring requirements prescribed by legislation for distribution samples in a large municipal residential system were being met. As per O.Reg. 170/03 s10-2, the owner/operating authority for the system shall ensure that if a system serves 100,000 people or less, at least eight distribution samples, plus one additional sample for every 1,000 people served, are taken every month, with at least one sample being taken each week. Each of the distribution samples collected must be tested for E. coli and total coliforms and at least 25 percent of these samples must be tested for general bacteria population expressed as colony counts on a heterotrophic plate count (HPC). During the inspection review period (January 1 to December 31, 2022) all microbiological water monitoring requirements for distribution water samples were performed.			

Question ID	MRDW1096001	Question Type	Legislative
<b>Question:</b> Do records confirm that chlorine residual tests are being conducted at the same time and at the same location that microbiological samples are obtained?			
Legislative Requirement	SDWA   O. Reg. 170/03   6-3   (1);		
<b>Observation</b> 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	MRDW1086001	Question Type	Legislative
<b>Question:</b> Are all haloacetic acid water quality monitoring requirements prescribed by legislation conducted within the required frequency and at the required location?			
<b>Legislative Requirement</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>Observation</b> All haloacetic acid water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location. As per O.Reg 170/03 s13-6.1, the owner/operating authority shall ensure that a minimum of one sample is collected and tested for haloacetic acid (HAA) per calendar quarter. On January 1, 2020, the O.Reg. 169/03 standard for HAA (80ug/L) came into effect and is expressed as a RAA, where RAA is defined as "the running annual average of quarterly results" for HAA for a drinking water system. During the inspection review period (January 1 to December 31, 2022), these HAA samples were collected on Jan. 10, 2022 (HAA result = 11.7ug/L), Apr. 11, 2022 (HAA result = 11.9 ug/L), July 11, 2022 (HAA result = 24.1ug/L) and Oct. 11, 2022 (HAA result = 17.8ug/L). All of these HAA results were below 80ug/L and the average for the inspection review period was 16.4ug/L.			

Question ID	MRDW1087001	Question Type	Legislative
<b>Question:</b> Have all trihalomethane water quality monitoring requirements prescribed by legislation been conducted within the required frequency and at the required location?			
<b>Legislative Requirement</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>Observation</b>	
<p>All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location. As per O.Reg. 170/03 s13-6, the owner/operating authority of a system that provides chlorination or chloramination shall ensure that at least one distribution sample is taken in each calendar quarter, from a point in the distribution system that is likely to have an elevated potential for the formation of trihalomethanes (THMs), and have the sample tested for THMs.</p> <p>During the inspection review period (January 1 to December 31, 2022), these THM quarterly samples were collected on Jan. 10, 2022 (at 4 locations with a THM average = 19.5ug/L), Apr. 11, 2022 (at 3 locations with a THM average = 21.7ug/L), July 11, 2022 (at 3 locations with a THM average = 26.7ug/L) and Oct. 11, 2022 (at 3 locations with a THM average = 22ug/L).</p> <p>The Ontario Drinking Water Quality Standard (ODWQS) for THM is 100ug/L (expressed as a running annual average of quarterly results). All of the THM results were below 100ug/L and the average for the inspection review period was 22.5ug/L.</p>	

Question ID	MRDW1113000	Question Type	Legislative
Question:			
Have all changes to the system registration information been provided to the Ministry within ten (10) days of the change?			
Legislative Requirement	SDWA   O. Reg. 170/03   10.1   (3);		
Observation			
All changes to the system registration information were provided within ten (10) days of the change.			

Question ID	MRDW1059000	Question Type	Legislative
<b>Question:</b> Do the operations and maintenance manuals contain plans, drawings and process descriptions sufficient for the safe and efficient operation of the system?			
Legislative Requirement	SDWA   O. Reg. 128/04   28;		
<b>Observation</b> The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.			

Question ID	MRDW1060000	Question Type	Legislative
<b>Question:</b> Do the operations and maintenance manuals meet the requirements of the DWWP and MDWL issued under Part V of the SDWA?			
<b>Legislative Requirement</b>   SDWA   31   (1);			
<b>Observation</b> <p>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 16.2 under Schedule B of Tecumseh's Drinking Water Licence (#040-101, Issue #4 dated May 24, 2019) notes that the operations and maintenance manuals shall include (at a minimum) the following:</p> <ul style="list-style-type: none"> <li>16.2.1 The requirements of this licence and associated procedures;</li> <li>16.2.2 The requirements of the drinking water works permit for the drinking water system;</li> <li>16.2.3 A description of the processes used to achieve secondary disinfection within the drinking water system;</li> <li>16.2.4 Procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;</li> <li>16.2.5 Procedures for the operation and maintenance of monitoring equipment;</li> <li>16.2.6 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;</li> <li>16.2.7 Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint.</li> </ul> <p>A review of Tecumseh's operating manual and standard operating procedures suggests that these conditions appear to be satisfied. All secondary disinfection is provided by the City of Windsor's A.H. Weeks Water Treatment Plant and Tecumseh does not maintain or operate a re-chlorination system.</p>			

