



**Ministry of the Environment, Conservation and Parks**

**SOUTH HURON DISTRIBUTION SYSTEM  
Inspection Report**

<b>Site Number:</b>	220001520
<b>Inspection Number:</b>	1-NX7TJ
<b>Date of Inspection:</b>	Aug 18, 2020
<b>Inspected By:</b>	Andrew Winkler

---

**Table of Contents**

---

Owner Information	2
Inspection Details	2
Inspection Summary	
Introduction	4
Treatment Process	4
Treatment Process Monitoring	6
Operations Manuals	7
Logbooks	7
Security	7
Certificate and Training	7
Water Quality Monitoring	7
Water Quality Assessment	8
Reporting & Corrective Actions	8
Other Inspection Findings	9
Non-Compliance with Regulatory Requirements and Actions Required	11
Summary of Recommendations and Best Practice Issues	12
Signatures	13
Appendix A: Key Reference and Guidance Material for Drinking Water Systems	
Appendix B: Inspection Rating Record	

**OWNER INFORMATION:**

<b>Company Name:</b>	SOUTH HURON, THE CORPORATION OF THE MUNICIPALITY	<b>Unit Identifier:</b>	
<b>Street Number:</b>	322		
<b>Street Name:</b>	MAIN St S		
<b>City:</b>	EXETER		
<b>Province:</b>	ON	<b>Postal Code:</b>	N0M 1S6

**CONTACT INFORMATION**

**INSPECTION DETAILS:**

<b>Site Name:</b>	SOUTH HURON DISTRIBUTION SYSTEM
<b>Site Address:</b>	82 NELSON Street EXETER ON N0M 1S6
<b>County/District:</b>	SOUTH HURON
<b>MECP District/Area Office:</b>	Sarnia District
<b>Health Unit:</b>	HURON COUNTY HEALTH UNIT
<b>Conservation Authority:</b>	Ausable Bayfield Conservation Authority
<b>MNR Office:</b>	
<b>Category:</b>	Large Municipal Residential
<b>Site Number:</b>	220001520
<b>Inspection Type:</b>	Unannounced
<b>Inspection Number:</b>	1-NX7TJ
<b>Date of Inspection:</b>	Aug 18, 2020
<b>Date of Previous Inspection:</b>	Nov 19, 2019

**COMPONENTS DESCRIPTION**

<b>Site (Name):</b>	DISTRIBUTION	<b>Sub Type:</b>	
<b>Type:</b>	Other		
<b>Comments:</b>			

The South Huron Distribution System obtains its drinking water supply via 5 connections to the donor's system – the Lake Huron Primary Water Supply System (LHPWSS). The donor's water treatment plant is located within South Huron, as are over 40 km of mains, a secondary reservoir and booster pumping station, and a number of chambers housing valves and other appurtenances. Note: The donor's infrastructure is subject to separate inspections.

The South Huron Distribution System supplies water to approximately 8,200 residents. Further, the system supplies some of Bluewater's residents along the Municipality's northern boundary. Some consumers along the Municipality's southern boundary are supplied by the North Middlesex Distribution System (which also obtains its drinking water from the LHPWSS).

The system consists of ~200 km of distribution watermains ranging in size from 50mm to 400mm diameter. The 50mm mains are polyethylene (PE); the 100mm to 300mm mains are polyvinylchloride (PVC) and the larger mains are mix of cast iron, ductile iron, and steel reinforced concrete pressure pipe.

There are seven pressure zones within the South Huron Distribution System. (The Municipality's Annual Drinking Water Reports typically contain a detailed description of the zones, the connections between them, and the supply of zones during normal and emergency feed situations.)

---

The distribution system includes two booster pumping stations, two reservoirs and two water towers. Continuous monitoring equipment, coupled with computerized Supervisory, Control and Data Acquisition Systems (SCADA) both monitor and control the operation of this distribution system.

---

**Site (Name):** MOE DWS Mapping  
**Type:** DWS Mapping Point

**Sub Type:**

---

## INSPECTION SUMMARY:

### Introduction

- 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.

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.

This report is based on an inspection of a "stand alone connected distribution system". This type of system receives treated water from a separately owned "donor" system. This report contains the elements required to assess key compliance and conformance issues associated with a "receiver" system. This report does not contain items associated with the inspection of the donor system, such as source waters, intakes/wells and treatment facilities.

