Ministry of the Environment, Conservation and Parks

Drinking Water and Environmental Compliance Division

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

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Ontario

April 15, 2025

Union Water Supply System Inc.
1615 Union Avenue
Ruthven, Ontario
N0P 2G0

Attention: **Dale Dillen**, Sr. Operations Manager
Regarding: **Union Water Supply System (WW# 210000853)** Final Inspection Report.
Physical Inspection conducted on **January 23, 2025**

The enclosed Drinking Water Inspection Report outlines non-compliances, if any, with Ministry legislation, and policies for the above noted water system. Violations noted in this report, if any, have been evaluated based on community risk. These violations will be monitored for compliance with the minimum standards for drinking water in Ontario as set forth under the *Safe Drinking Water Act* and the associated regulations. Where risk is deemed to be high and/or compliance is an ongoing concern, violations will be forwarded to this Ministry's Environmental Investigation and Enforcement Branch.

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 under "Drinking Water" on the Drinking Water Ontario website at https://www.ontario.ca/environment-and-energy/taking-care-your-drinking-water-guide-members-municipal-councils

The Inspection summary Rating Record (IRR) 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. Attached to the report is the IRR

methodology guidance describing how the risk rating model has improved to better reflect the health related and administrative non-compliance found in an inspection report. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspector's Annual Report.

Should you have any questions regarding the report, please feel free to contact me at (519) 317-8084.

Sincerely,

Angela Stroyberg
Provincial Officer
Water Compliance Officer
London District Office
Angela.Stroyberg@Ontario.ca

cc. Windsor Essex Public Health Unit
Essex Region Conservation Authority
London District File

UNION AREA WATER SUPPLY SYSTEM
Physical Address: 1615 UNION AVE, , KINGSVILLE, ON N9Y 2G5

INSPECTION REPORT

System Number:	210000853
Entity:	UNION WATER SYSTEM JOINT BOARD OF MANAGEMENT (LEAMINGTON, KINGSVILLE, ESSEX, LAKESHORE)
Inspection Start Date:	December 01, 2024
Site Inspection Date:	January 23, 2025
Inspection End Date:	April 01, 2025
Inspected By:	Angela Stroyberg
Badge #:	1695

(signature)

INTRODUCTION

Purpose

This announced, detailed inspection of the Union Water Supply System (DWS# 210000853) was conducted on January 23, 2025, by Provincial Officer Angela Stroyberg 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.

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.

Facility Contacts and Dates

The drinking water system is owned by Union Water Supply System Inc. and operated by the Ontario Clean Water Agency. The system directly serves the following drinking water systems and are inspected separately on an annual basis:

- Kingsville Distribution System (DWS# 220003403)
- Lakeshore Distribution System (DWS# 260004995)
- Leamington Distribution System (DWS# 210000853)
- Essex Distribution System (DWS# 220003680)

The Union Water Supply System is categorized as a Large Municipal Residential System. Information reviewed for this inspection covered the time period of January 1, 2024, to December 31, 2024.
The Elevated Towers listed in DWWP # 041-201 were inspected on February 27, 2025. It should be noted that after ownership of assets were separated from the surrounding distribution systems, it was determined that the Union Water Supply System has a separate a class 4 distribution system that falls under DWS# 210000853. Management, maintenance, and sampling of that distribution system will begin in the summer of 2025.

Systems/Components

All locations associated with primary disinfection were visited as part of this inspection. The following sites were visited as part of the inspection of the drinking water system:

Intake Crib
- Two (2) Rock filled timber crib with coated steel cover
- One (1) emergency intake located adjacent to the LL pumping station

LL Pumping Station
- Two (2) coarse bar screens
- Four (4) travelling screens
- Seven (7) Low lift pumps
- LL Back up Diesel Generator

Union Water Treatment Plant
- Three (3) solids contact upflow clarifiers with domed covers (1 currently being converted to a DAF unit)
- One (1) Hybrid dissolved air flotation system/settling tank
- Eight (8) gravity dual media filters
- Two (2) backwash pumps
- Eight (8) High lift Pumps
- Two (2) clearwells
- Two (2) reservoirs
- One (1) direct drive diesel engine on HL#1
- Two (2) Diesel Generators rated at 135 kW and 750kW
- SCADA System

Chemicals
- One (1) Co2 system with bulk storage tank
- Four (4) Coagulant metering pumps with two (2) bulk storage tanks
- One (1) pilot study coagulant system for clarifier startup
- Four (4) Coagulant aid metering pumps with two (2) bulk storage tanks
- Three (3) Filter Aid metering pumps with one (1) storage tank

- Four (4) V- notch Chlorinators for cylinders used for pre and post chlorination
- Four (4) PAC feed pumps with two (2) bulk storage and two (2) recirculation pumps
- Two (2) Sodium Hypochlorite metering pumps with Two (2) Bulk Storage tanks

Cottam Reservoir and Booster Station
- One (1) Cell with a volume of 3,630 m3
- One (1) Cell with a volume of 5,050 m3
- One (1) Contact chamber with a volume of 1,209 m3
- Four (4) Vertical Turbine Pumps
- Two (2) Sodium Hypochlorite pumps with one (1) bulk storage tank
- One (1) Back up Diesel Generator rated at 400kW

Leamington Tower
- One (1) Steel elevated water storage tank with a total volume of 1,514 m3

Kingsville Tower
- One (1) Steel elevated water storage tank with a total volume of 1,137 m3

Essex Tower
- One (1) Steel elevated water storage tank with a total volume of 1,137 m3

Albuna Water Tower
- One (1) Steel elevated water storage tank with a total volume of 6,820 m3

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) Drinking Water Works Permit # 041- 201 Issue Number 7, dated July 9, 2024.
2) Drinking Water Works Permit # 041- 201 Issue Number 6, dated November 26, 2021.
3) Municipal Drinking Water Licence # 041-101 Issue Number 9, July 9, 2024.
4) Municipal Drinking Water Licence # 041-101 Issue Number 8, dated November 26, 2021.
5) Permit to Take Water #0816-9T9SVT, dated March 6, 2015.
6) Extension Letter for PTTW #0816-9T9SVT, dated January 23, 2025

NON-COMPLIANCE

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

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

Item	Question	Compliance Response/Corrective Action(s)
NC-1	**Question ID:** DWMR1076001 Were adjustments to the treatment equipment only made by certified operators?	Adjustments to the treatment equipment were made by persons other than certified operators. The Union Water Supply System currently employ a number of operators that hold an operator-in-training certification. Under O. Reg 128/04 s. 25(5) a person who holds an operator-in-training's certification shall not be designated as an operator-in-charge, therefore, the Owner / Operating Authority shall designate a person with a Water Treatment Level 1 Certification or higher as an operator-in-charge as per O. Reg 128/04 s 25(1) for the subsystem. An Operator-in-Charge is defined as a person who is authorized to set operational parameters for the subsystem or for a process that controls the effectiveness or efficiency of the subsystem; and direct or instruct other operators in the subsystem to set such operational parameters. Discussions at the time of the physical inspection revealed that that Operators who hold an Operator-in-Training (OIT) certificate were performing duties of an Operator-in-Charge (OIC) including making operational decisions such as adjusting chemical dosages and pump changes without consulting with an OIC prior to making these operational changes. Operators who hold an OIT certificates must document all instructions provided by the operator-in-charge, including the date and time of the instruction. Once the direction has been completed, documentation must include "completed as per OIC" or a similar notation, after an entry is made in the logbook for any

		operational duties or process changes.
NC-2	**Question ID:** DWMR1044001 Did the process wastewater discharge monitoring program and discharge quality comply with requirements established in the Municipal Drinking Water Licence?	The process wastewater discharge monitoring program and/or discharge quality did not comply with requirements established in the Municipal Drinking Water Licence. Municipal Drinking Water Licence #041-201 Issue #9, Sections 5 of Schedule C outline the requirements for sampling, testing, and monitoring the environmental discharge parameters. The Union Drinking Water Supply is required to collect the following samples: Point of Discharge from the waste management pond 1) Monthly Grab sample – Total Chlorine Residual 2) Monthly Composite – Total Suspended Solids Point of Discharge from the South end of the residual waste pile 1) Monthly Grab Sample – Total Suspended Solids 2) Filtered and Unfiltered Grab - Aluminum Section 1.5 of Schedule C states that the annual average concentration of TSS shall not exceed 25 mg/L and that the annual average concentration of Total Chlorine Residual shall not exceed 0.02 mg/L. In addition, a monthly grab sample shall not exceed the maximum concentration of 0.1 mg/L of Total Chlorine. A review of documentation for the inspection period indicated that the total chlorine residual concentrations exceeded the prescribed limit of 0.1 mg/L for the following months from the point of discharge of the waste management pond: Monthly Grab Samples from point of discharge 1) July 2024 = 0.12 mg/L 2) August 2024 = 0.10 mg/L