Question ID	MRDW1061001	Question Type	Legislative
<b>Question:</b> Are logbooks properly maintained and contain the required information?			
<b>Legislative Requirement</b>   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);			
<b>Observation</b> Logbooks were properly maintained and contained the required information.			

Question ID	MRDW1062001	Question Type	Legislative
<b>Question:</b> 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?			
Legislative Requirement	SDWA   O. Reg. 170/03   7-5;		
<b>Observation</b> 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	MRDW1071000	Question Type	BMP
<b>Question:</b> Has the owner provided security measures to protect components of the drinking water system?			
Legislative Requirement	Not Applicable		
<b>Observation</b> The owner had provided security measures to protect components of the drinking water system.			

Question ID	MRDW1073001	Question Type	Legislative
<b>Question:</b> Has the overall responsible operator been designated for all subsystems which comprise the drinking water system?			
Legislative Requirement	SDWA   O. Reg. 128/04   23   (1);		
<b>Observation</b> The overall responsible operator had been designated for each subsystem.			

<b>Question ID</b>	MRDW1074001	<b>Question Type</b>	Legislative
<b>Question:</b> Have operators-in-charge been designated for all subsystems for which comprise the drinking water system?			

<b>Legislative Requirement</b>	SDWA   O. Reg. 128/04   25   (1);
<b>Observation</b>	
Operators-in-charge had been designated for all subsystems which comprise the drinking water system.	

Question ID	MRDW1075001	Question Type	Legislative
<b>Question:</b> Do all operators possess the required certification?			
Legislative Requirement	SDWA   O. Reg. 128/04   22;		
<b>Observation</b> All operators possessed the required certification.			



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**Stakeholder Appendix**

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



PUBLICATION TITLE	PUBLICATION NUMBER
<b>FORMS:</b> Drinking Water System Profile Information Laboratory Services Notification Adverse Test Result Notification	012-2149E 012-2148E 012-4444E
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	Website
Procedure for Disinfection of Drinking Water in Ontario	Website
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	Website
Filtration Processes Technical Bulletin	Website
Ultraviolet Disinfection Technical Bulletin	Website
Guide for Applying for Drinking Water Works Permit Amendments, & License Amendments	Website
Certification Guide for Operators and Water Quality Analysts	Website
Guide to Drinking Water Operator Training Requirements	9802E
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	Website
Drinking Water System Contact List	7128E01
Ontario's Drinking Water Quality Management Standard - Pocket Guide	Website
Watermain Disinfection Procedure	Website
List of Licensed Laboratories	Website



# 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 dans le tableau 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](mailto: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/eaupotable](http://www.ontario.ca/eaupotable)

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
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	Site Web
Marche à suivre pour désinfecter l'eau potable en Ontario	Site Web
Stratégies pour minimiser les trihalométhanes et les acides haloacétiques de sous-produits de désinfection	Site Web
Filtration Processes Technical Bulletin (en anglais seulement)	Site Web
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	Site Web
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable	Site Web
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	Site Web
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802F
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	Site Web
Liste des personnes-ressources du réseau d'eau potable	Site Web
L'eau potable en Ontario - Norme de gestion de la qualité - Guide de poche	Site Web
Procédure de désinfection des conduites principales	Site Web
Laboratoires autorisés	Site Web



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**Inspection Rating Record**

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Ministry of the Environment, Conservation and Parks - Inspection Summary Rating Record (Reporting Year - 2022-2023)

**DWS Name:** TECUMSEH DISTRIBUTION SYSTEM  
**DWS Number:** 260004969  
**DWS Owner:** THE CORPORATION OF THE TOWN OF TECUMSEH  
**Municipal Location:** TECUMSEH

**Regulation:** O.REG. 170/03  
**DWS Category:** DW Municipal Residential  
**Type of Inspection:** Focused  
**Inspection Date:** Jan-19-2023  
**Ministry Office:** Windsor Area Office

**Maximum Risk Rating:** 175

Inspection Module	Non Compliance Rating
Operations Manuals	0 / 28
Reporting & Corrective Actions	0 / 4
Other Inspection Findings	0 / 143
<b>Overall - Calculated</b>	<b>0 / 175</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 - 2022-2023)

**DWS Name:** TECUMSEH DISTRIBUTION SYSTEM  
**DWS Number:** 260004969  
**DWS Owner Name:** THE CORPORATION OF THE TOWN OF TECUMSEH  
**Municipal Location:** TECUMSEH

**Regulation:** O.REG. 170/03  
**DWS Category:** DW Municipal Residential  
**Type of Inspection:** Focused  
**Inspection Date:** Jan-19-2023  
**Ministry Office:** Windsor Area Office

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

Maximum Question Rating: 175

Inspection Risk Rating:	0.00%
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FINAL INSPECTION RATING:	100.00%
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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.