This report is based on a "focused" inspection of the system. Although the inspection involved fewer activities than those normally undertaken in a detailed inspection, it contained critical elements required to assess key compliance issues. This system was chosen for a focused inspection because the system's performance met the ministry's criteria, most importantly that there were no deficiencies as identified in O.Reg. 172/03 over the past 3 years. The undertaking of a focused inspection at this drinking water system does not ensure that a similar type of inspection will be conducted at any point in the future.

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 2020/2021 inspection of this municipal drinking water system was performed remotely. A telephone interview occurred between the undersigned Provincial Officer and municipal staff on August 18, 2020. Documents and records reviewed in relation to this inspection included but may not have been limited to:

- Municipal Drinking Water Licence Number: 054-101, Issue Number: 2, Dated: May 19, 2016;
- Drinking Water Works Permit Number: 054-201, Issue Number: 3, Dated: December 1, 2016;
- Operations & Maintenance Manual(s);
- Operational logbook(s) & other record-keeping mechanisms; and
- Microbiological & chemical test results.

The inspection review period included November 12, 2019 to August 18, 2020.

### Treatment Processes

- The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.

Equipment described in Schedule A and Schedule C of the Owner's Drinking Water Works Permit is required to be installed in the drinking water system. To make any alterations, changes must be either approved through a Schedule C amendment or pre-authorized through a condition in Schedule B of the Drinking Water Works Permit. Further, Schedule B identifies record keeping and notification requirements when alterations occur.

In accordance with Schedule B of the Drinking Water Works Permit, a Form 2 record was completed prior to alterations being performed to the re-chlorination system at the Huron Park Water Tower.

- The owner/operating authority was in compliance with the requirement to prepare Form 1 documents as

**Treatment Processes**

**required by their Drinking Water Works Permit during the inspection period.**

A Form 1 record was completed for the replacement of the watermain under Sherwood Crescent, Exeter.

- **The owner/operating authority was in compliance with the requirement to prepare Form 2 documents as required by their Drinking Water Works Permit during the inspection period.**

A Form 2 dated September 12, 2019 was created for alterations to the re-chlorination system at the Huron Park Water Tower.

A Form 2 dated January 3, 2020 was created for alterations to hardware within the Exeter North Control Zone Chamber.

A Form 2 dated March 02, 2020 was created for alterations to the SCADA Programmable Logic Controller (PLC) at the Exeter Water Tower, Huron Park Water Tower, MacNaughton Drive Booster Pumping Station, Crediton Booster Pumping Station, Airport Line Control Chamber, Huron Street Monitoring Chamber and Exeter Pressure Zone Control Chamber.

- **Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.**

The owner and operating authority of a system that utilize chlorination for secondary disinfection shall ensure the system is operated so that, the free chlorine residual is at least 0.05mg/L at all times and at all locations within the distribution system.

Data recorded by continuous analyzers indicated that secondary disinfection was maintained during this review period. The data included outliers that this officer dismissed after reviewing log entries and SCADA trending. Outliers were due to equipment installation, maintenance and calibration activities.

As part of the watermain deadend and hydrant flushing program, operators manually performed free chlorine residual testing. Records provided to this inspector demonstrated compliant levels of free chlorine residual throughout the distribution system.

- **Where an activity has occurred that could introduce contamination, all parts of the drinking water system were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit.**

Seven Watermain Failure Reports were provided for this review period. Records demonstrated that proper disinfection was performed in accordance with the Drinking Water Works Permit.

Records for the Sherwood Cres. watermain installation project demonstrated that disinfection was performed in accordance with the Drinking Water Works Permit.

Note: The system's representative was aware that the updated Ontario Watermain Disinfection Procedure was issued on August 1, 2020. For the South Huron Distribution System, the Drinking Water Works Permit is anticipated to be updated at the same time as the next Drinking Water Works Licence renewal. Condition 2.3 of the new Drinking Water Works Permit to include a date requiring the new procedure be used - typically six months from the issue date of the renewed licence. Further, the system Owner is required to modify its watermain repair/commissioning procedures and forms to meet the updated procedure's documentation requirements.