		3) September 2024 = 0.10 mg/L 4) October 2024 = 0.11 mg/L 5) November 2024 = 0.22 mg/L
NC-3	**Question ID:** DWMR1064001 Did an operator-in-charge ensure that records were maintained of all adjustments to the processes within their responsibility?	The operator-in-charge did not ensure that records were maintained of all adjustments to the processes within their responsibility. Ontario Regulation 128/04 section 26 (2) states that an Operator-in-Charge shall, (a) take all steps reasonably necessary to operate the processes within his or her responsibility in a safe and efficient manner in accordance with the relevant operations manuals; (b) ensure that the processes within his or her responsibility are measured, monitored, sampled and tested in a manner that permits them to be adjusted when necessary; (c) ensure that records are maintained of all adjustments made to the processes within his or her responsibility; and (d) ensure that all equipment used in the processes within his or her responsibility is properly monitored, inspected, tested and evaluated and that records of equipment operating status are prepared and available at the end of every operating shift. O. Reg. 128/04, s. 26 (2). Electronic logbooks submitted for review stated that online analyzer calibrations were completed but at times, entries failed to clearly identify which unit was calibrated, the exact times of the calibration (start and finish) per unit, readings before and after calibrations and documentation of the handheld DPD reading or NTU standard that was used to calibrate the unit. The Owner / Operating Authority also failed to document if the plant/filters were in production or off at the time of the calibration, any maintenance that was performed (new probe, added electrolyte etc.) or any issues that may have occurred with the unit during calibrations.

NC-4	**Question ID:** DWMR1025001 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?	All parts of the drinking water system were not disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit. Drinking Water Works Permit #041-201 Issue #7 Section 2.3 of Schedule B stipulates that All parts of the drinking water system in contact with drinking water that are added, modified, replaced, extended shall be disinfected in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents: a) The ministry's Watermain Disinfection Procedure, dated August 1, 2020; b) Subject to condition 2.3.2, any updated version of the ministry's Watermain Disinfection Procedure; c) c) Subject to condition 2.3.3, i. AWWA C652 – Standard for Disinfection of Water-Storage Facilities; ii. AWWA C653 – Standard for Disinfection of Water Treatment Plants. For greater certainty, where an activity has occurred that could introduce contamination, including but not limited to repair, maintenance, or physical / video inspection, all equipment that may come in contact with the drinking water system shall be disinfected in accordance with the requirements of condition 2.3 above. Documentation submitted for review dated March 25, 2024, and another dated December 20, 2024, indicated that that Owner / Operating Authority failed to ensure that AWWA Standard C653 – Disinfection of Water Treatment Plants was followed and accurately documented in order to satisfy the conditions imposed by the Director in the Drinking Water Works Permit. Forms submitted lacked appropriate details such as but not limited to, which approved disinfection method was followed, accurate times of activities performed, the length of contact time and if a certified operator was on

	site to oversee the disinfection procedure.

RECOMMENDATIONS

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

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

Item	Question	Recommendation(s)
R-1	**Question ID:** DWMR1069001 Were all storage facilities completely covered and secure?	Storage facilities were not completely covered and secure. At the time of the inspection, the outdoor treated water reservoir hatches were tightly secured with a metal bar that was bolted to the associated concrete pads. Due to weather conditions, these outdoor hatches could not be assessed for a watertight seal. The hatch associated with Clearwell #2 was located within the highlift pumping station, while the hatch associated with Clearwell #1 was located within a truck breezeway. Neither of the hatches associated with the clearwells were fitted with acceptable watertight seals that would adequately prevent the ingress of contaminates, invertebrates, small animals and arachnids.
R-2	**Question ID:** DWMR1070001 Were air vents and overflows associated with reservoirs and elevated storage structures equipped with screens?	Air vents and overflows associated with reservoirs and elevated storage structures were not equipped with screens. It was observed during the inspection that the plant's treated water reservoir access points were fitted with metal vents along the walls to allow proper venting to the outside, however, some of these vents did not have appropriate screens to mitigate access to the finished water from contaminants, animals, and invertebrates, etc. In addition, the overflows associated with the Kingsville Elevated Tower and the Leamington Elevated Tower did not have an acceptable screen or mechanical device to prevent the entry of contaminants, animals, and invertebrates, etc.

INSPECTION DETAILS

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

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

Question ID	DWMR1012001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Did the owner have a harmful algal bloom monitoring plan in place that met the requirements of the Municipal Drinking Water Licence?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner had a harmful algal bloom monitoring plan in place which met the requirements.

As per Schedule C, Section 7.0 of Municipal Drinking Water Licence #041-101 – Issue #9, the Owner shall develop and keep an up-to-date Harmful Algal Bloom Monitoring Plan. The Owner shall ensure that the plan meets the requirements set out in the Ministry document titled "Harmful Algal Bloom Guide for Owners and Operators of Municipal Residential Drinking Water Systems", dated January 29, 2024. The plan shall include details relating to visual monitoring, reporting procedures, a sampling plan that includes location and frequencies, as well as triggers for increased sampling.

A review of the document entitled "Harmful Algal Bloom, Monitoring, Sampling, and Reporting Plan" dated August 7, 2024, indicated that the Owner / Operating Authority is in compliance with the aforementioned requirements. In addition to the above, training was provided to relevant drinking water staff on April 3, 2024, as per Schedule C, section 7.2 of the MDWL.

Over the course of the inspection period, the Operating Authority collected the required raw and treated water samples on a weekly basis from May 13, 2024, until November 4, 2024. All results were less the applicable limit of 1.5 mg/L.

Question ID	DWMR1010001	**Question Type**	BMP

Legislative Requirement(s):
Not Applicable

Question:
Were trends in source water quality monitored?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Trends in source water quality were monitored.

Question ID	DWMR1014001	Question Type	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Was flow monitoring performed as required by the Municipal Drinking Water Licence or Drinking Water Works Permit?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Flow monitoring was performed as required.

Municipal Drinking Water Licence #041-101 - Issue #9, Section 2 of Schedule C stipulates that continuous flow measurement and recording shall be undertaken for the flow rate (L/s) and daily volume (m3/day) of treated water that flows from the treatment subsystem to the distribution system and water that flows into the treatment subsystem.

At the time of the inspection, it was observed that flow meters were installed on each of the four (4) raw water discharge headers to measure the raw water flow from Lake Erie into the treatment plant. Individual flow meters were also observed on
each of the two (2) treated water discharge headers which were located downstream of the highlift pumps but prior to treated water entering the distribution system.

In addition to the aforementioned, additional process flow meters were installed throughout the system.

Question ID	DWMR1015001	Question Type	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Were flow measuring devices calibrated or verified in accordance with the requirements of the Municipal Drinking Water Licence?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Flow measuring devices were calibrated or verified as required.

Municipal Drinking Water Licence #041-101 section 3.0 of Schedule C states that all flow measuring devices that are required by regulation, by a condition in the drinking water works permit #401-201, or by a condition otherwise imposed by the Ministry, shall be checked and where necessary calibrated in accordance with the manufacturer's instructions.

Condition 3.2.1 of the Municipal Drinking Water Licence further stipulates the following in reference to the 12 month period referenced in Condition 3.2:

"For greater certainty, if condition 3.2 applies, the equipment shall be checked and calibrated not more than 30 days after the first anniversary of the day the equipment was checked and calibrated in the previous 12 month period." Calibration Records provided for review indicated that calibrations are conducted annually and were last conducted in May of 2024.

Question ID	DWMR1016001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Was the owner in compliance with the conditions associated with maximum flow rate or the rated/operational capacity in the Municipal Drinking Water Licence?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner was in compliance with the conditions associated with maximum flow rate and/or the rated/operational capacity conditions.