[ontario.ca/drinkingwater](http://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:

**RISK = LIKELIHOOD × 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).

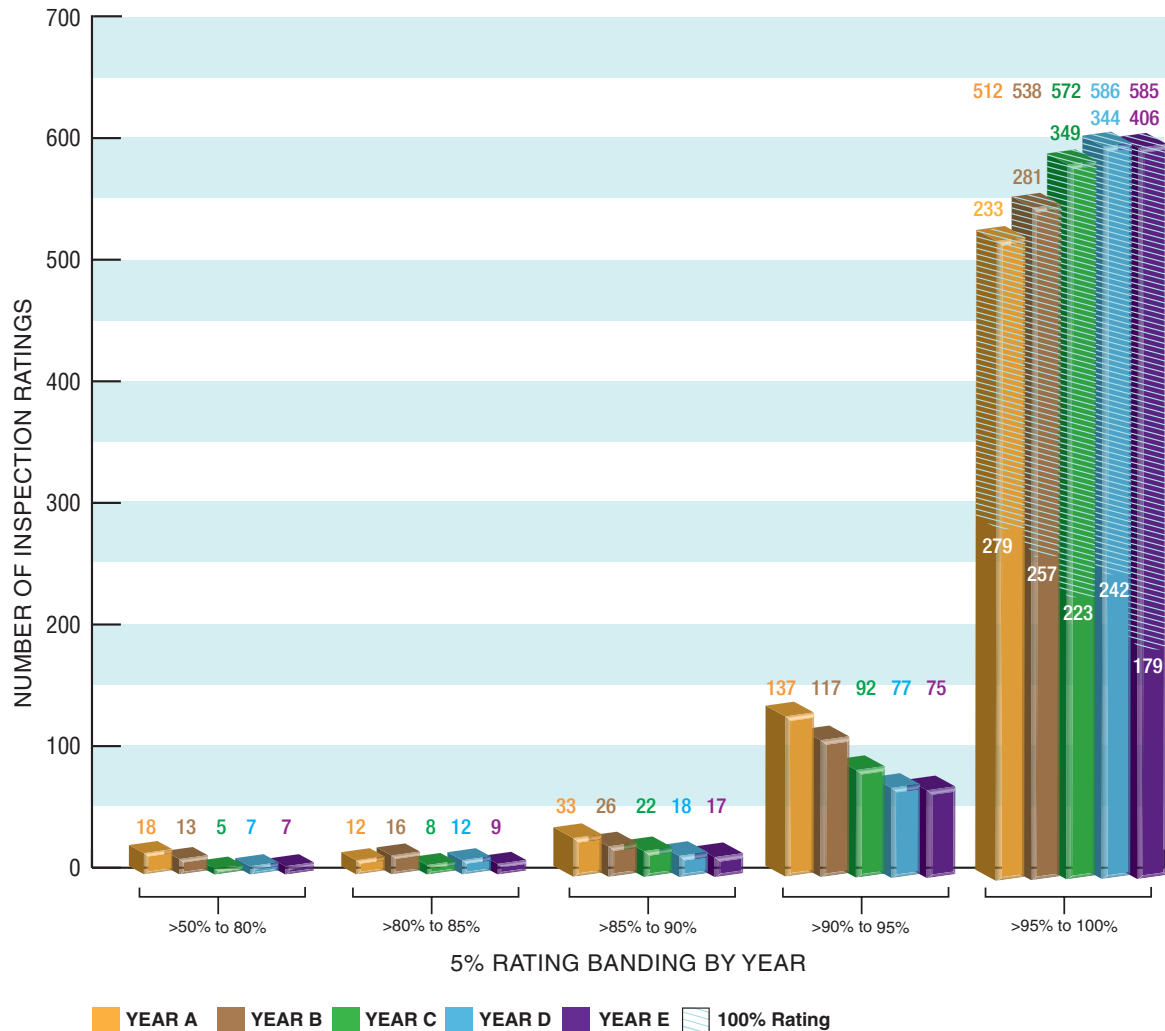
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

## 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)