The system owner may submit a written request, to implement the new procedure at an earlier date. A copy of the form may be obtained from the undersigned Provincial Officer upon request.

**Treatment Process Monitoring**

- **The secondary disinfectant residual was measured as required for the distribution system.**

Section 7-2(3) of O.Reg. 170/03 stipulated that the owner/operating authority of a system that provides secondary disinfection shall ensure that at least seven distribution grab samples are taken each week and are tested immediately for, (a) free chlorine residual, if the system provides chlorination and does not provide chloramination; (4) The following rules apply to the distribution samples referred to in subsection (3) unless at least one sample is taken on each day of the week: 1. 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. 2. 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 day referred to in paragraph 1. 3. When more than one sample is taken on the same day of the week under paragraph 1 or 2, each sample must be taken from a different location.

Section 6-4(1) of O. Reg. 170/03 stipulated that a person who is required to ensure that samples are taken under this Regulation, or under an approval, municipal drinking water licence or order, including an OWRA order, shall ensure that they are taken in the form of grab samples, unless continuous monitoring equipment is authorized or required. (2) Continuous monitoring equipment may be used for sampling and testing that is required under this Regulation, or under an approval, municipal drinking water licence or order, for, (c) free chlorine residual.

Municipal staff identified the use of continuous monitoring equipment to satisfy free chlorine residual monitoring requirements under 170/03. Continuous monitors installed at the Huron Park Tower were identified as "process analyzers", used to assist with the secondary disinfection process. Although process analyzers are not used to satisfy monitoring requirements under schedule 6 of O. Reg 170/03, the duty to report other observations does apply (ex. improperly disinfected water directed to water users), in accordance with 16-4 of O. Reg 170/03.

- **Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.**

Operators created written records of examinations in the facility logbook.

- **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.**

Continuous chlorine analyzers were equipped with an alarm feature. The low alarm was set to 0.3 mg/L for all analyzers. The high alarm was set to 2.0 mg/L for all analyzers, except the analyzer installed post re-chlorination at the Huron Park Water Tower – with a set point of 2.5 mg/L. If an alarm was triggered, the Operator in Charge and/or Overall Responsible Operator would receive notification. To ensure alarms were functioning as expected, operators tested alarms on a monthly basis.

- **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.**

Section 6-5.(1) of O. Reg. 170/03 stipulated that if a drinking water system uses continuous monitoring equipment for sampling and testing that is required under this Regulation, or under an approval, drinking water works permit, municipal drinking water licence or order, for a parameter set out in the Table to this section, the owner of the system and the operating authority for the system shall ensure that the following standards are met: Item 3. of the table included free chlorine residual in a distribution to be tested and results recorded at a minimum of once per hour, while water is directed to users.

The owner met the requirements of O. Reg. 170/03 by utilizing continuous free chlorine analyzers installed within the distribution system. Records provided for review demonstrated that sample results were recorded every four minutes.

**Treatment Process Monitoring**

- **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.**

Section 6-5(1)10 of O. Reg 170/03 stipulated that if the manufacturer's instructions do not indicate how often to check and calibrate the continuous monitoring equipment, the equipment must be checked and calibrated as often as necessary to ensure that test results are within the +/- 0.05 milligrams per litre, if the concentrations usually measured by the equipment are less than or equal to 1.0 milligrams per litre, and proportionally higher if the concentrations usually measured are greater than 1.0 milligrams per litre.

Operators performed scheduled comparison tests to verify the accuracy of continuous analyzers; additional test were performed as necessary. Details were recorded in logbooks and on Maintenance & Calibration worksheets. Annual calibrations were performed by a third-party technician, with details recorded on an Instrumentation Report.

A portable free chlorine analyzer was used to assist with comparison tests. The accuracy of portable analyzers was verified by a third-party technician, annually. Details were recorded on reports completed by the third-party.

**Operations Manuals**

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

**Logbooks**

- **Logbooks were properly maintained and contained the required information.**

**Security**

- **The owner had provided security measures to protect components of the drinking water system.**  
The owner had implemented and continues to upgrade security measures.