Municipal Drinking Water Licence #041-101 - Issue #9, Section 1 of Schedule C stipulates that the treated water from the treatment facility to the distribution system must not exceed the rated capacity of 124,588 m3/day for the Union Water Treatment Plant. It should be noted that the aforementioned stipulated rated capacity when expressed in L/s as recorded by SCADA, the maximum flow rate from the treatment facility must not exceed 1441.99 L/s for a 24-hour period.

Despite the above conditions, the system may be operated above the maximum daily volume for firefighting purposes or for maintenance on the system. Records submitted for review indicate that the rated capacity was not exceeded for a 24-hour period, for the stated inspection period.

Question ID	DWMR1013001	Question Type	Legislative

Legislative Requirement(s):
OWRA | 34 | (3);

Question:
Was the owner in compliance with all conditions of the Permit To Take Water?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner was in compliance with all conditions of the Permit To Take Water.

Permit to Take Water # 0816-9T9SVT dated March 6, 2015, stipulates the amount of water taken from Lake Erie shall not exceed the following:

Maximum Rate = 113, 650 L/min
Maximum Number of Hours Taken per Day = 24 hours
Maximum Volume per Day = 163,656,000 L/day
Maximum Number of Days = 365 days

The permit also stipulates that the permit holder shall maintain a record of all water takings. The record shall include the dates and times of water takings, the rates of pumping and an estimated calculation of the total amounts of water pumped per day for each day that the water is taken under the authorization of the permit.

According to documentation, the Owner / Operating Authority have complied with the aforementioned.

It should be noted that an extension was issued on January 23, 2025, for Permit to Take Water #0816-9T-SVT because the application for renewal was made less than 90 days before it expired on January 31, 2025, as per the OWRA 34.1(6).

Question ID	DWMR1018001	Question Type	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Did the owner ensure that equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner ensured that equipment was installed as required.

Observations made at the time of the inspection indicated that the equipment and components that are described under Schedule A of the Drinking Water Works Permit #041-201 – Issue #7 were installed for the Union Water Supply System.

It should be noted that the facility is currently still upgrading Clarifier No. 2 into a DAF hybrid and therefore equipment listed under Schedule C was not assessed at the time of the physical inspection.

Question ID	DWMR1021001	Question Type	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Were Form 2 documents prepared as required?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Form 2 documents were prepared as required.

The Owner / Operating Authority provided fifteen (15) Form 2 documents pertaining to several various modifications throughout the treatment plant and distribution system.

Question ID	DWMR1019001	Question Type	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Were Director Notifications prepared and submitted as required?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Director Notifications were prepared and submitted as required.

A Directors Notification form was submitted on June 7, 2024, for the modification of the pilot coagulant feed system to be repurposed as a secondary coagulant feed system capable of feeding the clarifiers and DAF units during peak season.

Question ID	DWMR1028001	Question Type	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Were up-to-date plans for the drinking water system made available in such a manner that they could be readily viewed by all persons responsible for all or part of the operation of the drinking water system, in accordance with the Drinking Water Works Permit and Municipal

Drinking Water Licence?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Plans for the drinking water system were kept up-to-date and made available as required.

Question ID	DWMR1025001	Question Type	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Were all parts of the drinking water system that came in contact with drinking water disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?

Compliance Response(s)/Corrective Action(s)/Observation(s):
All parts of the drinking water system were not disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit.

Drinking Water Works Permit #041-201 Issue #7 Section 2.3 of Schedule B stipulates that All parts of the drinking water system in contact with drinking water that are added, modified, replaced, extended shall be disinfected in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:
a) The ministry's Watermain Disinfection Procedure, dated August 1, 2020;
b) Subject to condition 2.3.2, any updated version of the ministry's Watermain Disinfection Procedure;
c) c) Subject to condition 2.3.3,
i. AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
ii. AWWA C653 – Standard for Disinfection of Water Treatment Plants.
For greater certainty, where an activity has occurred that could introduce contamination, including but not limited to repair, maintenance, or physical / video inspection, all equipment that may come in contact with the drinking water system shall be disinfected in accordance with the requirements of condition 2.3 above.
Documentation submitted for review dated March 25, 2024, and another dated December 20, 2024, indicated that that Owner / Operating Authority failed to ensure that AWWA Standard C653 – Disinfection of Water Treatment Plants was followed and accurately documented in order to satisfy the conditions imposed by the Director in the Drinking Water Works Permit. Forms submitted lacked appropriate details such as but not limited to, which approved disinfection method was followed, accurate times of activities performed, the length of contact time and if a certified operator was on site to oversee the disinfection procedure.

CORRECTIVE ACTIONS:

From herein, the Owner / Operating Authority shall ensure that the procedures listed in the

most current issue of the Drinking Water Works Permit #041-201, Section 2.3 of Schedule B are followed, and associated activities are properly documented in order to satisfy the conditions imposed by the Director. Compliance with this requirement will be assessed during the next annual inspection of the water system.

In addition to the aforementioned, the Owner / Operating Authority shall provide training to all operators and maintenance staff on the requirements prescribed by Drinking Water Works Permit #041-201, Section 2.3 of Schedule B, and documentation associated with this training shall be provided to the undersigned Officer no later than May 31, 2025.

Question ID	DWMR1023001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 1-2 | (2);

Question:
Did records indicate that the treatment equipment was operated in a manner that achieved the design capabilities prescribed by O. Reg. 170/03, Drinking Water Works Permit and/or Municipal Drinking Water Licence at all times that water was being supplied to consumers?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities prescribed.

The Procedure for Disinfection of Drinking Water in Ontario states that a raw water source that is surface water shall ensure at least a 2-log (99%) removal or inactivation of Cryptosporidium, 3-log (99.9%) removal or inactivation of Giardia Cysts and a 4-log (99.99%) removal or inactivation of Viruses by the time the water enters the distribution system. At least 0.5-log removal or inactivation of Giardia cysts and 2-log removal or inactivation of viruses must be provided through the disinfection portion of the overall water treatment process. In addition to the aforementioned, the Municipal Drinking Water Licence #041-101 Schedule E, Log Removal/Inactivation credits for Conventional Filtration states the following:

1) 2 Log Inactivation of Cryptosporidium Oocysts
2) 2.5 Log Inactivation of Giardia Cysts
3) 2 Log Inactivation of Viruses

In addition, Chlorination must account for the following level of treatment in order to meet with the required log removal / inactivation credits.

1) 0 Log Inactivation of Cryptosporidium Oocysts
2) 0.5+ Log Inactivation of Giardia Cysts
3) 2+ Log Inactivation of Viruses

The Union Water Treatment Plant utilizes an on-line CT calculator through SCADA and is equipped with alarms. The Operators also have access to a CT calculator that they can

manually enter in conditions to anticipate any issues that may arise during any unusual event or any planned maintenance.
The calculation of CT is understood to include all pertinent parameters associated with primary disinfection including flow rates, baffling factors, reservoir levels / volumes, pH, temperature, and free chlorine concentrations.

Documentation submitted for review, indicated that the concentration of free chlorine for the treated water was consistently greater than the minimum requirements. Reservoirs were maintained at a level greater than the minimum level, as well as maximum capacity not exceeded. There were also no instances when the turbidity levels were considered non-compliant over the inspection period therefore indicating that chemical coagulant was continuously injected, in addition, the filter turbidity was maintained at a concentration of less than 0.3 NTU in 95% of the measurements conducted on a monthly basis.

Question ID	DWMR1027001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Did the owner have evidence indicating that chemicals and materials that came in contact with water within the drinking water system met all applicable AWWA and ANSI standards in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner had evidence indicating that chemicals and materials that came in contact with water within the drinking water system met the applicable standards.

The Owner / Operating Authority provided NSF / ANSI documentation for the following chemicals used at the Treatment Plant:

1) Anchem, Anchlor 12 (Carboys) - Sodium Hypochlorite 12% – Max use = 60 mg/L
2) Brenntag, COL-PL800 - Power Activated Carbon
3) Brenntag, COL-L800 - Granular Activated Carbon
4) Brenntag, Tonners - Chlorine Gas – Max use = 30 mg/L
5) Air Liquide, bulk - Carbon Dioxide - Max use = 200 mg/L
6) Kemira, SternPAC 70 – Coagulant – Max use = 250 mg/L
7) LAVO, LAVO 12% - Sodium Hypochlorite 12% - Max use = 96%
8) Nalco, CAT-FLOC 8103 – Filter Aid – Max use = 57 mg/L
9) Northland, Norfloc 122 – Polymer – Max use = 1 mg/L

Question ID	DWMR1036001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-7 | (1);

Question:
Where continuous monitoring equipment was not used for chlorine residual analysis, were samples tested using an acceptable portable device?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Samples for chlorine residual analysis were tested using an acceptable portable device.

Question ID	DWMR1030001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 7-2 | (1); SDWA | O. Reg. 170/03 | 7-2 | (2);

Question:
Was primary disinfection chlorine monitoring being conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit or at/near a location where the intended CT had just been achieved?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Primary disinfection chlorine monitoring was conducted as required.

Question ID	DWMR1031001	Question Type	BMP

Legislative Requirement(s):
Not Applicable

Question:
Were operators aware of the operational criteria necessary to achieve primary disinfection within the drinking water system?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Operators were aware of the operational criteria necessary to achieve primary disinfection within the drinking water system.

The Operating Authority is aware of the critical operational parameters associated with the achieving primary disinfection at the Treatment Plant, and understand both chlorination with appropriate contact time, and chemically assisted filtration must both be operational in order to meet with the minimum requirements.

The Operating Authority utilizes an online CT calculator which continually draws and assesses water quality data from the SCADA including parameters such as flow rates, free chlorine concentration, reservoir / clearwell depths, temperature, and pH in order to determine Treatment Plant CT values. However, as part of this inspection, it was determined that the

Online CT calculations may not capture all necessary parameters to make accurate calculations of CT. Upon notification of this issue, the Operating Authority implemented necessary changes to the CT calculator to ensure its proper functioning. The Owner / Operating Authority is reminded that Municipal Drinking Water Licence #041-101 Issue #9 section 17.0 of Schedule B states that any changes to the CT calculations used as the basis for primary disinfection described in Table B1 must be:

17.1.1 Structured to ensure that the provided CT is greater than or equal to the CT (or log inactivation) required for the pathogen inactivation as described in Schedule E of the Licence;
17.1.2 included in the Operations and Maintenance manual described in condition 16 of Schedule B in the licence prior to being implemented;
17.1.3 reviewed by a licensed Engineering Practitioner; and,
17.1.4 submitted to the Director no later than 30 days after the date of that the changes have been implemented.

Question ID	DWMR1032001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 7-3 | (2);

Question:
If the drinking water system obtained water from a surface water source and provided filtration, was continuous monitoring of each filter effluent line performed for turbidity?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Continuous monitoring of each filter effluent line was performed for turbidity.

Ontario Regulation 170/03 Schedule 7-3(2) states that if a drinking water system obtains water from a raw water supply that is surface water and the system provides filtration, the owner of the system shall ensure that sampling and testing for turbidity is carried out by continuous monitoring equipment on each filter effluent line.
In addition to the Municipal Drinking Water Licence #041-101 Issue #9, section 1.7.4 of Schedule B states that filtered water must be continuously monitored for turbidity from each filter and meet the criterion for filtered water turbidity of less than or equal to 0.3 NTU in 95% of the measurements each month. Filter performance will be evaluated within 72 hours of the end of each calendar month and should the performance for a filter not meet the percentage criterion specified in Schedule E, an adverse water quality report shall be made as per Schedule 16-4 of O. Reg 170/03 immediately after the evaluation is conducted.
The Owner / Operating Authority are reminded of condition 1.7 which comes into force on July 17, 2025, and states the following:

1.7.1 Filtrate turbidity performance shall be calculated for each filter using all turbidity measurements taken in a calendar day ('daily filtrate turbidity performance').

1.7.2 When filtrate turbidity test results are examined within 72 hours after the tests are conducted in accordance with Schedule 6, condition 6-5(1)(3), daily filtrate turbidity

performance shall be evaluated against the percentage criterion specified in Schedule E.

1.7.3 If an evaluation of daily filtrate turbidity performance indicates performance for a filter does not meet the percentage criterion specified in Schedule E, the owner shall ensure that:
a) Appropriate action is taken to identify the cause(s) and resolve where necessary.
b) A record is created to describe the action(s) taken.

The Union Water Supply System is a conventional filtration plant that utilizes eight (8) dual media gravity filters with each filter being divided into two sides (side A and side B). Each filter is equipped with an online continuous turbidimeter to monitor the filter effluent with the frequency as per Schedule 6.5 of Ontario Regulation 170/03. Documents submitted for review indicated that the turbidity was consistently below the legislative requirement while filter effluent was being directed to the next stage of the treatment process.

Question ID	DWMR1035001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-5 | (1)1-4;

Question:
Were operators examining continuous monitoring test results and did they examine the results within 72 hours of the test?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Operators were examining continuous monitoring test results as required.

Question ID	DWMR1038001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-5 | (1)1-4;

Question:
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?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency and recording data with the prescribed format.

Ontario Regulation 170/03 – Schedule 6.5 stipulates that 1. The continuous monitoring equipment must, except when no water is being directed to users of water sampled by the equipment,

i. test for the parameter with at least the minimum frequency specified in the Table for the parameter, and ii. record the date, time, sampling location and result of every test for the parameter with at least the minimum frequency referred to in subparagraph i.
2. If the continuous monitoring equipment tests for a parameter more often than is required by subparagraph 1 i, the equipment may, instead of complying with subparagraph 1 ii, i. record the minimum, maximum and mean results of tests for the parameter for every period that is equal to the length of time referred to in subparagraph 1 i, along with the sampling location, the date of the tests conducted during the period and the time at the end of the period, and ii. record the result of every test that causes an alarm to signal under paragraph 1 of subsection (1.1), along with the sampling location and the date and time of the test.

The Owner / Operating Authority did provide continuous monitoring data that met with the requirements of Ontario Regulation 170/03, Schedule 6-5 for parameters including turbidity and free chlorine. It is strongly recommended that the Owner / Operating Authority determine a method in which all data pertinent to primary disinfection, including the aforementioned turbidity and free chlorine, but not limited to plant flow rates, reservoir levels / volumes, chemical coagulant pumping rates, raw water flow rates, pH, temperature, CT calculations (Required and Achieved) as applicable can be exported from the continuous analyzers / SCADA and stored on spreadsheets for both regulatory review purposes and for internal compliance purposes. This method should ensure compliance with Ontario Regulation 170/03 - Schedule 6-5 and also provide consistent pertinent data to illustrate all requirements of disinfection have been met with.

Question ID	DWMR1037001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-5 | (1)5-10; SDWA | O. Reg. 170/03 | 6-5 | (1.1);

Question:
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?

Compliance Response(s)/Corrective Action(s)/Observation(s):
All required continuous monitoring equipment utilized for sampling and testing were equipped with alarms or shut-off mechanisms that satisfied the standards

Question ID	DWMR1040001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-5 | (1)1-4; SDWA | O. Reg. 170/03 | 6-5 | (1)5-10;

Question:
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.

The current minimum regulatory requirements under Schedule 6-5 of O. Reg 170/03 stipulates that continuous monitoring equipment calibrations are to be conducted as often as necessary to ensure that test results are within the appropriate margin of error. Every free chlorine residual analyzer installed for the purpose of monitoring a primary disinfection process utilizing free chlorine residual, must be calibrated at a frequency necessary to ensure appropriate operation of the analyzer within a quality control band of plus/minus 0.05 mg/L at a chlorine concentration up to and including 1.0 mg/L or plus/minus 5.0% at a chlorine concentration greater than 1.0 mg/L.

In addition, every water turbidity analyzer installed for the purpose of monitoring the effectiveness of the filtration process (usually ahead of the primary disinfection process) must be calibrated at a frequency necessary to ensure the appropriate operation of the analyzer and must be within 0.100 NTU.

Documentation submitted for review stated that analyzer calibrations were completed monthly. The Owner / Operating Authority are reminded that records need to clearly identify details such as which units were calibrated, the exact times of the calibration (start and finish) per unit. The Owner / Operating Authority are also reminded to document if the plant/filters were in production or off at the time of the calibration, any maintenance that was performed (new probe, added electrolyte etc.) or any issues that may have occurred with the unit during calibrations. In addition to the above, handheld calibrations are conducted annually with the last calibration conducted in April 2024.

Question ID	DWMR1108001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-5 | (1)5-10; SDWA | O. Reg. 170/03 | 6-5 | (1.1);

Question:
Where continuous monitoring equipment used for the monitoring of free chlorine residual, total chlorine residual, combined chlorine residual or turbidity, required by O. Reg. 170/03, 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?

Compliance Response(s)/Corrective Action(s)/Observation(s):
A qualified person responded as required and took appropriate actions.

Question ID	DWMR1099001	Question Type	Information

Legislative Requirement(s):
Not Applicable

Question:
Do records show that water provided by the drinking water system met the Ontario Drinking Water Quality Standards?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Records showed that all water sample results met the Ontario Drinking Water Quality Standards.

Question ID	DWMR1079001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 10-4 | (1); SDWA | O. Reg. 170/03 | 10-4 | (2); SDWA | O. Reg. 170/03 | 10-4 | (3);

Question:
Were raw water microbiological sampling requirements prescribed by Schedule 10-4 of O. Reg. 170/03 for large municipal residential systems met?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Raw water microbiological sampling requirements were met.

Ontario Regulation 170/03, Schedule 10-4 stipulates that raw water samples are required to be collected and tested for E.coli, total coliforms with the prescribed frequency stipulated in Schedule 6-1.1(1) of O.Reg 170/03.

Over the inspection period, raw water microbiological samples were collected twice a week from the water raw sampling line. Based on the aforementioned, the Owner / Operating Authority are in compliance with the legislative requirement.

Question ID	DWMR1083001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 10-3;

Question:
Were treated microbiological sampling requirements prescribed by Schedule 10-3 of O. Reg. 170/03 for large municipal residential systems met?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Treated microbiological sampling requirements were met.

Ontario Regulation 170/03, Schedule 10-3 stipulates that treated water samples are required to be collected and tested for E.coli, Total Coliforms with the prescribed frequency stipulated in Schedule 6-1.1(1) of O.Reg 170/03.

Over the course of the inspection period, the Owner / Operating Authority collected weekly treated water microbiological samples. Based on the aforementioned, the Owner / Operating Authority is in compliance with the legislative requirement.

Question ID	DWMR1096001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-3 | (1);

Question:
Did records confirm that chlorine residual tests were conducted at the same time and location as microbiological samples?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Records confirmed that chlorine residual tests were conducted as required.

Question ID	DWMR1084001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 13-2;

Question:
Were inorganic parameter sampling requirements prescribed by Schedule 13-2 of O. Reg. 170/03 met?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Inorganic parameter sampling requirements were met.

Schedule 23 Inorganic water quality samples are required to be collected and tested every 12 months if the system obtains water from a raw water supply that is surface water as stipulated by Schedule 13-2 of O. Reg 170/03. According to documentation, Inorganic samples were collected on the following dates:

Union Water Supply System
1) January 10, 2024
2) January 10, 2023

Based on the aforementioned, the Owner / Operating Authority is in compliance with the requirements for collecting Inorganic water quality samples as per Schedule 23 of O. Reg 170/03.

Question ID	DWMR1085001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 13-4 | (1); SDWA | O. Reg. 170/03 | 13-4 | (2); SDWA | O. Reg. 170/03 | 13-4 | (3);

Question:
Were organic parameter sampling requirements prescribed by Schedule 13-4 of O. Reg. 170/03 met?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Organic parameter sampling requirements were met.

Schedule 24 Organic water quality samples are required to be collected and tested every 12 months if the system obtains water from a raw water supply that is surface water as stipulated by Schedule 13-2 of O. Reg 170/03. According to documentation, Organic samples were collected on the following dates:

Union Water Supply System
1) January 10, 2024
2) January 10, 2023

Based on the aforementioned, the Owner / Operating Authority is in compliance with the requirements for collecting Organic water quality samples as per Schedule 24 of O. Reg 170/03.

Question ID	DWMR1088001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 13-7;

Question:
Were nitrate/nitrite sampling requirements prescribed by Schedule 13-7 of O. Reg. 170/03 met?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Nitrate/nitrite sampling requirements were met.

Nitrate and Nitrite samples are required to be collected and tested every three (3) months in accordance with Schedule 13-7 of O. Reg 170/03 with the prescribed frequency stipulated in Schedule 6-1.1(4). According to documentation the following samples were collected:

Union Water Supply System
1) October 2, 2024
2) July 3, 2024
3) April 3, 2024
4) January 8, 2024

Based on the aforementioned, the Owner / Operating Authority is in compliance with the requirements for collecting nitrate and nitrite samples as per Schedule 13-7 of O. Reg 170/03.

Question ID	DWMR1089001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 13-8;

Question:
Were sodium sampling requirements prescribed by Schedule 13-8 of O. Reg. 170/03 met?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Sodium sampling requirements were met.

Sodium samples are required to be collected and tested every 60 months in accordance with Schedule 13-8 of O. Reg 170/03 with the prescribed frequency stipulated in Schedule 6-1.1 (7). According to documentation, the following samples were collected:

Union Water Supply System
1) January 10, 2024 = 6.8 mg/L
2) January 10, 2023 = 6.87 mg/L

Based on the aforementioned, the Owner / Operating Authority is in compliance with the requirements for collecting Sodium water quality samples as per Schedule 13-8 of O. Reg 170/03.

Question ID	DWMR1090001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 13-9;

Question:
Where fluoridation is not practiced, were fluoride sampling requirements prescribed by

Schedule 13-9 of O. Reg. 170/03 met?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Fluoride sampling requirements were met.

Fluoride samples are required to be collected and tested every 60 months in accordance with Schedule 13-9 of O. Reg 170/03 with the prescribed frequency stipulated in Schedule 6-1.1 (7). According to documentation, the following samples were collected:

Union Water Supply System
1) January 10, 2024 = 6.8 mg/L
2) January 10, 2023 = 6.87 mg/L

Based on the aforementioned, the Owner / Operating Authority is in compliance with the requirements for collecting Fluoride water quality samples as per Schedule 13-8 of O. Reg 170/03.

Question ID	DWMR1092001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-2;

Question:
Were water samples taken at the prescribed location?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Water samples were taken at the prescribed location.

Question ID	DWMR1110001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 11 | (6);

Question:
Was the annual report prepared by February 28th of the following year and did it contain the required information?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The annual report requirements were met.

Question ID	DWMR1057001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 11 | (2.1);

Question:
Did the owner of this system provide an annual report to the owner(s) of all standalone distribution systems connected to this system?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner provided an annual report to the standalone distribution system(s) connected to this system.

Question ID	DWMR1056001	Question Type	Information

Legislative Requirement(s):
Not Applicable

Question:
Did the donor provide an annual report to the owner of this receiver drinking water system?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The donor provided an annual report to the owner of the receiver drinking water system.

Question ID	DWMR1111001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 22-2 | (1); SDWA | O. Reg. 170/03 | 22-2 | (2); SDWA | O. Reg. 170/03 | 22-2 | (3); SDWA | O. Reg. 170/03 | 22-2 | (4);

Question:
Did the summary report contain the required information and was it completed and distributed as required?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The summary report requirements were met.

Question ID	DWMR1113001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 10.1 | (3);

Question:
Were changes to the system registration information provided to the ministry within ten (10) days of the change?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Changes to the system registration information were provided as required.

Question ID	DWMR1114001	Question Type	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Did the owner have evidence that, when required, all legal owners associated with the drinking water system were notified of the requirements of the Municipal Drinking Water Licence and Drinking Water Works Permit?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner had evidence that the required notifications were made.

Question ID	DWMR1098001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 13 | (1); SDWA | O. Reg. 170/03 | 13 | (2); SDWA | O. Reg. 170/03 | 13 | (3);

Question:
Were the required records kept for the periods prescribed by section 13 of O. Reg. 170/03?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The required records were kept for the prescribed periods.

Question ID	DWMR1043001	Question Type	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Were the process wastewater and residual solids/sludges treated, handled, and disposed of in accordance with the design requirements approved under the Drinking Water Works Permit and the Municipal Drinking Water Licence?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The process wastewater and residual solids/sludges were treated, handled, and disposed of as required.

Question ID	DWMR1044001	Question Type	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Did the process wastewater discharge monitoring program and discharge quality comply with requirements established in the Municipal Drinking Water Licence?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The process wastewater discharge monitoring program and/or discharge quality did not comply with requirements established in the Municipal Drinking Water Licence.

Municipal Drinking Water Licence #041-201 Issue #9, Sections 5 of Schedule C outline the requirements for sampling, testing, and monitoring the environmental discharge parameters. The Union Drinking Water Supply is required to collect the following samples:

Point of Discharge from the waste management pond
1) Monthly Grab sample – Total Chlorine Residual
2) Monthly Composite – Total Suspended Solids

Point of Discharge from the South end of the residual waste pile
1) Monthly Grab Sample – Total Suspended Solids
2) Filtered and Unfiltered Grab - Aluminum

Section 1.5 of Schedule C states that the annual average concentration of TSS shall not exceed 25 mg/L and that the annual average concentration of Total Chlorine Residual shall not exceed 0.02 mg/L. In addition, a monthly grab sample shall not exceed the maximum concentration of 0.1 mg/L of Total Chlorine.

A review of documentation for the inspection period indicated that the total chlorine residual concentrations exceeded the prescribed limit of 0.1 mg/L for the following months from the point of discharge of the waste management pond:

Monthly Grab Samples from point of discharge
1) July 2024 = 0.12 mg/L
2) August 2024 = 0.10 mg/L
3) September 2024 = 0.10 mg/L
4) October 2024 = 0.11 mg/L
5) November 2024 = 0.22 mg/L

CORRECTIVE ACTIONS:

From herein the Owner / Operating Authority shall ensure that the requirements set forth by the Municipal Drinking Water Licence #041-201 for monitoring and testing the of the Residual management system are followed. Discussions with the Operating Authority indicated that a new dechlorination system will be completed by the summer of 2025. The Owner / Operating

Authority shall provide documentation regarding the timeline as to when the new system is to be installed as well as documentation describing steps to mitigate the chlorine exceedances until the new facility is completed. The aforementioned shall be submitted to the undersigned Officer, no later than May 31, 2025.

Question ID	DWMR1047001	Question Type	BMP

Legislative Requirement(s):
Not Applicable

Question:
Did the owner have a program or maintain a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner had a program or maintained a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system.

Question ID	DWMR1050001	Question Type	BMP

Legislative Requirement(s):
Not Applicable

Question:
Was there a program in place for inspecting and exercising valves?

Compliance Response(s)/Corrective Action(s)/Observation(s):
There was a program in place for inspecting and exercising valves.

Question ID	DWMR1058001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 128/04 | 28;

Question:
Did operators and maintenance personnel have ready access to operations and maintenance manuals?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Operators and maintenance personnel had ready access to operations and maintenance manuals.

Question ID	DWMR1059001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 128/04 | 28;

Question:
Did the operations and maintenance manuals contain plans, drawings, and process descriptions sufficient for the safe and efficient operation of the system?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The operations and maintenance manuals contained plans, drawings, and process descriptions sufficient for the safe and efficient operation of the system.

The current regulatory requirements under O. Reg 128/04 s.28 stipulates that the Owner / Operating Authority of a subsystem shall ensure that operators and maintenance personnel in the subsystem have ready access to the comprehensive operations and maintenance manuals that contain plans, drawings, and process descriptions sufficient for the safe efficient operation of the subsystem. A review of the Operations and Maintenance Manual dated August 2024 that was submitted by the Owner / Operating Authority included the aforementioned requirements.

Question ID	DWMR1060001	Question Type	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
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 Owner / Operating Authority are reminded that Municipal Drinking Water Licence #041-101 Issue #9 Section 16.2 of Schedule B State that the Operations and Maintenance manual or manuals, shall include at a minimum:

16.2.1 The requirements of this licence and associated procedures;

16.2.2 The requirements of the drinking water works permit for the drinking water system;

16.2.3 A description of the processes used to achieve primary and secondary disinfection within the drinking water system including where applicable:
a) A copy of the CT calculations used to ensure that at all times, CT provided shall be greater than or equal to the CT required for the pathogen

inactivation; and,
b) The validated operating conditions for UV disinfection equipment, including a copy of the validation certificate;

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;

16.2.5 Procedures for the operation and maintenance of monitoring equipment;

16.2.6 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;

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;

16.3 Procedures necessary for the operation and maintenance of any alterations to the drinking water system shall be incorporated into the operations and maintenance manual or manuals prior to those alterations coming into operation.

Question ID	DWMR1064001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 128/04 | 26 | (2);

Question:
Did an operator-in-charge ensure that records were maintained of all adjustments to the processes within their responsibility?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The operator-in-charge did not ensure that records were maintained of all adjustments to the processes within their responsibility.

Ontario Regulation 128/04 section 26 (2) states that an Operator-in-Charge shall,
(a) take all steps reasonably necessary to operate the processes within his or her responsibility in a safe and efficient manner in accordance with the relevant operations manuals;
(b) ensure that the processes within his or her responsibility are measured, monitored, sampled and tested in a manner that permits them to be adjusted when necessary;
(c) ensure that records are maintained of all adjustments made to the processes within his or her responsibility; and

(d) ensure that all equipment used in the processes within his or her responsibility is properly monitored, inspected, tested and evaluated and that records of equipment operating status are prepared and available at the end of every operating shift. O. Reg. 128/04, s. 26 (2).

Electronic logbooks submitted for review stated that online analyzer calibrations were completed but at times, entries failed to clearly identify which unit was calibrated, the exact times of the calibration (start and finish) per unit, readings before and after calibrations and documentation of the handheld DPD reading or NTU standard that was used to calibrate the unit. The Owner / Operating Authority also failed to document if the plant/filters were in production or off at the time of the calibration, any maintenance that was performed (new probe, added electrolyte etc.) or any issues that may have occurred with the unit during calibrations.

CORRECTIVE ACTIONS:

From herein, the Owner / Operating Authority shall ensure that the Operator-in-Charge records all adjustments made to the processes within his or her responsibility as stipulated in Ontario Regulation 128/04 section 26 (2). The Owner / Operating Authority shall provide training to all operators on the requirements of O. Reg 128/04 S. 26(2) and shall submit documentation of the aforementioned, including an operator sign off sheet to the undersigned Officer, no later than May 31, 2025

Question ID	DWMR1062001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 7-5;

Question:
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?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was done by a certified operator, water quality analyst, or person who met the requirements of Schedule 7-5 of O. Reg. 170/03.

Question ID	DWMR1063001	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-10 | (1);

Question:
For every required operational test and sample, was a record made of the date, time, location, results, and name of the person conducting the test?

Compliance Response(s)/Corrective Action(s)/Observation(s):
For every required operational test and sample, a record was made as required.

Question ID	DWMR1061001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 128/04 | 27 | (1); SDWA | O. Reg. 128/04 | 27 | (2); SDWA | O. Reg. 128/04 | 27 | (3); SDWA | O. Reg. 128/04 | 27 | (4); SDWA | O. Reg. 128/04 | 27 | (5); SDWA | O. Reg. 128/04 | 27 | (6); SDWA | O. Reg. 128/04 | 27 | (7);

Question:
Were logbooks properly maintained and did they contain the required information?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Logbooks were properly maintained and contained the required information.

Ontario Regulation 128/04 s. 27, stipulate the requirements for record keeping for the operations of a subsystem. The Operating Authority for the Union Water Supply System has transitioned over to electronic logbooks from physical logbooks. An electronic logbook allows operators to securely access one single log record therefore negating the need for multiple logbooks within a single system. A review of the log records indicated that operators were diligently documenting scheduled operational checks, manual free chlorine residuals and any other operational or maintenance activities that may have occurred within the system; however, it is recommended that operators include more detail during events and unusual conditions into their log entries. In addition, it is also highly recommended that the Owner / Operating Authority move forward with the digitalization of all records as they pertain to legislation.

Question ID	DWMR1065001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 128/04 | 27 | (6);

Question:
Were logs and other record keeping mechanisms available for at least five (5) years?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Logs or other record keeping mechanisms were available for at least five (5) years.

Question ID	DWMR1066001	Question Type	BMP

Legislative Requirement(s):
Not Applicable

Question:
Was spill containment provided for process chemicals and standby power generator fuel?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Spill containment was provided for process chemicals and/or standby power generator fuel.

Question ID	DWMR1067001	Question Type	BMP

Legislative Requirement(s):
Not Applicable

Question:
Were equipment and materials in place for the clean up of spills?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Equipment and materials were in place for the clean up of spills.

Question ID	DWMR1068001	Question Type	BMP

Legislative Requirement(s):
Not Applicable

Question:
If available, were standby power generators tested under normal load conditions?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Standby power generators were tested under normal load conditions.

Question ID	DWMR1069001	Question Type	BMP

Legislative Requirement(s):
Not Applicable

Question:
Were all storage facilities completely covered and secure?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Storage facilities were not completely covered and secure.

At the time of the inspection, the outdoor treated water reservoir hatches were tightly secured with a metal bar that was bolted to the associated concrete pads. Due to weather conditions, these outdoor hatches could not be assessed for a watertight seal. The hatch associated with Clearwell #2 was located within the highlift pumping station, while the hatch associated with Clearwell #1 was located within a truck breezeway. Neither of the hatches associated

with the clearwells were fitted with acceptable watertight seals that would adequately prevent the ingress of contaminates, invertebrates, small animals and arachnids.

RECOMMENDATIONS:

It is recommended that the Owner / Operating Authority assess all treated water access hatches and ensure that they are all fitted with a proper watertight seal in order to adequately prevent the ingress of contaminates such as invertebrate, small animals and arachnids as per the "Ten States Standards", which states that each manhole shall be fitted with a solid watertight cover which overlaps a framed opening and extends down around the frame at least two inches. The frame shall be at least four inches high. Each cover shall be hinged on one side and shall have a locking device.

It is also strongly recommended that a schedule be created for the inspection of the clearwell #2 access point that is located within the truck breezeway to ensure that the hatch is in fact watertight and ensure that the inspection is documented.

Question ID	DWMR1070001	**Question Type**	BMP

Legislative Requirement(s):
Not Applicable

Question:
Were air vents and overflows associated with reservoirs and elevated storage structures equipped with screens?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Air vents and overflows associated with reservoirs and elevated storage structures were not equipped with screens.

It was observed during the inspection that the plant's treated water reservoir access points were fitted with metal vents along the walls to allow proper venting to the outside, however, some of these vents did not have appropriate screens to mitigate access to the finished water from contaminants, animals, and invertebrates, etc. In addition, the overflows associated with the Kingsville Elevated Tower and the Leamington Elevated Tower did not have an acceptable screen or mechanical device to prevent the entry of contaminants, animals, and invertebrates, etc.

RECOMMENDATIONS:

The Ten State Standards recommends that vents shall, on ground-level structures, hall prevent the entrance of surface water and rainwater, shall exclude birds and animals; should exclude insects and dust, as much as this function can be made compatible with effective venting and shall, on ground-level structures, open downward with the opening at least 24 inches above the roof or sod and covered with twenty-four mesh non-corrodible screen. The screen shall be installed within the pipe at a location least susceptible to vandalism.

In addition to the aforementioned, it is also recommended by "The Ten States Standards" that the overflow for an elevated tank shall open downward and be screened with a four mesh (5.16 mm), non-corrodible screen or mechanical device, such as a flap valve or duckbill valve, to prevent animals or insects' access. The screen shall be installed within the overflow pipe at a location least susceptible to damage by vandalism.

Question ID	DWMR1071001	Question Type	BMP

Legislative Requirement(s):
Not Applicable

Question:
Did the owner provide security measures to protect components of the drinking water system?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner provided security measures to protect components of the drinking water system.

The Union Water Treatment Plant remains locked at all times and is equipped with a security system which includes intrusion alarms, motion detectors and security cameras. The intrusion and motion alarms are connected to SCADA to alert the Owner / Operating Authority of an unauthorized entry. The treatment plant is also a 24-hour manned facility and all facilities are enclosed with security fencing with lockable gates and out stations are visited regularly by staff.

Question ID	DWMR1072001	Question Type	BMP

Legislative Requirement(s):
Not Applicable

Question:
Had the owner and/or operating authority undertaken efforts to promote water conservation and reduce water losses in the drinking water system?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner and/or operating authority undertook efforts to promote water conservation and reduce water losses in their system.

The Union Water Supply System encourages and promotes multiple ways to conserve water through their website.

Question ID	DWMR1073001	Question Type	Legislative

Legislative Requirement(s):
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.

Ontario Regulation 128/04 S.23(1) states that the owner or operating authority of a municipal residential subsystem shall designate as overall responsible operator of the subsystem an operator who holds a certificate for that type of subsystem and that is of the same class as or higher than the class of that subsystem. (For example, the overall responsible operator of a Class III water treatment subsystem must be an operator who holds a Class III or Class IV water treatment subsystem operator's certificate.)

The Owner / Operating Authority currently employ several operators qualified to act as the Overall Responsible Operator for the drinking water system to ensure sufficient coverage in the event of an absence.

Question ID	DWMR1078001	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 128/04 | 23 | (1); SDWA | O. Reg. 128/04 | 23 | (2); SDWA | O. Reg. 128/04 | 23 | (4); SDWA | O. Reg. 128/04 | 23 | (6); SDWA | O. Reg. 128/04 | 23 | (7);

Question:
When the overall responsible operator was unable to act, was a properly certified operator designated to act in their place?

Compliance Response(s)/Corrective Action(s)/Observation(s):
A properly certified operator was designated to act in place of the overall responsible operator.

Question ID	DWMR1074001	Question Type	Legislative

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.

Ontario Regulation 128/04 S. 25(1) states that the Owner or Operating Authority of a subsystem or a person authorized by the Owner or Operating Authority shall designate one or more operators as operators-in-charge of the subsystem. The Owner / Operating Authority currently employ a number of operators who are designated as Operator-In-Charges for the system.

Question ID	DWMR1075001	**Question Type**	Legislative

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.

Question ID	DWMR1076001	**Question Type**	Legislative

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 made by persons other than certified operators.

The Union Water Supply System currently employ a number of operators that hold an operator-in-training certification. Under O. Reg 128/04 s. 25(5) a person who holds an operator-in-training's certification shall not be designated as an operator-in-charge, therefore, the Owner / Operating Authority shall designate a person with a Water Treatment Level 1 Certification or higher as an operator-in-charge as per O. Reg 128/04 s 25(1) for the subsystem.

An Operator-in-Charge is defined as a person who is authorized to set operational parameters for the subsystem or for a process that controls the effectiveness or efficiency of the subsystem; and direct or instruct other operators in the subsystem to set such operational parameters.

Discussions at the time of the physical inspection revealed that that Operators who hold an Operator-in-Training (OIT) certificate were performing duties of an Operator-in-Charge (OIC)

including making operational decisions such as adjusting chemical dosages and pump changes without consulting with an OIC prior to making these operational changes. Operators who hold an OIT certificates must document all instructions provided by the operator-in-charge, including the date and time of the instruction. Once the direction has been completed, documentation must include "completed as per OIC" or a similar notation, after an entry is made in the logbook for any operational duties or process changes.

CORRECTIVE ACTIONS:

From herein, the Owner / Operating Authority shall ensure that only OICs are authorized to conduct the following as prescribed by Ontario Regulation 128/04 – Section 26(1):
(a) set operational parameters for the subsystem or for a process that controls the effectiveness or efficiency of the subsystem; and
(b) direct or instruct other operators in the subsystem to set such operational parameters.

The Owner / Operating Authority shall provide training for all staff on the requirements stipulated in Ontario Regulation 128/04 and shall submit documentation to ensure compliance with the aforementioned including an Operator sign-off sheet to the undersigned Officer, no later than May 31, 2025.

Question ID	DWMR1117001	**Question Type**	Information

Legislative Requirement(s):
Not Applicable

Question:
Were there any other items related to the drinking water system that should be recognized in the report?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The following items were noted as being relevant to the drinking water system:

1) A review of verifications records indicated that analyzers were frequently not within the acceptable range of accuracy as noted by Ontario Regulation 170/03 and the Procedure for Disinfection of Drinking Water in Ontario.

Recommendations:
It is recommended that the Owner / Operating Authority increase the frequency of verifications of online analyzers to ensure they are functioning within the acceptable range of accuracy. In addition, it is also recommended that handheld analyzers be compared with verification standards on a regular basis and the differences recorded to ensure that the online analyzers are being compared with accurate handhelds.

2) At the time of the physical inspection, it was discovered that chemical storage tanks located inside the water treatment plant did not have acceptable lids / covers as recommended per the Section 5.1.10 of the "Ten States Standards."

Recommendations:
It is recommended that the Owner / Operating Authority ensure that all chemical storage containers have an acceptable cover to mitigate access from contaminants, animals, and invertebrates, etc., as recommended by Section 5.1.10 of the "Ten States Standards."

3) At the time of the inspection, Operators certificates were located in a binder. Ontario Regulation 128/04 section 15 states that the owner or operating authority of a subsystem shall ensure that a copy of the certificate of every certified operator who is employed in the subsystem is conspicuously displayed at the operator's workplace or at the premises from which the subsystem is managed. In addition, O. Reg 128/04 Section 3 (5) states the owner or operating authority of a subsystem shall ensure that the certificate of classification of the subsystem is conspicuously displayed at the operator's workplace or at the premises from which the subsystem is managed.

Recommendations:
To ensure compliance with O. Reg 128/04, it is strongly recommended that all Operator Certificates and System Classification Certificates be conspicuously posted as per O.Reg 128/04.

4) Within the Treatment Plant building, there is a designated room where coagulants pumps, bulk polymer and filter aid storage tanks are stored. This room is understood to act as a secondary containment system, however, there is a floor drain within the floor through which it is expected spilled chemicals could gain access.

Recommendations:
It is recommended that the floor drain within the chemical storage room be assessed to determine if it is actually required for operational purposes, or if it could be raised or plugged to mitigate any potentially spilled chemicals from access it.

Stakeholder Appendix

February 2, 2023

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

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

To access these materials online click on their titles below or use your web browser to search for their titles. Contact the Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.
For more information on Ontario's drinking water visit www.ontario.ca/page/drinking-water

Click on the publication below to access it

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

Inspection Rating and Inspection Risk Methodology

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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Ontario

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).

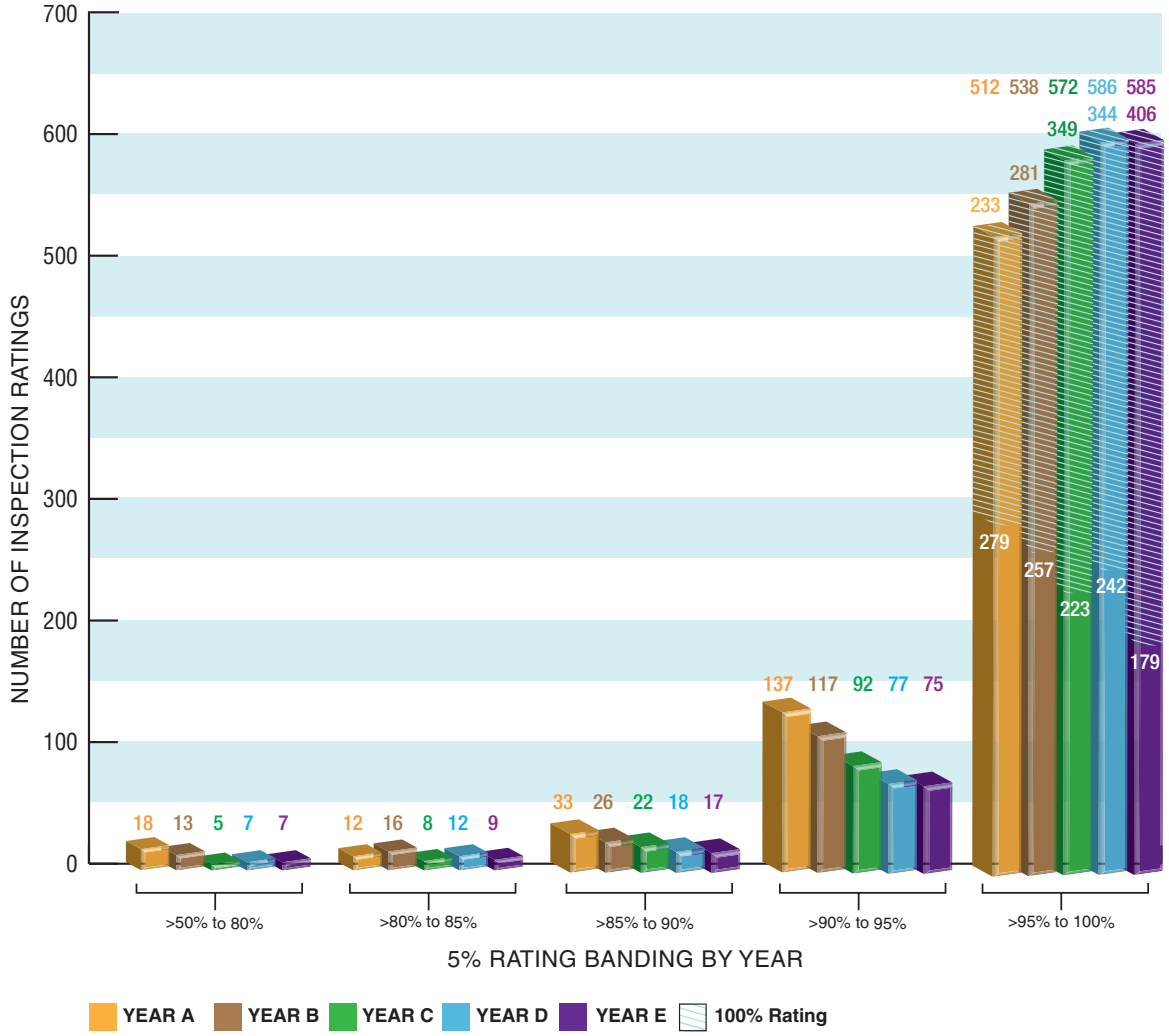
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

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

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

DWS Name:	UNION AREA WATER SUPPLY SYSTEM
DWS Number:	210000853
DWS Owner:	UNION WATER SYSTEM JOINT BOARD OF MANAGEMENT (LEAMINGTON, KINGSVILLE, ESSEX, LAKESHORE)
Municipal Location:	KINGSVILLE
Regulation:	O.REG. 170/03
DWS Category:	DW Municipal Residential
Type of Inspection:	Detailed
Compliance Assessment Start Date:	Dec-1-2024
Ministry Office:	Windsor Area Office

Maximum Risk Rating: 519

Inspection Module	Non Compliance Risk (X out of Y)
Capacity Assessment	0/38
Certification and Training	14/49
Distribution System	0/4
Effluent Quality and Quantity	10/20
Logbooks	4/30
Operations Manuals	0/42
Reporting & Corrective Actions	0/37
Source	0/12
Treatment Processes	21/196
Water Quality Monitoring	0/91
Overall - Calculated	**49/519**

Inspection Risk Rating:	**9.44%**

Final Inspection Rating:	**90.56%**

DWS Name:	UNION AREA WATER SUPPLY SYSTEM
DWS Number:	210000853
DWS Owner Name:	UNION WATER SYSTEM JOINT BOARD OF MANAGEMENT (LEAMINGTON, KINGSVILLE, ESSEX, LAKESHORE)
Municipal Location:	KINGSVILLE
Regulation:	O.REG. 170/03
DWS Category:	DW Municipal Residential
Type of Inspection:	Detailed
Compliance Assessment Start Date:	Dec-1-2024
Ministry Office:	Windsor Area Office

Non-Compliance Question(s)	Non Compliance Risk
Certification and Training	
Were adjustments to the treatment equipment only made by certified operators?	14
Effluent Quality and Quantity	
Did the process wastewater discharge monitoring program and discharge quality comply with requirements established in the Municipal Drinking Water Licence?	10
Logbooks	
Did an operator-in-charge ensure that records were maintained of all adjustments to the processes within their responsibility?	4
Treatment Processes	
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?	21
Overall - Total	**49**

Maximum Question Rating: 519

Inspection Risk Rating:	**9.44%**
FINAL INSPECTION RATING:	**90.56%**