**Certification and Training**

- **The overall responsible operator had been designated for each subsystem.**  
The South Huron Distribution System was categorized as a Class 3 Distribution Subsystem. The designated overall responsible operator held a valid Class 3 Water Distribution Subsystem certificate.
- **Operators-in-charge had been designated for all subsystems which comprised the drinking water system.**
- **All operators possessed the required certification.**
- **Only certified operators made adjustments to the treatment equipment.**  
Records of adjustments were recorded in the facility logbook. Operator identifiers were included with entries.

**Water Quality Monitoring**

- **All microbiological water quality monitoring requirements for distribution samples were being met.**  
Section 10-2.(1) of O. Reg. 170/03 stipulated that if the system serves 100,000 people or less, at least eight



**Water Quality Monitoring**

distribution samples, plus one additional distribution sample for every 1,000 people served by the system, are taken every month, with at least one of the samples being taken in each week. Further, subsection (2) & (3) required samples under subsection (1) to be tested for Escherichia coli (E.coli) and Total Coliforms, with at least 25% of samples tested for Heterotrophic Plate Count (HPC).

- **All haloacetic acid water quality monitoring requirements prescribed by legislation are being conducted within the required frequency and at the required location.**

Section 13-6.1 of O. Reg. 170/03 required at least one distribution sample to be collected and tested for haloacetic acid (HAA) in each calendar quarter, from a point in the drinking water system's distribution system or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of HAA.

- **All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.**

Section 13-6 of O. Reg. 170/03 required at least one distribution sample to be collected and tested for trihalomethanes (THMs) in each calendar quarter, from a point in the drinking water system's distribution system or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of THMs.

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

Section 6-3. (1) of O. Reg. 170/03 stipulated that where a water sample was required to be taken and tested for a microbiological parameter, the owner of the drinking water system and the operating authority for the system shall ensure that another sample was taken at the same time, from the same location and tested immediately for free chlorine residual, if the system provides chlorination and does not provide chloramination.

Free chlorine residual test results were recorded on laboratory sample submission Chain of Custody forms.

**Water Quality Assessment**

- **Records did not 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).**

Table 1 of O. Reg. 169/03 prescribed the limit for E.coli and Total coliforms as "not detectable".

- During this review period, 840 samples were collected from the water distribution system and tested for E. coli & Total coliforms. No samples exceeded the prescribed limit for E. coli. One sample exceeded the prescribed limit for Total coliforms - with a result of 1 cfu/100ml (February 11, 2020).

Table 2 of O. Reg. 169/03 prescribed the limit for Trihalomethanes (THMs) as "0.100 mg/L" – expressed as a running annual average of quarterly results.

- The highest annual average of quarterly results was 0.025 mg/L (annual period ending May 12, 2020).

Table 2 of O. Reg. 169/03 prescribed the limit for Haloacetic acids (HAAs) as "0.080 mg/L" – expressed as a running annual average of quarterly results. Note: this limit came into affect on January 1, 2020.

- The highest annual average of quarterly results obtained was 0.029 mg/L (annual period ending February 11, 2020).

**Reporting & Corrective Actions**

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

The owner took appropriate corrective actions related to the sample collected on February 11, 2020, with total

**Reporting & Corrective Actions**

coliform result of 1 cfu/100ml. Corrective actions included the collection of one set of samples. A set included one upstream, one downstream and one at the adverse water quality incident location. None of the resamples exceeded the prescribed limit for total coliform.

- **All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.**
- **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.**  
Records of events were documented in facility logs.
- **All changes to the system registration information were provided within ten (10) days of the change.**

**Other Inspection Findings**

- **The following instance(s) of non-compliance were also noted during the inspection:**

Condition 2.4 of the Drinking Water Works Permit stipulated that the owner shall notify the Director within thirty (30) days of the placing into service or the completion of any addition, modification, replacement or extension of the drinking water system which had been authorized through:

2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this Drinking Water Works Permit;

Facility log records for the month of January 2020 demonstrated that:

- the "Post" continuous analyzer, chlorine gas cylinders and other unused parts from the discontinued chlorine gas secondary disinfection system, were removed from the drinking water system,
- mechanical and electrical equipment for the new sodium hypochlorite system was installed,
- staff received hands-on training, and
- the new secondary disinfection system was put into service.

These alterations to the Drinking Water System were pre-approved by Schedule B of the Drinking Water Works Permit.

Alterations made to the secondary disinfection system changed the description of components within Schedule A of the Drinking Water Works Permit. The owner did not notify the Director within thirty (30) days of placing the new sodium hypochlorite secondary disinfection system into service, as required by Condition 2.4 of the Drinking Water Works Permit. Director Notification forms may be found on the Ontario.ca website or following this link <http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/ssbforms.nsf/ODAGetFormDetail?openagent&lang=E&env=ODA&NO=012-9166E>.

- **The following items are noted as being relevant to the Drinking Water System:**

Provincial Officers Order - Ontario's Safe Drinking Water Act

A Provincial Officers Order was issued to a private company within the Municipality of South Huron.

The company operated a produce business that included property for growing produce. Multiple water service connections existed between the municipal drinking water system and company's plumbing. The company's plumbing was connected to one or more irrigation system that included: well(s), pond(s), pump(s) and distribution lines. In the absents of drawings or schematics, the company's representative was unable to determine the configuration of the irrigation system(s). It was understood that the irrigation system operated at significantly higher pressure than the Municipality's drinking water system. Without backflow prevention equipment that was both adequate and properly maintained, the potential existed for improperly treated water to enter the municipal drinking

---

**Other Inspection Findings**

water system and cause a drinking-water health hazard.

It was noted that three of the five service connections between the municipal drinking water system and the company's plumbing were opened by parties acting on behalf of the company, without the knowledge or consent of the Overall Responsible Operator for the Drinking Water System.

Ministry Staff inspected the site and subsequently served a Provincial Offenses Order (Order Number 1-OK0HP) to the company, for suspected contraventions of Ontario's Safe Drinking Water Act, 2002. The order aids as a preventative tool to protect the drinking water system from drinking-water health hazards.

**Municipal Backflow Prevention/Cross Connection Program**

An effective backflow prevention program is a critical component for ensuring the safety of the drinking water system and ultimately public health.

The owner is working toward the implementation of a backflow prevention/cross connection program. Discussions are underway with a third-party company to deliver the day to day activities of the program. While enforcement would remain with municipal staff. Program implementation is anticipated in the fall of 2020 and the completion of a draft Backflow Prevention By-Law before the end of 2020.

Further information on backflow prevention programs may be found on the Ontario.ca website or following this link <https://www.ontario.ca/page/guide-drinking-water-system-owners-seeking-undertake-backflow-prevention-program>.

---

**NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED**

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

**1. The following instance(s) of non-compliance were also noted during the inspection:**

Condition 2.4 of the Drinking Water Works Permit stipulated that the owner shall notify the Director within thirty (30) days of the placing into service or the completion of any addition, modification, replacement or extension of the drinking water system which had been authorized through:

2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this Drinking Water Works Permit;

Alterations made to the secondary disinfection system changed the description of components within Schedule A of the Drinking Water Works Permit. The owner did not notify the Director within thirty (30) days of placing the new sodium hypochlorite secondary disinfection system into service, as required by Condition 2.4 of the Drinking Water Works Permit.

**Action(s) Required:**

The owner submitted a Director Notification form to the Ministry before the issuance of this this report.

No further actions required.

**SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES**

This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

**Not Applicable**

---

## SIGNATURES

Inspected By:

Andrew Winkler

Signature: (Provincial Officer)



Reviewed & Approved By:

Marc Bechard

Signature: (Supervisor)



2020.10.09 13:23:57 -04'00'

Review & Approval Date:

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.



**Ministry of the Environment, Conservation and Parks  
Drinking Water System Inspection Report  
Appendix A**

---

**Key Reference and Guidance Material for Drinking Water Systems**

---

# 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



**Ministry of the Environment, Conservation and Parks  
Drinking Water System Inspection Report Appendix B**

---

**Inspection Rating Record and Inspection Risk Methodology**

---

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2020-2021)

**DWS Name:** SOUTH HURON DISTRIBUTION SYSTEM  
**DWS Number:** 220001520  
**DWS Owner:** South Huron, The Corporation Of The Municipality  
**Municipal Location:** South Huron

**Regulation:** O.REG 170/03  
**Category:** Large Municipal Residential System  
**Type Of Inspection:** Adhoc  
**Inspection Date:** August 18, 2020  
**Ministry Office:** Sarnia District

**Maximum Question Rating:** 700

Inspection Module	Non-Compliance Rating
Treatment Processes	0 / 128
Operations Manuals	0 / 56
Logbooks	0 / 8
Certification and Training	0 / 84
Water Quality Monitoring	0 / 102
Reporting & Corrective Actions	0 / 140
Other Inspection Findings	0 / 0
Treatment Process Monitoring	0 / 182
<b>TOTAL</b>	<b>0 / 700</b>

**Inspection Risk Rating** 0.00%

**FINAL INSPECTION RATING:** 100.00%

**Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2020-2021)**

<b>DWS Name:</b> SOUTH HURON DISTRIBUTION SYSTEM
<b>DWS Number:</b> 220001520
<b>DWS Owner:</b> South Huron, The Corporation Of The Municipality
<b>Municipal Location:</b> South Huron
<b>Regulation:</b> O.REG 170/03
<b>Category:</b> Large Municipal Residential System
<b>Type Of Inspection:</b> Adhoc
<b>Inspection Date:</b> August 18, 2020
<b>Ministry Office:</b> Sarnia District

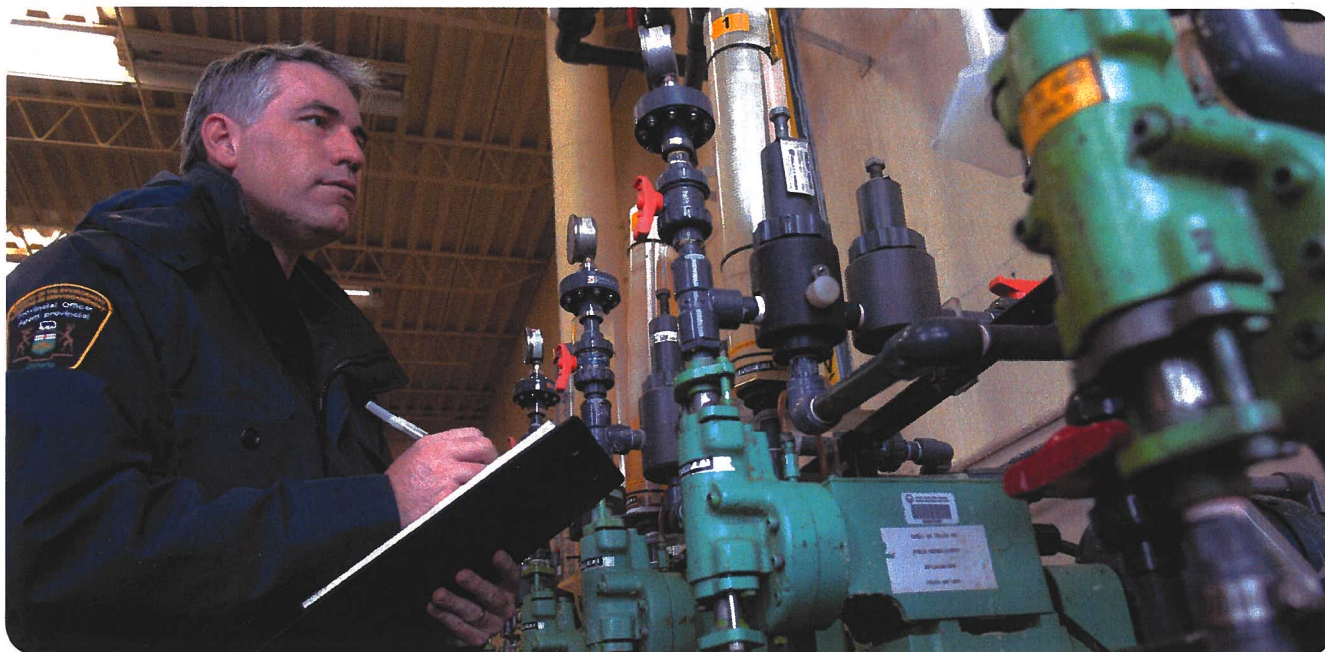
Non-compliant Question(s)	Question Rating
<b>Other Inspection Findings</b>	
In the event that an issue of non-compliance outside the scope of this inspection protocol is identified, a "No" response may be used if further actions are deemed necessary (and approved by the DW Supervisor) to facilitate compliance.	0
<b>TOTAL QUESTION RATING</b>	<b>0</b>

**Maximum Question Rating: 700**

<b>Inspection Risk Rating</b>	<b>0.00%</b>
-------------------------------	--------------

<b>FINAL INSPECTION RATING:</b>	<b>100.00%</b>
---------------------------------	----------------

# 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 up to 14 inspection modules and consists of approximately 120 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:

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

(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).

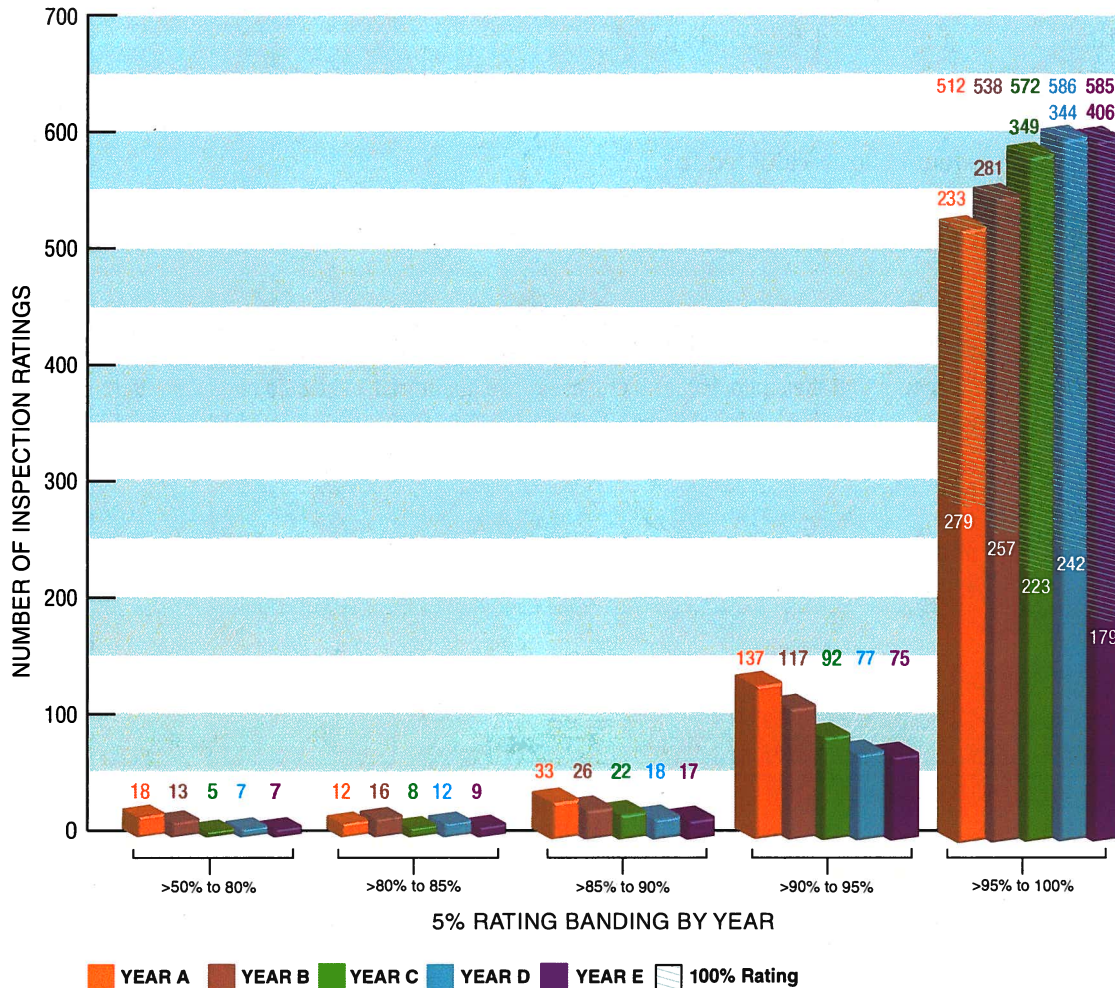
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

## 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 14 possible modules of the inspection protocol,

which would provide the system owner/operator with information on the areas where they need to improve. The 14 modules are:

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

For further information, please visit [www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater)