2021

ANNUAL SUMMARY REPORT

THE TOWNSHIP OF HAMILTON

HAMILTON TOWNSHIP STAND-ALONE DRINKING WATER SYSTEM

Prepared by Lakefront Utility Services Inc. (2022)

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1. PURPOSE

The purpose of the Annual Summary Report is to provide information to residents and stakeholders of the Township of Hamilton. Furthermore, satisfying the regulatory requirements of the *Safe Drinking Water Act*, *2002* including the Drinking Water Quality Management Standard (DWQMS) reports to Owner, and regulatory reporting required under *Ontario Regulation 170/03*. This annual water quality report fulfills all requirements of *Ontario Regulation 170/03* Section 11 Annual Reports and Schedule 22 Summary Reports for Municipalities.

The Annual Summary Report is prepared by Lakefront Utility Services Inc. (Operating Authority) on behalf of The Township of Hamilton (Owner).

Scope

This Annual Summary Report includes information pertaining to the Township of Hamilton's Stand-Alone Drinking Water System (Hamilton Township Distribution System) for the period of January 1, 2021 to December 31, 2021. *Ontario Regulation 170/03* requires reported information be provided to:

- **Drinking Water System Owners (Mayor and Council)**
- **Owner and Operating Authority Top Management**
- **The Public**

Availability

The Hamilton Township Distribution System is a large municipal residential system that serves approximately 342 people. Copies of this Annual Summary Report are available online at https://www.lakefrontutilities.com/regulatory-water/. Hard copies are also available at the LUSI's office at 207 Division St, Cobourg ON, K9A 4L3.

Customers of the Hamilton Township Distribution System are notified that the annual water quality report is available via "What's New" https://www.lakefrontutilities.com/whats-new/, social media posts and "Stay Connected" LUSI bill insert.

Council Resolution

Ontario Regulation 170/03 requires Summary Reports to be distributed to the Municipal Council no later than March 31 of each year. Hamilton Township must provide LUSI with a copy of the council resolution indicating the report has been accepted.

2. HAMILTON TOWNSHIP DISTRIBUTION SYSTEM OVERVIEW

The Hamilton Township Distribution System is a standalone distribution system, which is supplied with potable water produced by the Cobourg Water Treatment Plant. The Hamilton Township distribution system consists of 19 fire hydrants and 36 distribution valves. There are no storage facilities, pressure boosting, re-chlorination facilities, or other external structures within in the system.

LUSI and Hamilton TWSP have an agreement to operate the Hamilton Township Distribution System in accordance with O. Reg 170/03 Section 5. (4)(b). This means, if a large municipal residential system obtains all of its' water from a drinking water system (Cobourg) and both parties have agreed in writing, Hamilton Township's attached system is treated as an extension of Cobourg's distribution system. Note: Components of this report will reference the Cobourg Drinking Water System 2021 Annual Summary report.

3. TOWN OF COBOURG DRINKING WATER SYSTEM

The Cobourg Water Treatment Plant (WTP) takes water from Lake Ontario through an 860m-long intake pipe. Raw water is pre-chlorinated for zebra-muscle control before it enters a full conventional treatment process. The treatment process includes coagulation, flocculation, sedimentation, and filtration. *Aluminum sulphate* is used as the coagulation agent, with the addition of *Flowpam AN 934 PWG* (polymer) to aid in the process. Primary disinfection is achieved with *gaseous chlorine* after water undergoes an appropriate contact time, after which the water is stored in a 6240m^3 in-ground reservoir, from where it is then pumped to the distribution system.

The distribution system consists of two pressure zones, with an elevated water storage tank in each of the zones. The Water Treatment Plant supplies water to the zone 1 tower, with a holding capacity of 1332m^3. The booster station, located at the boundary of the two zones, supplies water to the zone 2 tower, with a holding capacity of 3734m^3. Zone 1 tower, zone 2 tower and the booster station are all equipped with *sodium hypochlorite* and rechlorination equipment to maintain proper disinfection.

4. 2021 COMPLIANCE

4.1 MECP INSPECTION

The Hamilton Township Stand-alone Distribution System ("Hamilton Township Distribution System") underwent an announced MECP compliance inspection starting Jun 08, 2021 and achieved an inspection rating of 100.00%. No non-compliance with regards to regulatory requirements, or recommendations and best practice issues were identified in the 2021 MECP inspection.

4.2 LICENSE & PERMIT COMPLIANCE

The Hamilton Township Distribution System maintained compliance with all applicable legislation, and all terms and conditions of the Municipal Drinking Water License and Drinking Water Works Permit in 2021.

The Hamilton Township DWS MDWL was received on August 12, 2021. An updated Drinking Water Works Permit (DWWP) was also received, this document was updated to be representative of the drinking water system components currently in place.

4.3 ADVERSE WATER QUALITY INCIDENT(S)

There were no adverse water quality incidents in the Hamilton Township Distribution System in 2021.

5. CONTINUAL IMPROVEMENT

LUSI's commitment to continual improvement requires investigating and investing in, where appropriate, methods and technologies to improve

- The quality of processes used to ensure production of ample clean water, and
- The quality and effectiveness of the distribution system.

During the 2021 reporting year, LUSI demonstrated this commitment by completing the activities listed in Table 1. Table 1 also satisfies O. Reg 170/03 requirement to describe major expenses that occurred during the reporting period.

Table 1 - 2021 Major Expenses Incurred at the Hamilton Township Distribution System		
Hamilton Township Distribution System	Yard Hydrant for Water Quality Flushing	$4,801.34
	Engineering- Water Main	$840.00
		$5,641.34

6. SAMPLING AND ANALYSIS

Sampling and analysis data as it may relate to the Hamilton Township Distribution System is presented in the Cobourg Drinking Water System 2021 Annual Summary Report.

6.1 LEAD SAMPLING

PERIOD 1			
	Residential	Commercial	Distribution
# of Samples Taken	0	0	1
Concentration Range, µg/L	N/A - System was subject to the Plumbing Exemption only pH & Alkalinity were sampled		
PERIOD 2			
	Residential	Commercial	Distribution
# of Samples Taken	0	0	1
Concentration, µg/L	0.04		

APPENDIX 1

The Corporation of the Township of Hamilton

MDWL 139-101 Issue 4

Ontario

MUNICIPAL DRINKING WATER LICENCE

Licence Number: 139-101
Issue Number: 4

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, I hereby issue this municipal drinking water licence under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Corporation of the Township of Hamilton

8285 Majestic Hills Drive
Station Main P.O. Box 1060
Cobourg ON
K9A 4W5

For the following municipal residential drinking water system:

Hamilton Township Distribution System

This municipal drinking water licence includes the following:

Schedule	Description
Schedule A	Drinking Water System Information
Schedule B	General Conditions
Schedule C	System-Specific Conditions
Schedule D	Conditions for Relief from Regulatory Requirements

Upon the effective date of this drinking water licence #139-101, all previously issued versions of licence #139-101 are revoked and replaced by this licence.

DATED at TORONTO this 12th day of August, 2021

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Information

System Owner	**The Corporation of The Township Of Hamilton**
Licence Number	**139-101**
Drinking Water System Name	**Hamilton Township Distribution System**
Licence Effective Date	**August 12, 2021**

1.0 Licence Information

Licence Issue Date	August 12, 2021
Licence Effective Date	August 12, 2021
Licence Expiry Date	August 11, 2026
Application for Licence Renewal Date	February 11, 2026

2.0 Incorporated Documents

The following documents are applicable to the above drinking water system and form part of this licence:

2.1 Drinking Water Works Permit

Drinking Water System Name	Permit Number	Issue Date
Hamilton Township Distribution System	139-201	August 12, 2021

2.2 Permits to Take Water

Water Taking Location	Permit Number	Issue Date
Not Applicable	Not Applicable	Not Applicable

2.3 Other Documents

Document Title	Version Number	Version Date
Not Applicable	Not Applicable	Not Applicable

3.0 Financial Plans

The Financial Plan Number for the Financial Plan required to be developed for this drinking water system in accordance with O. Reg. 453/07 shall be:	139-301
Alternately, if one Financial Plan is developed for all drinking water systems owned by the owner, the Financial Plan Number shall be:	139-301A

4.0 Accredited Operating Authority

Drinking Water System or Operational Subsystems	Accredited Operating Authority	Operational Plan No.	Operating Authority No.
Hamilton Township Distribution System	Lakefront Utilities Services Inc.	139-401	139-OA2

Schedule B: General Conditions

System Owner	**The Corporation of The Township Of Hamilton**
Licence Number	**139-101**
Drinking Water System Name	**Hamilton Township Distribution System**
Licence Effective Date	**August 12, 2021**

1.0 Definitions

1.1 Words and phrases not defined in this licence and the associated drinking water works permit shall be given the same meaning as those set out in the SDWA and any regulations made in accordance with that act, unless the context requires otherwise.

1.2 In this licence and the associated drinking water works permit:

"**adverse effect**", "**contaminant**" and "**natural environment**" shall have the same meanings as in the EPA;

"**alteration**" may include the following in respect of this drinking water system:

(a) An addition to the system,
(b) A modification of the system,
(c) A replacement of part of the system, and
(d) An extension of the system;

"compound of concern" means a contaminant described in paragraph 4 subsection 26 (1) of O. Reg. 419/05, namely, a contaminant that is discharged to the air from a component of the drinking water system in an amount that is not negligible;

"CT" means the CT Disinfection Concept, as described in subsection 3.1.1 of the Ministry's Procedure for Disinfection of Drinking Water in Ontario, dated July 29 2016.

"**Director**" means a Director appointed pursuant to section 6 of the SDWA for the purposes of Part V of the SDWA;

"**drinking water works permit**" means the drinking water works permit for the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

"emission summary table" means a table described in paragraph 14 of subsection 26 (1) of O. Reg. 419/05;

"EPA" means the *Environmental Protection Act*, R.S.O. 1990, c. E.19;

"**financial plan**" means the financial plan required by O. Reg. 453/07;

"Harmful Algal Bloom (HAB)" means an overgrowth of aquatic algal bacteria that produce or have the potential to produce toxins in the surrounding water, when the algal

cells are damaged or die. Such bacteria are harmful to people and animals and include microcystins produced by cyanobacterial blooms.

"**licence**" means this municipal drinking water licence for the municipal drinking water system identified in Schedule A of this licence;

"**licensed engineering practitioner**" means a person who holds a licence, limited licence or temporary licence under the Professional Engineers Act;

"Ministry" means the Ontario Ministry of the Environment, Conservation and Parks;

"**operational plan**" means an operational plan developed in accordance with the Director's Directions – Minimum Requirements for Operational Plans made under the authority of subsection 15(1) of the SDWA;

"**owner**" means the owner of the drinking water system as identified in Schedule A of this licence;

"OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c. 0.40;

"**permit to take water**" means the permit to take water that is associated with the taking of water for purposes of the operation of the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

"**point of impingement**" has the same meaning as in section 2 of O. Reg. 419/05 under the EPA;

"**point of impingement limit**" means the appropriate standard from Schedule 2 or 3 of O. Reg. 419/05 under the EPA and if a standard is not provided for a compound of concern, the concentration set out for the compound of concern in the document titled "Air Contaminants Benchmarks (ACB) List: Standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", as amended from time to time and published by the Ministry and available on a government of Ontario website;

"**provincial officer**" means a provincial officer designated pursuant to section 8 of the SDWA;

"**publication NPC-300**" means the Ministry publication titled "Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning" dated August 2013, as amended;

"**SCADA system**" means a supervisory control and data acquisition system used for process monitoring, automation, recording and/or reporting within the drinking water system;

"**SDWA**" means the *Safe Drinking Water* Act, 2002, S.O. 2002, c. 32;

"**sensitive receptor**" means any location where routine or normal activities occurring at reasonably expected times would experience adverse effect(s) from a discharge to air from an emergency generator that is a component of the drinking water system, including one or a combination of:

(a) private residences or public facilities where people sleep (e.g.: single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.),
(b) institutional facilities (e.g.: schools, churches, community centres, day care centres, recreational centres, etc.),
(c) outdoor public recreational areas (e.g.: trailer parks, play grounds, picnic areas, etc.), and
(d) other outdoor public areas where there are continuous human activities (e.g.: commercial plazas and office buildings).

"**sub-system**" has the same meaning as in Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts) under the SDWA;

"**surface water**" means water bodies (lakes, wetlands, ponds - including dug-outs), water courses (rivers, streams, water-filled drainage ditches), infiltration trenches, and areas of seasonal wetlands;

"UV" means ultraviolet, as in ultraviolet light produced from an ultraviolet reactor.

2.0 Applicability

2.1 In addition to any other applicable legal requirements, the drinking water system identified above shall be established, altered and operated in accordance with the conditions of the drinking water works permit and this licence.

3.0 Licence Expiry

3.1 This licence expires on the date identified as the licence expiry date in Schedule A of this licence.

4.0 Licence Renewal

4.1 Any application to renew this licence shall be made on or before the date identified as the application for licence renewal date set out in Schedule A of this licence.

5.0 Compliance

5.1 The owner and operating authority shall ensure that any person authorized to carry out work on or to operate any aspect of the drinking water system has been informed of the SDWA, all applicable regulations made in accordance with that act, the drinking water works permit and this licence and shall take all reasonable measures to ensure any such person complies with the same.

6.0 Licence and Drinking Water Works Permit Availability

6.1 At least one copy of this licence and the drinking water works permit shall be stored in such a manner that they are readily viewable by all persons involved in the operation of the drinking water system.

7.0 Permit to Take Water and Drinking Water Works Permit

7.1 A permit to take water identified in Schedule A of this licence is the applicable permit on the date identified as the Effective Date of this licence.

7.2 A drinking water works permit identified in Schedule A of this licence is the applicable permit on the date identified as the Effective Date of this licence.

8.0 Financial Plan

8.1 For every financial plan prepared in accordance with subsections 2(1) and 3(1) of O. Reg. 453/07, the owner of the drinking water system shall:

8.1.1 Ensure that the financial plan contains on the front page of the financial plan, the appropriate financial plan number as set out in Schedule A of this licence; and

8.1.2 Submit a copy of the financial plan to the Ministry of Municipal Affairs and Housing within three (3) months of receiving approval by a resolution of municipal council or the governing body of the owner.

9.0 Interpretation

9.1 Where there is a conflict between the provisions of this licence and any other document, the following hierarchy shall be used to determine the provision that takes precedence:

9.1.1 The SDWA*;*

9.1.2 A condition imposed in this licence that explicitly overrides a prescribed regulatory requirement;

9.1.3 A condition imposed in the drinking water works permit that explicitly overrides a prescribed regulatory requirement;

9.1.4 Any regulation made under the SDWA;

9.1.5 Any provision of this licence that does not explicitly override a prescribed regulatory requirement;

9.1.6 Any provision of the drinking water works permit that does not explicitly override a prescribed regulatory requirement;

9.1.7 Any application documents listed in this licence, or the drinking water works permit from the most recent to the earliest; and

9.1.8 All other documents listed in this licence, or the drinking water works permit from the most recent to the earliest.

9.1.9 Any other technical bulletin or procedure issued by the Ministry from the most recent to the earliest.

9.2 If any requirement of this licence or the drinking water works permit is found to be invalid by a court of competent jurisdiction, the remaining requirements of this licence and the drinking water works permit shall continue to apply.

9.3 The issuance of and compliance with the conditions of this licence and the drinking water works permit does not:

9.3.1 Relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including the *Environmental Assessment Act*, R.S.O. 1990, c. E.18; and

9.3.2 Limit in any way the authority of the appointed Directors and provincial officers of the Ministry to require certain steps be taken or to require the owner to furnish any further information related to compliance with the conditions of this licence or the drinking water works permit.

9.4 For greater certainty, nothing in this licence or the drinking water works permit shall be read to provide relief from regulatory requirements in accordance with section 46 of the SDWA, except as expressly provided in the licence or the drinking water works permit.

10.0 Adverse Effects

10.1 Nothing in this licence or the drinking water works permit shall be read as to permit:

10.1.1 The discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or

10.1.2 The discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.

10.2 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

10.3 Fulfillment of one or more conditions imposed by this licence or the drinking water works permit does not eliminate the requirement to fulfill any other condition of this licence or the drinking water works permit.

11.0 Change of Owner or Operating Authority

11.1 This licence is not transferable without the prior written consent of the Director.

11.2 The owner shall notify the Director in writing at least 30 days prior to a change of any operating authority identified in Schedule A of this licence.

11.2.1 Where the change of operating authority is the result of an emergency situation, the owner shall notify the Director in writing of the change as soon as practicable.

12.0 Information to be Provided

12.1 Any information requested by a Director or a provincial officer concerning the drinking water system and its operation, including but not limited to any records required to be kept by this licence or the drinking water works permit, shall be provided upon request.

13.0 Records Retention

13.1 Except as otherwise required in this licence or the drinking water works permit, any records required by or created in accordance with this licence or the drinking water works permit, other than the records specifically referenced in section 12 or section 13 of O. Reg. 170/03, shall be retained for at least 5 years and made available for inspection by a provincial officer, upon request.

14.0 Chemicals and Materials

14.1 All chemicals and materials used in the alteration or operation of the drinking water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60, NSF/61 and NSF/372.

14.1.1 In the event that the standards are updated, the owner may request authorization from the Director to use any on hand chemicals and materials that previously met the applicable standards.

14.2 The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution ("ANSI") shall be available at all times for each chemical and material used in the operation of the drinking water system that comes into contact with water within the system.

14.3 Conditions 14.1 and 14.2 do not apply in the case of the following:

14.3.1 Water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC, fibre and/or steel wire reinforced cement pipe or high density polyethylene (HDPE);

14.3.2 Articles made from stainless steel, glass, HDPE or Teflon®;

14.3.3 Cement mortar for watermain lining and for water contacting surfaces of concrete structures made from washed aggregates and Portland cement;

14.3.4 Gaskets that are made from NSF approved materials;

14.3.5 Food grade oils and lubricants, food grade anti-freeze, and other food grade chemicals and materials that are compatible for drinking water use that may come into contact with drinking water, but are not added directly to the drinking water; or

14.3.6 Any particular chemical or material where the owner has written documentation signed by the Director that indicates that the Ministry is satisfied that the chemical or material is acceptable for use within the drinking water system and the chemical or material is only used as permitted by the documentation.

15.0 Drawings

15.1 All drawings and diagrams in the possession of the owner that show any treatment subsystem as constructed shall be retained by the owner unless the drawings and diagrams are replaced by a revised or updated version showing the subsystem as constructed subsequent to the alteration.

15.2 Any alteration to any treatment subsystem shall be incorporated into process flow diagrams, process and instrumentation diagrams, and record drawings and diagrams within one year of the alteration being completed or placed into service.

15.3 Process flow diagrams and process and instrumentation diagrams for any treatment subsystem shall be kept in a place, or made available in such a manner, that they may be readily viewed by all persons responsible for all or part of the operation of the drinking water system.

16.0 Operations and Maintenance Manual

16.1 An up-to-date operations and maintenance manual or manuals shall be maintained and applicable parts of the manual or manuals shall be made available for reference to all persons responsible for all or part of the operation or maintenance of the drinking water system.

16.2 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 secondary disinfection within the drinking water system;

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.

16.4 All of the procedures included or referenced within the operations and maintenance manual must be implemented.

16.5 The requirement for the owner to comply with condition 16.2.3 shall come into force on February 3, 2022.

Schedule C: System-Specific Conditions

System Owner	**The Corporation Of The Township Of Hamilton**
Licence Number	**139-101**
Drinking Water System Name	**Hamilton Township Distribution System**
Licence Effective Date	**August 12, 2021**

1.0 Additional Sampling, Testing and Monitoring

Drinking Water Health and Non-Health Related Parameters

1.1 For each treatment subsystem or treatment subsystem component identified in column 1 of Tables 5 and 6 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 at the sampling frequency listed in column 3 and at the monitoring location listed in column 4 of the same row.

Table 1: Drinking Water Health Related Parameters

Column 1 Drinking Water System or Drinking Water Subsystem Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table 2: Drinking Water Non-Health Related Parameters

Column 1 Drinking Water System or Drinking Water Subsystem Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Discharge Parameters

1.2 Pursuant to Condition 10 of Schedule B of this licence, the owner may undertake the following environmental discharges associated with the maintenance and/or repair of the drinking water system:

1.2.1 The discharge of potable water from a watermain to a road or storm sewer;

1.2.2 The discharge of potable water from a water storage facility or pumping station:

1.2.2.1 To a road or storm sewer; or

1.2.2.2 To a watercourse where the discharge has been dechlorinated and if necessary, sediment and erosion control measures have been implemented.

1.2.3 The discharge of dechlorinated non-potable water from a watermain, water storage facility or pumping station to a road or storm sewer;

1.2.4 The discharge of potable water or non-potable water from a treatment subsystem to the environment where if necessary, the discharge has been dechlorinated and sediment and erosion control measures have been implemented.

1.2.5 The discharge of any excess water to a road, storm sewer or the environment, associated with the management of materials excavated as part of watermain construction or repair, where necessary sediment, erosion and environmental control measures have been implemented.

2.0 Studies Required

2.1 Not Applicable

3.0 Source Protection

3.1 The owner of the drinking water system shall implement risk management measures, as appropriate, to manage any potential threat to drinking water that results from the operation of the drinking water system.

3.2 The owner of the system shall notify the Director in writing within thirty (30) days of any approved changes to an applicable source protection plan that impact the assessed threat level of a fuel oil system identified in Schedule A of drinking water works permit.

3.3 The notification required in condition 3.2 shall include:

3.3.1 A description of the changes and their impact on the assessed threat level of the fuel oil system(s); and,

3.3.2 A timeline for re-assessing the threat level and providing the results of the assessment to the Director.

Schedule D: Conditions for Relief from Regulatory Requirements

System Owner	**The Corporation Of The Township Of Hamilton**
Licence Number	**139-101**
Drinking Water System Name	**Hamilton Township Distribution System**
Licence Effective Date	**August 12, 2021**

As of the Effective Date of the Licence, no relief from regulatory requirements is authorized by the Director under section 46 of the SDWA in respect of the drinking water system.

APPENDIX 2

The Corporation of the Township of Hamilton

DWWP 139-201 Issue 3

Ontario

DRINKING WATER WORKS PERMIT

Permit Number: 139-201
Issue Number: 3

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, I hereby issue this drinking water works permit under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Corporation of the Township of Hamilton

8285 Majestic Hills Drive
Station Main P.O. Box 1060
Cobourg ON
K9A 4W5

For the following municipal residential drinking water system:

Hamilton Township Distribution System

This drinking water works permit includes the following:

Schedule	Description
Schedule A	Drinking Water System Description
Schedule B	General
Schedule C	All documents issued as Schedule C to this drinking water works permit which authorize alterations to the drinking water system

Upon the effective date of this drinking water works permit # 139-201, all previously issued versions of permit # 139-201 are revoked and replaced by this permit.

DATED at TORONTO this 12th day of August, 2021

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Description

System Owner	**The Corporation of the Township of Hamilton**
Permit Number	**139-201**
Drinking Water System Name	**Hamilton Township Distribution System**
Permit Effective Date	**August 12, 2021**

1.0 System Description

1.1 The following is a summary description of the works comprising the above drinking water system:

Overview

The **Hamilton Township Distribution System** obtains water from the Cobourg Water Treatment Plant (137-101 Cobourg Drinking Water System) and consists of distribution watermains.

Instrumentation and Control

SCADA System

Description	Not Applicable
Notes	Not Applicable

Watermains

1.1 Watermains within the distribution system comprise:

1.1.1 Watermains that have been set out in each document or file identified in column 1 of Table 1.

Table 1: Watermains

Column 1 Document or File Name	Column 2 Date
FEB2021_Whitton_HamiltonWaterDist.pdf	February 2021

1.1.2 Watermains that have been added, modified, replaced or extended further to the provisions of Schedule C of this drinking water works permit on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

1.1.3 Watermains that have been added, modified, replaced or extended further to an authorization by the Director on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

Schedule B: General

System Owner	**The Corporation of the Township of Hamilton**
Permit Number	**139-201**
Drinking Water System Name	**Hamilton Township Distribution System**
Permit Effective Date	**August 12, 2021**

1.0 Applicability

1.1 In addition to any other applicable legal requirements, the drinking water system identified above shall be altered and operated in accordance with the conditions of this drinking water works permit and the licence #139-101.

1.2 The definitions and conditions of licence #139-101 are incorporated into this permit and also apply to this drinking water system.

2.0 Alterations to the Drinking Water System

2.1 Any document issued by the Director to be incorporated into Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance with the applicable conditions of this drinking water works permit and licence #139-101.

2.2 All documents issued by the Director as described in condition 2.1 shall form part of this drinking water works permit.

2.3 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) Until February 11, 2022, the ministry's Watermain Disinfection Procedure, dated November 2015. As of February 12, 2022, 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) AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
d) AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
e) AWWA C654 – Standard for Disinfection of Wells.

2.3.1 For greater clarity, 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.

2.3.2 Updated requirements described in condition 2.3 b) are effective six months from the date of publication of the updated Watermain Disinfection Procedure.

2.4 The owner shall notify the Director in writing within thirty (30) days of the placing into service or the completion of any addition, modification, replacement, removal or extension of the drinking water system which had been authorized through:

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

2.4.2 Any document to be incorporated in Schedule C to this drinking water works permit respecting works other than watermains; or

2.4.3 Any approval issued prior to the issue date of the first drinking water works permit respecting works other than watermains which were not in service at the time of the issuance of the first drinking water works permit.

2.5 The notification required in condition 2.4 shall be submitted using the "Director Notification Form" published by the Ministry.

2.6 For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement, removal or extension in respect of the drinking water system which:

2.6.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;

2.6.2 Constitutes maintenance or repair of the drinking water system; or

2.6.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.

2.7 The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system.

2.8 For greater certainty, the owner may only carry out alterations to the drinking water system in accordance with this drinking water works permit after having satisfied other applicable legal obligations, including those arising from the *Environmental Assessment Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act, 2001* and *Greenbelt Act, 2005*.

3.0 Watermain Additions, Modifications, Replacements and Extensions

3.1 The owner may alter the drinking water system, or permit it to be altered by a person acting on the owner's behalf, by adding, modifying, replacing or extending a watermain within the distribution system subject to the following conditions:

3.1.1 The design of the watermain addition, modification, replacement or extension:

a) Has been prepared by a licensed engineering practitioner;

b) Has been designed only to transmit water and has not been designed to treat water;

c) Satisfies the design criteria set out in the Ministry publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – June 2012”, as amended from time to time; and

d) Is consistent with or otherwise addresses the design objectives contained within the Ministry publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.

3.1.2 The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system.

3.1.3 The watermain addition, modification, replacement or extension will not adversely affect the distribution system’s ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.

3.1.4 Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03.

3.1.5 The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction.

3.1.6 The owner of the drinking water system consents in writing to the watermain addition, modification, replacement or extension.

3.1.7 A licensed engineering practitioner has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of condition 3.1.1.

3.1.8 The owner of the drinking water system has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of conditions 3.1.2 to 3.1.6.

3.2 The authorization for the addition, modification, replacement or extension of a watermain provided for in condition 3.1 does not include the addition, modification, replacement or extension of a watermain that:

3.2.1 Passes under or through a body of surface water, unless trenchless construction methods are used;

3.2.2 Has a nominal diameter greater than 750 mm;

3.2.3 Results in the fragmentation of the drinking water system; or

3.2.4 Connects to another drinking water system, unless:

a) Prior to construction, the owner of the drinking water system seeking the connection obtains written consent from the owner or owner’s delegate of the drinking water system being connected to; and

b) The owner of the drinking water system seeking the connection retains a copy of the written consent from the owner or owner's delegate of the drinking water system being connected to as part of the record that is recorded and retained under condition 3.3.

3.3 The verifications required in conditions 3.1.7 and 3.1.8 shall be:

3.3.1 Recorded on "Form 1 – Record of Watermains Authorized as a Future Alteration", as published by the Ministry, prior to the watermain addition, modification, replacement or extension being placed into service; and

3.3.2 Retained for a period of ten (10) years by the owner.

3.4 For greater certainty, the verification requirements set out in condition 3.3 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

3.4.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

3.4.2 Constitutes maintenance or repair of the drinking water system.

3.5 The document or file referenced in Column 1 of Table 1 of Schedule A of this drinking water works permit that sets out watermains shall be retained by the owner and shall be updated to include watermain additions, modifications, replacements and extensions within 12 months of the addition, modification, replacement or extension.

3.6 The updates required by condition 3.5 shall include watermain location relative to named streets or easements and watermain diameter.

3.7 Despite clause (a) of condition 3.1.1 and condition 3.1.7, with respect to the replacement of an existing watermain or section of watermain that is 6.1 meters in length or less, if a licensed engineering practitioner has:

3.7.1 inspected the replacement prior to it being put into service;

3.7.2 prepared a report confirming that the replacement satisfies clauses (b), (c) and (d) of condition 3.1.1 (i.e. "Form 1 – Record of Watermains Authorized by a Future Alteration" (Form 1), Part 3, items No. 2, 3 and 4); and

3.7.3 appended the report referred to in condition 3.7.2 to the completed Form 1,

the replacement is exempt from the requirements that the design of the replacement be prepared by a licensed engineering practitioner and that a licensed engineering practitioner verify on Form 1, Part 3, item No. 1 that a licensed engineering practitioner prepared the design of the replacement.

3.8 For greater certainty, the exemption in condition 3.7 does not apply to the replacement of an existing watermain or section of watermain if two or more sections of pipe, each of which is 6.1 meters in length or less, are joined together, if the total length of replacement pipes joined together is greater than 6.1 meters.

4.0 Minor Modifications to the Drinking Water System

4.1 The drinking water system may be altered by adding, modifying or replacing the following components in the drinking water system:

4.1.1 Coagulant feed systems in the treatment system, including the location and number of dosing points:

a) Prior to making any alteration to the drinking water system under condition 4.1.1, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and

b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.1.1 and shall provide the Director with a copy of the review.

c) The notification required in condition 4.1.1 b) shall be submitted using the "Director Notification Form" published by the Ministry

4.1.2 Instrumentation and controls, including new SCADA systems and upgrades to SCADA system hardware;

4.1.3 SCADA system software or programming that:

a) Measures, monitors or reports on a regulated parameter;
b) Measures, monitor or reports on a parameter that is used to calculate CT; or,
c) Calculates CT for the system or is part of the process algorithm that calculates log removal, where the impacts of addition, modification or replacement have been reviewed by a licensed engineering practitioner;

4.1.4 Filter media, backwashing equipment, filter troughs, and under-drains and associated equipment in the treatment system;

4.1.5 Spill containment works; or,

4.1.6 Coarse screens and fine screens.

4.2 The drinking water system may be altered by adding, modifying, replacing or removing the following components in the drinking water system:

4.2.1 Treated water pumps, pressure tanks, and associated equipment;

4.2.2 Raw water pumps and process pumps in the treatment system;

4.2.3 Inline booster pumping stations that are not associated with distribution system storage facilities and are on a watermain with a nominal diameter not exceeding 200 mm;

4.2.4 Re-circulation devices within distribution system storage facilities;

4.2.5 In-line mixing equipment;

4.2.6 Chemical metering pumps and chemical handling pumps;

4.2.7 Chemical storage tanks (excluding fuel storage tanks) and associated equipment; or,

4.2.8 Measuring and monitoring devices that are not required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry.

4.2.9 Chemical injection points;

4.2.10 Valves.

4.3 The drinking water system may be altered by replacing the following:

4.3.1 Raw water piping, treatment process piping or treated water piping within the treatment subsystem;

4.3.2 Measuring and monitoring devices that are required by regulation, by a condition in the Drinking Water Works Permit or by a condition otherwise imposed by the Ministry.

4.3.3 Coagulants and pH adjustment chemicals, where the replacement chemicals perform the same function;

a) Prior to making any alteration to the drinking water system under condition 4.3.3, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and

b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.3.3 and shall provide the Director with a copy of the review.

c) The notification required in condition 4.3.3 b) shall be submitted using the "Director Notification Form" published by the Ministry

4.4 Any alteration of the drinking water system made under conditions 4.1, 4.2 or 4.3 shall not result in:

4.4.1 An exceedance of a treatment subsystem rated capacity or a treatment subsystem component maximum flow rate as specified in the licence;

4.4.2 The bypassing or removal of any unit process within a treatment subsystem;

4.4.3 The addition of any new unit process other than coagulation within a treatment subsystem;

4.4.4 A deterioration in the quality of drinking water provided to consumers;

4.4.5 A reduction in the reliability or redundancy of any component of the drinking water system;

4.4.6 A negative impact on the ability to undertake compliance and other monitoring necessary for the operation of the drinking water system; or

4.4.7 An adverse effect on the environment.

4.5 The owner shall verify in writing that any addition, modification, replacement or removal of drinking water system components in accordance with conditions 4.1, 4.2 or 4.3 has met the requirements of the conditions listed in condition 4.4.

4.6 The verifications and documentation required in condition 4.5 shall be:

4.6.1 Recorded on “Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System” published by the Ministry, prior to the modified or replaced components being placed into service; and

4.6.2 Retained for a period of ten (10) years by the owner.

4.7 For greater certainty, the verification requirements set out in conditions 4.5 and 4.6 do not apply to any addition, modification, replacement or removal in respect of the drinking water system which:

4.7.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

4.7.2 Constitutes maintenance or repair of the drinking water system, including software changes to a SCADA system that are not listed in condition 4.1.3

4.8 The owner shall update any drawings maintained for the drinking water system to reflect the modification or replacement of the works, where applicable.

5.0 Equipment with Emissions to the Air

5.1 The drinking water system may be altered by adding, modifying or replacing any of the following drinking water system components that may discharge or alter the rate or manner of a discharge of a compound of concern to the air:

5.1.1 Any equipment, apparatus, mechanism or thing that is used for the transfer of outdoor air into a building or structure that is not a cooling tower;

5.1.2 Any equipment, apparatus, mechanism or thing that is used for the transfer of indoor air out of a space used for the production, processing, repair, maintenance or storage of goods or materials, including chemical storage;

5.1.3 Laboratory fume hoods used for drinking water testing, quality control and quality assurance purposes;

5.1.4 Low temperature handling of compounds with a vapor pressure of less than 1 kilopascal;

5.1.5 Maintenance welding stations;

5.1.6 Minor painting operations used for maintenance purposes;

5.1.7 Parts washers for maintenance shops;

5.1.8 Emergency chlorine and ammonia gas scrubbers and absorbers;

5.1.9 Venting for activated carbon units for drinking water taste and odour control;

5.1.10 Venting for a stripping unit for methane removal from a groundwater supply;

5.1.11 Venting for an ozone treatment unit;

5.1.12 Natural gas or propane fired boilers, water heaters, space heaters and make-up air units with a total facility-wide heat input rating of less than 20 million kilojoules per hour, and with an individual fuel energy input of less than or equal to 10.5 gigajoules per hour; or

5.1.13 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline or biofuel, and that are used for emergency duty only with periodic testing.

5.2 The owner shall not make an addition, modification, or replacement described in condition 5.1 in relation to an activity that is not related to the treatment and/or distribution of drinking water.

5.3 The emergency generators identified in condition 5.1.13 shall not be used for non-emergency purposes including the generation of electricity for sale or for peak shaving purposes.

5.4 The owner shall prepare an emission summary table for nitrogen oxides emissions only, for each addition, modification or replacement of emergency generators identified in condition 5.1.13.

Performance Limits

5.5 The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.13 is operated at all times to comply with the following limits:

5.5.1 For equipment other than emergency generators, the maximum concentration of any compound of concern at a point of impingement shall not exceed the corresponding point of impingement limit;

5.5.2 For emergency generators, the maximum concentration of nitrogen oxides at sensitive receptors shall not exceed the applicable point of impingement limit, and at non-sensitive receptors shall not exceed the Ministry half-hourly screening level of 1880 ug/m^3 as amended; and

5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-300, as applicable.

5.6 The owner shall verify in writing that any addition, modification or replacement of works in accordance with condition 5.1 has met the requirements of the conditions listed in condition 5.5.

5.7 The owner shall document how compliance with the performance limits outlined in condition 5.5.3 is being achieved, through noise abatement equipment and/or operational procedures.

5.8 The verifications and documentation required in conditions 5.6 and 5.7 shall be:

5.8.1 Recorded on “Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere”, as published by the Ministry, prior to the additional, modified or replacement equipment being placed into service; and

5.8.2 Retained for a period of ten (10) years by the owner.

5.9 For greater certainty, the verification and documentation requirements set out in conditions 5.6 and 5.8 do not apply to any addition, modification or replacement in respect of the drinking water system which:

5.9.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

5.9.2 Constitutes maintenance or repair of the drinking water system.

5.10 The owner shall update any drawings maintained for the works to reflect the addition, modification or replacement of the works, where applicable.

6.0 Previously Approved Works

6.1 The owner may add, modify, replace or extend, and operate part of a municipal drinking water system if:

6.1.1 An approval was issued after January 1, 2004 under section 36 of the SDWA in respect of the addition, modification, replacement or extension and operation of that part of the municipal drinking water system;

6.1.2 The approval expired by virtue of subsection 36(4) of the SDWA; and

6.1.3 The addition, modification, replacement or extension commenced within five years of the date that activity was approved by the expired approval.

7.0 System-Specific Conditions

7.1 Not applicable

8.0 Source Protection

8.1 Not applicable

Schedule C: Authorization to Alter the Drinking Water System

System Owner	**The Corporation of the Township of Hamilton**
Permit Number	**139-201**
Drinking Water System Name	**Hamilton Township Distribution System**
Permit Effective Date	**August 12, 2021**

1.0 General

1.1 Table 2 provides a reference list of all documents to be incorporated into Schedule C that have been issued as of the date that this permit was issued.

1.1.1 Table 2 is not intended to be a comprehensive list of all documents that are part of Schedule C. For clarity, any document issued by the Director to be incorporated into Schedule C after this permit has been issued is considered part of this drinking water works permit.

Table 2: Schedule C Documents

Column 1 Issue #	Column 2 Issued Date	Column 3 Description	Column 4 Status	Column 5 DN#
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

1.2 For each document described in columns 1, 2 and 3 of Table 2, the status of the document is indicated in column 4. Where this status is listed as 'Archived', the approved alterations have been completed and relevant portions of this permit have been updated to reflect the altered works. These 'Archived' Schedule C documents remain as a record of the alterations.

APPENDIX 3

NSF Certification of Registration 2021 DWQS

Certificate of Registration

This certifies that the Quality Management System of

Lakefront Utility Services Inc.

207 Division Street
Cobourg, Ontario, K9A 4L3, Canada

has been assessed by NSF-ISR and found to be in conformance to the following standard(s):

Ontario's Drinking Water Quality Management Standard Version 2

Scope of Registration:
Hamilton Township Distribution System, 139-OA2, Entire Full Scope Accreditation

Certificate Number:	C0128651-DWQ5
Certificate Issue Date:	09-DEC-2020
Registration Date:	08-FEB-2021
Expiration Date *:	07-FEB-2023

Tom Chestnut,
Sr Vice President - ISR,
NSF-ISR, Ltd.

NSF International Strategic Registrations
789 North Dixboro Road, Ann Arbor, Michigan 48105 | (888) NSF-9000 | www.nsf-isr.org

APPENDIX 4

The Corporation of the Township of Hamilton

MECP 2021 Inspection Report Hamilton Township
Distribution 06 08 2021

Ministry of the Environment, Conservation and Parks
Eastern Region
Peterborough District Office
300 Water Street
2nd Floor, South Tower
Peterborough ON K9J 3C7
Phone: 705.755.4300
or 800.558.0595

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Région de l'Est
Bureau du district de Peterborough
300, rue Water
2e étage, Tour Sud
Peterborough (Ontario) K9J 3C7
Tél: 705 755-4300
558-0595230,

Ontario

July 15, 2021

The Corporation of the Township of Hamilton
8285 Majestic Hills Dr.
Cobourg, Ontario K9A 4W5

Attention: William Cane, Mayor

RE: Hamilton Township Distribution System (260039208)

File: SI NO CO MA 540

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

Any items under the heading "Non-Compliance with Regulatory Requirements and Actions Required" are linked to incidents of non-compliance with regulatory requirements contained within the Act, a regulation, or site-specific approvals, licenses, permits, orders or instructions.

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

In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (II&E) Secretariat and advice of internal/external risk experts. The Inspection Summary Rating Record (IRR) provides the Ministry, the system owner and the local Public Health Unit with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspectors' Annual Report.

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

I would like to thank staff for the assistance afforded to me during this compliance assessment. If you have any questions or concerns please contact myself or Jacqueline Fuller, Water Compliance Supervisor, Peterborough District Office at 705-768-0436.

Yours truly,

Brittney Wielgos
Water Inspector
Ministry of the Environment, Conservation and Parks
Drinking Water and Environmental Compliance Division
300 Water Street, 2nd Floor South
Peterborough, ON K9J 3C7
705-768-8195

cc:
Larry Spyrka, Manager of Capital Projects, Lakefront Utility Services
Sarah Whitton, Water Compliance Coordinator, Lakefront Utility Services
Dr. Natalie Bocking, Medical Officer of Health, Haliburton, Kawartha, Pine Ridge District Health Unit
Linda Laliberte, CAO/Secretary – Treasurer, Ganaraska Region Conservation Authority
Jacqueline Fuller, Water Compliance Supervisor, Peterborough District Office, MECP

Ontario

HAMILTON TOWNSHIP DISTRIBUTION SYSTEM

,

Inspection Report

System Number:	260039208
Inspection Start Date:	06/08/2021
Inspection End Date:	07/15/2021
Inspected By:	Brittney Wielgos
Badge #:	754

(signature)

NON-COMPLIANCE/NON-CONFORMANCE ITEMS

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

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

INSPECTION DETAILS

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

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

Question ID	MRDW1001000	
Question	**Question Type**	**Legislative Requirement**
What was the scope of this inspection?	Information	Not Applicable

Observation

The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices.

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. The Hamilton Township Distribution System (the System) is owned by the Corporation of the Township of Hamilton and operated by Lakefront Utility Services Inc. (LUSI) and serves a population of approximately 342. The System obtains water produced by the Cobourg Water Treatment Plant. Treated water is directed to the Hamilton Township Distribution System thorough an extension of the Town of Cobourg's Distribution System serving Pressure Zone 2.

The inspection includes a compliance assessment of applicable Ministry of Environment, Conservation and Parks (MECP) legislation, an inspection of the procedures used within the treatment and distribution system, and a review of records.

Records reviewed in conjunction with this inspection include:
-Drinking Water Works Licence No. 139-101, dated: September 19, 2016
-Drinking Water Works Permit No. 139-201, dated: August 18, 2016
-Hamilton Township Signed Water Service Agreement, dated August 1, 2018

This inspection was conducted pursuant to section 81 of the Safe Drinking Water Act in order to assess compliance with the requirements of Ontario Regulation 170/03 (O.Reg.170/03). The drinking water inspection included: interviews with operating authority staff and a review of relevant documents from the period of July 22, 2020 to July 7, 2021 (hereafter referred to as the "inspection review period").

Question ID	MRDW1000000		
Question		**Question Type**	**Legislative Requirement**
Does this drinking water system provide primary disinfection?		Information	Not Applicable
Observation			
This Drinking Water System provides for only secondary disinfection and distribution of water. Primary disinfection is undertaken by another regulated Drinking Water System which provides treated water to this Drinking Water System. DWS is a stand-alone distribution system directly connected to Cobourg DWS that is providing primary disinfection.			

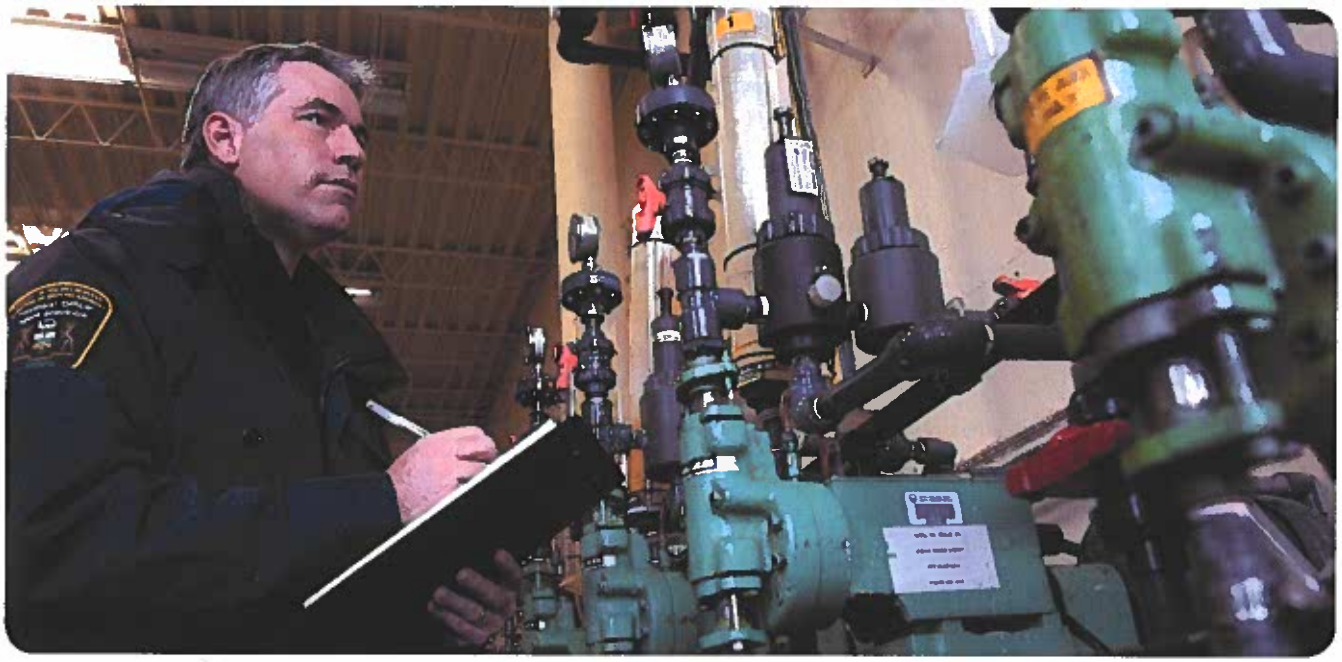
Question ID	MRDW1018000		
Question		**Question Type**	**Legislative Requirement**
Has the owner ensured that all equipment is installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit?		Legislative	SDWA | 31 | (1)
Observation			
The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit. The Hamilton Township Distribution System obtains water from the Cobourg Water Treatment Plant. There is no treatment equipment located within Hamilton Township. The system consists solely of distribution watermains. There have been no changes to the distribution system since the permit was issued on September 19, 2016.			

Question ID	MRDW1100000		
Question		**Question Type**	**Legislative Requirement**
Did any reportable adverse/exceedance conditions occur during the inspection period?		Information	Not Applicable
Observation			
There were no reportable adverse/exceedances during the inspection period.			

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

Question ID	MRDW1054000	
Question	**Question Type**	**Legislative Requirement**
For stand alone connected distribution systems, if the receiving system is claiming the exemptions to O. Reg. 170/03 available under subsection 5(4), does the agreement with the donor satisfy the requirements prescribed by subsection 5(4)?	Information	Not Applicable
Observation		
The receiving system was claiming exemptions to O. Reg. 170/03 available under subsection 5(4), and the agreement with the donor satisfied the requirements prescribed by subsection 5(4). The Hamilton Township Distribution System and the Cobourg Drinking Water System have a written agreement dated August 1, 2018, stating that the Hamilton Township Distribution System will be operated as an extension of the Cobourg Distribution System. The agreement satisfies the requirements prescribed by section 5(4) of O.Reg.170/03.		

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).

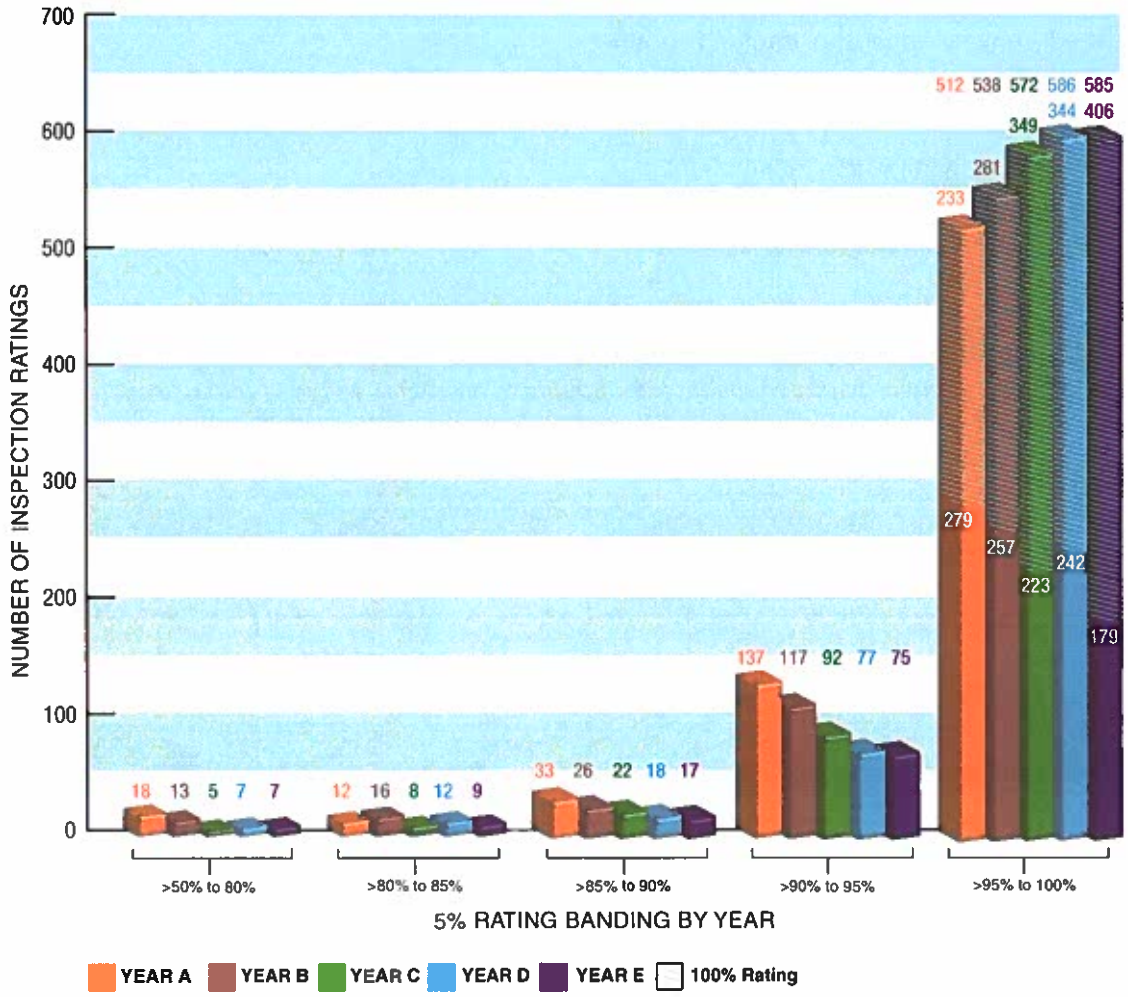
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

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**

Ministry of the Environment, Conservation and Parks - Inspection Summary Rating Record (Reporting Year - 2021-2022)

DWS Name:	HAMILTON TOWNSHIP DISTRIBUTION SYSTEM
DWS Number:	260039208
DWS Owner:	THE CORPORATION OF THE TOWNSHIP OF HAMILTON
Municipal Location:	HAMILTON
Regulation:	O.REG. 170/03
DWS Category:	DW Municipal Residential
Type of Inspection:	Focused
Inspection Date:	Jun-8-2021
Ministry Office:	Peterborough District Office

Maximum Risk Rating: 18

Inspection Module	Non Compliance Rating
Treatment Processes	0 / 14
Reporting & Corrective Actions	0 / 4
Overall - Calculated	**0 / 18**

Inspection Risk Rating:	**0.00%**

Final Inspection Rating:	**100.00%**

Inspection Rating Record Generated On 2021-09-28 (Inspection ID: 1-29531731)

Ministry of the Environment, Conservation and Parks - Detailed Inspection Rating Record (Reporting Year - 2021-2022)

DWS Name:	HAMILTON TOWNSHIP DISTRIBUTION SYSTEM
DWS Number:	260039208
DWS Owner Name:	THE CORPORATION OF THE TOWNSHIP OF HAMILTON
Municipal Location:	HAMILTON
Regulation:	O.REG. 170/03
DWS Category:	DW Municipal Residential
Type of Inspection:	Focused
Inspection Date:	Jun-8-2021
Ministry Office:	Peterborough District Office

All legislative requirements were met. No detailed rating scores.

Maximum Question Rating: 18

Inspection Risk Rating:	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 2021-09-28 (Inspection ID: 1-29531731)

APPENDIX 5

The Corporation of the Township of Hamilton

Cobourg DWS MECP Inspection Report 06 08 2021

Ministry of the Environment, Conservation and Parks
Eastern Region
Peterborough District Office
300 Water Street
2nd Floor, South Tower
Peterborough ON K9J 3C7
Phone: 705.755.4300
or 800.558.0595

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Région de l'Est
Bureau du district de Peterborough
300, rue Water
2e étage, Tour Sud
Peterborough (Ontario) K9J 3C7
Tél: 705 755-4300
558-0595230,

Ontario

July 15, 2021

The Corporation of the Town of Cobourg
55 King St. W,
Cobourg, Ontario K9A 2M2

Attention: Tracey Vaughan, CAO

RE: Cobourg Drinking Water System (220000825)

File: SI NO CO KI 540

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

Any items under the heading "Non-Compliance with Regulatory Requirements and Actions Required" are linked to incidents of non-compliance with regulatory requirements contained within the Act, a regulation, or site-specific approvals, licenses, permits, orders or instructions.

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

In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (II&E) Secretariat and advice of internal/external risk experts. The Inspection Summary Rating Record (IRR) provides the Ministry, the system owner and the local Public Health Unit with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspectors' Annual Report.

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

I would like to thank staff for the assistance afforded to me during this compliance assessment. If you have any questions or concerns please contact myself or Jacqueline Fuller, Water Compliance Supervisor, Peterborough District Office at 705-768-0436.

Yours truly,

Brittney Wielgos
Water Inspector
Ministry of the Environment, Conservation and Parks
Drinking Water and Environmental Compliance Division
300 Water Street, 2nd Floor South
Peterborough, ON K9J 3C7
705-768-8195

cc:
Larry Spyrka, Manager of Capital Projects, Lakefront Utility Services
Sarah Whitton, Water Compliance Coordinator, Lakefront Utility Services
Dr. Natalie Bocking, Medical Officer of Health, Haliburton, Kawartha, Pine Ridge District Health Unit
Linda Laliberte, CAO/Secretary – Treasurer, Ganaraska Region Conservation Authority
Jacqueline Fuller, Water Compliance Supervisor, Peterborough District Office, MECP

Ontario

COBOURG DRINKING WATER SYSTEM
6 D'ARCY ST, COBOURG, ON, K9A 3Z4

Inspection Report

System Number:	220000825
Inspection Start Date:	06/08/2021
Inspection End Date:	07/15/2021
Inspected By:	Brittney Wielgos
Badge #:	754

(signature)

NON-COMPLIANCE/NON-CONFORMANCE ITEMS

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

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

INSPECTION DETAILS

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

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

Question ID	MRDW1001000	
Question	**Question Type**	**Legislative Requirement**
What was the scope of this inspection?	Information	Not Applicable

Observation

The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices.

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. On June 8, 2021, Provincial Officer Brittney Wielgos began an announced focused inspection of the Cobourg Drinking Water System. The onsite physical inspection took place on July 7, 2021.

The inspection included a compliance assessment of applicable Ministry of Environment, Conservation and Parks (MECP) legislation, an inspection of the procedures within the treatment and distribution system, and a review of records.

Records reviewed in conjunction with this inspection include:
-Drinking Water Works Licence No. 137-101 Issue Number 3 (The Licence); and,
-Drinking Water Works Permit No. 137-201 Issue Number 2 (The Permit)
-Permit to Take Water (PTTW) No. 6423-8XHF2

This inspection was conducted pursuant to section 81 of the Safe Drinking Water Act in order to assess compliance with the requirements of Ontario Regulation 170/03. The drinking water inspection included: physical inspections of the equipment and facilities; interviews with operating authority staff; and, a review of relevant documents from the period of July 22, 2020 to July 7, 2021(hereafter referred to as the "inspection review period").

Question ID	MRDW1000000	
Question	**Question Type**	**Legislative Requirement**

Does this drinking water system provide primary disinfection?	Information	Not Applicable
Observation		
This Drinking Water System provides for both primary and secondary disinfection and distribution of water. The Cobourg Drinking Water System (the System) is owned by the Corporation of the Town of Cobourg and operated by Lakefront Utility Services Inc. (LUSI). The System consists of a convention water treatment plant; two (2) elevated storage tanks with rechlorination; and a booster pumping station with rechlorination. Raw water is obtained from Lake Ontario via a single 1,050 mm diameter intake pipe located approximately 850 m south of the water treatment plant and at a depth of 8.8 m. The System delivers treated water through two (2) pressure zones and consists of approximately 126 kilometers of distribution watermain and 6,350 residential and non-residential service connections. The System serves approximately 19,544 people. The System operates under Drinking Water System No. 220000825 and is classified as a Class 3 Water Treatment Subsystem and Class 3 Water Distribution Subsystem.		

Question ID	MRDW1011000	
Question	**Question Type**	**Legislative Requirement**
Does the owner have a harmful algal bloom monitoring plan in place?	BMP	Not Applicable
Observation		
The owner had a harmful algal bloom monitoring plan in place. LUSI has developed and implemented a 'Harmful Algal Bloom Monitoring Plan', dated January 29, 2021. The plan provides details on a normal sampling plan, which consists of proactive sampling and analysis of microcystin in the raw water on a monthly basis during the period of June 1 - October 31. The plan outlines the following: how LUSI will respond to suspected or occurring harmful algal blooms; a sampling escalation policy; communication; and response.		

Question ID	MRDW1012000	
Question	**Question Type**	**Legislative Requirement**
Does the owner have a harmful algal bloom monitoring plan in place that meets the requirements of the MDWL?	Legislative	SDWA | 31 | (1)
Observation		
The owner had a harmful algal bloom monitoring plan in place.		

Question ID	MRDW1014000	
Question	**Question Type**	**Legislative Requirement**
Is there sufficient monitoring of flow as required by the MDWL or DWWP issued under Part V of the SDWA?	Legislative	SDWA | 31 | (1)

Observation
There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA. At the time of the inspection sufficient flow meters were installed to permit the continuous measurement of the flow rates and daily volume of treated water that flows from the treatment subsystem into the distribution system in accordance with Condition 2 of Schedule C of the Licence.

Question ID	MRDW1016000		
Question		**Question Type**	**Legislative Requirement**
Is the owner in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the MDWL issued under Part V of the SDWA?		Legislative	SDWA | 31 | (1)
Observation			
The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA. Condition 1.1 of Schedule C of the Licence requires that the System not be operated to exceed the rated capacity of: Cobourg Drinking Water System: 36,368 m³/day The rated capacity was not exceeded during the inspection review period. The maximum treated flow for the inspection review period was 11,248 m³/day in June 2021.			

Question ID	MRDW1030000		
Question		**Question Type**	**Legislative Requirement**
Is primary disinfection chlorine monitoring being conducted at a location approved by MDWL and/or DWWP issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved?		Legislative	SDWA | O. Reg. 170/03 | 7-2 | (1), SDWA | O. Reg. 170/03 | 7-2 | (2)
Observation			
Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved. Primary disinfection chlorine monitoring is conducted at the end of the chlorine contact chamber via an online chlorine analyser.			

Question ID	MRDW1032000		
Question		**Question Type**	**Legislative Requirement**
If the drinking water system obtains water from a surface water source and provides filtration, is continuous monitoring of each filter effluent line being performed for		Legislative	SDWA | O. Reg. 170/03 | 7-3 | (2)

turbidity?		

Observation

Continuous monitoring of each filter effluent line was being performed for turbidity. The Cobourg Drinking Water System consists of two dual-media gravity filters. The filters consist of a 600 mm layer of granular activated carbon (GAC), on top of a 300 mm thick layer of silica sand. Filter time and turbidity are monitored by SCADA. Operators manually initiate filter backwash via SCADA based on run time, loss of head and effluent water turbidity.

Each filter is equipped with an online turbidity analyzer.

Question ID	MRDW1033000	
Question	**Question Type**	**Legislative Requirement**
Is the secondary disinfectant residual measured as required for the large municipal residential distribution system?	Legislative	SDWA | O. Reg. 170/03 | 7-2 | (3), SDWA | O. Reg. 170/03 | 7-2 | (4)

Observation

The secondary disinfectant residual was measured as required for the distribution system. LUSI operators collect an average of eight free chlorine and total chlorine residual samples each week within the distribution system.

Furthermore, secondary disinfection residual is measured using three continuous analysers located at the Ewart Street Booster Pumping Station, Zone 1 and Zone 2 Elevated tanks and recorded and reviewed on SCADA.

Question ID	MRDW1037000	
Question	**Question Type**	**Legislative Requirement**
Are all continuous monitoring equipment utilized for sampling and testing required by O. Reg.170/03, or MDWL or DWWP or order, equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6?	Legislative	SDWA | O. Reg. 170/03 | 6-5 | (1) 1-4,SDWA | O. Reg. 170/03 | 6-5 | (1)5-10,SDWA | O. Reg. 170/03 | | 6-5 | (1.1)

Observation

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

Contact Chamber Effluent:
Upper limit - 3.5 mg/L
Lower Limit - 1.0 mg/L

Filter Effluent Turbidity: 0.3 NTU

Question ID	MRDW1038000		
Question		**Question Type**	**Legislative Requirement**
Is continuous monitoring equipment that is being utilized to fulfill O. Reg. 170/03 requirements performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format?		Legislative	SDWA | O. Reg. 170/03 | 6-5 | (1) 1-4
Observation			
Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.			

Question ID	MRDW1035000		
Question		**Question Type**	**Legislative Requirement**
Are operators examining continuous monitoring test results and are they examining the results within 72 hours of the test?		Legislative	SDWA | O. Reg. 170/03 | 6-5 | (1) 1-4,SDWA | O. Reg. 170/03 | 6-5 | (1)5-10
Observation			
Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test. The System is inspected on a daily basis by a licenced operator to monitor the process, perform operational duties, maintenance and respond to customer concerns. The System is equipped with a SCADA system that continuously monitors process parameters. Daily checks include reviewing the previous 24 hour SCADA trending. The SCADA system is equipped with an auto-dialler that has been programmed to contact the answering service or LUSI personnel whenever conditions deviate from the program setting.			

Question ID	MRDW1040000		
Question		**Question Type**	**Legislative Requirement**
Are all continuous analysers calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation?		Legislative	SDWA | O. Reg. 170/03 | 6-5 | (1) 1-4,SDWA | O. Reg. 170/03 | 6-5 | (1)5-10
Observation			
All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.			

Question ID	MRDW1108000	
Question	**Question Type**	**Legislative Requirement**
Where continuous monitoring equipment used for the monitoring of free chlorine residual, total chlorine residual, combined chlorine residual or turbidity, required by Regulation 170, an Order, MDWL, or DWWP issued under Part V, SDWA, has triggered an alarm or an automatic shut-off, did a qualified person respond in a timely manner and take appropriate actions?	Legislative	SDWA | O. Reg. 170/03 | 6-5 | (1) 1-4,SDWA | O. Reg. 170/03 | 6-5 | (1)5-10,SDWA | O. Reg. 170/03 | 6-5 | (1.1)
Observation		
Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.		

Question ID	MRDW1018000	
Question	**Question Type**	**Legislative Requirement**
Has the owner ensured that all equipment is installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit?	Legislative	SDWA | 31 | (1)
Observation		
The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit. The Drinking Water Works Permit 137-201 outlines the equipment installed throughout the Cobourg Drinking Water System which includes the drinking water treatment plant, two elevated storage tanks with rechlorination and a booster pumping station. During the physical inspection, a comparison between the equipment described in the permit and the equipment installed on site was performed.		

Question ID	MRDW1021000	
Question	**Question Type**	**Legislative Requirement**
Is the owner/operating authority able to demonstrate that, when required during the inspection period, Form 2 documents were prepared in accordance with their Drinking Water Works Permit?	Legislative	SDWA | 31 | (1)
Observation		
The owner/operating authority was in compliance with the requirement to prepare Form 2 documents as required by their Drinking Water Works Permit during the inspection period. During the inspection review period seven (7) Form 2 - Record of Minor Modifications or Replacements to the Drinking Water System were prepared.		

The Form 2 documents reviewed suggests that the documents were prepared in accordance with the Drinking Water Works Permit.

Question ID	MRDW1023000	
Question	**Question Type**	**Legislative Requirement**
Do records indicate that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a DWWP and/or MDWL issued under Part V of the SDWA at all times that water was being supplied to consumers?	Legislative	SDWA | O. Reg. 170/03 | 1-2 | (2)

Observation

Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers. The Procedure for Disinfection of Drinking Water in Ontario requires a drinking water system that obtains water from a raw water supply which is surface water, have a treatment process that is capable of producing water of equal or better quality than a combination of well-operated chemically assisted filtration and disinfection process would provide. This treatment must provide and overall performance with a minimum 2-log (99%) removal or inactivation of Cryptosporidium oocysts, a 3-log (99.9%) removal or inactivation of Giardia cysts and a 4-log (99.99%) removal or inactivation of viruses before water is delivered to the first consumer.

The log removal attributed to specific treatment processes at the Cobourg Drinking Water System are stated in the MDWL 137-101under Schedule E: conventional filtration and chlorination. Operational requirements are listed for each process in order to meet the log removal/inactivation stipulated.

The conventional filtration component requires: a chemical coagulant to be used at all times when the treatment plant is in operation; effective backwash procedures and continuous monitoring of the filtrate turbidity.

Primary disinfection is achieved using chlorine gas. Chlorine is injected into filtered water as it leaves the backwash well. The contact chamber is comprised of two cells that are designed to provide appropriate baffling. The contact tank outlet chlorine residual is used to calculate contact time.

A review of records, including backwash procedures; review of continuous monitoring data of the filtrate turbidity; logbook entries and maintenance records, suggest that the System was operated in a manner that achieved the deign capabilities required under the Procedure for Disinfection of Drinking Water in Ontario and O.Reg.170/03.

Question ID	MRDW1024000	
Question	**Question**	**Legislative**

	Type	Requirement
Do records confirm that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined?	Legislative	SDWA | O. Reg. 170/03 | 1-2 | (2)

Observation

Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined. A review of records confirmed that water treatment equipment that provides chlorination for secondary disinfection purposes was operated in a manner to fulfill the requirements under clause 1-2 (2) 4 of Schedule 1, O. Reg. 170/03.

The chlorine residual is continuously monitored by SCADA at the booster station, water tower #1 and water tower #2. If additional disinfection is necessary, sodium hypochlorite can be added via an on-line pump.

A review of free chlorine residual grab samples taken form the Cobourg distribution system indicate that the free chlorine residual was greater than 0.05 mg/L at all times during the inspection review period.

Question ID	MRDW1025000	
Question	**Question Type**	**Legislative Requirement**
Were all parts of the drinking water system that came in contact with drinking water (added, modified, replaced or extended) disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?	Legislative	SDWA | 31 | (1)

Observation

All parts of the drinking water system were disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit.

Question ID	MRDW1062000	
Question	**Question Type**	**Legislative Requirement**
Do records or other record keeping mechanisms confirm that operational testing not performed by continuous monitoring equipment is being done by a certified operator, water quality analyst, or person who meets the requirements of O. Reg. 170/03 7-5?	Legislative	SDWA | O. Reg. 170/03 | 7-5

Observation

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

during the inspection review period, it appears that only certified operators performed operational tests.

Question ID	MRDW1060000		
Question		**Question Type**	**Legislative Requirement**
Do the operations and maintenance manuals meet the requirements of the DWWP and MDWL issued under Part V of the SDWA?		Legislative	SDWA | 31 | (1)
Observation			
The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.			

Question ID	MRDW1071000		
Question		**Question Type**	**Legislative Requirement**
Has the owner provided security measures to protect components of the drinking water system?		BMP	Not Applicable
Observation			
The owner had provided security measures to protect components of the drinking water system.			

Question ID	MRDW1073000		
Question		**Question Type**	**Legislative Requirement**
Has the overall responsible operator been designated for all subsystems which comprise the drinking water system?		Legislative	SDWA | O. Reg. 128/04 | 23 | (1)
Observation			
The overall responsible operator has been designated for each subsystem. Subsection 23(1) of O. Reg. 128/04 "Certification of Drinking-Water System Operators and Water Quality Analysts" states that a municipal residential drinking water system must have a designated overall responsible operator (ORO). The ORO shall be an operator who holds a certificate for that type of subsystem (e.g. water distribution subsystem) and that is of the same class or higher than the class of that subsystem. The Operational Plan for Cobourg and Hamilton Distribution contains Appendix E 'Responsibilities and Authorities', the appendix identifies competencies required and responsibilities for all individuals whose duties directly affect drinking water quality. LUSI appoints the Manager of Capital Water Projects as the ORO for the Cobourg Drinking Water System. Operators identify the ORO in the logbook each day of the year during daily system checks. The Cobourg Drinking Water Treatment Plant is classified as a Water Treatment Subsystem Class 3 and Water Distribution Subsystem Class 3. During the inspection review period, Larry Spyrka,			

Manager of Water Capital Projects possessed a Water Distribution and Supply Subsystem Class 3 certification that expires on May 31, 2023 and a Water Treatment Subsystem Class 3 certificate that expires on October 31, 2023.

During the inspection review period, the ORO and alternates possessed the appropriate operator certificates to serve in this capacity.

Question ID	MRDW1074000		
Question		**Question Type**	**Legislative Requirement**
Have operators in charge been designated for all subsystems for which comprise the drinking water system?		Legislative	SDWA | O. Reg. 128/04 | 25 | (1)
Observation			
Operators-in-charge had been designated for all subsystems which comprised the drinking water system. LUSI designates all operators with the exception of Operators in Training as Operator in Charge (OIC). The OIC is identified each day in the daily logbook.			

Question ID	MRDW1075000		
Question		**Question Type**	**Legislative Requirement**
Do all operators possess the required certification?		Legislative	SDWA | O. Reg. 128/04 | 22
Observation			
All operators possessed the required certification.			

Question ID	MRDW1076000		
Question		**Question Type**	**Legislative Requirement**
Do only certified operators make adjustments to the treatment equipment?		Legislative	SDWA | O. Reg. 170/03 | 1-2 | (2)
Observation			
Only certified operators made adjustments to the treatment equipment.			

Question ID	MRDW1099000		
Question		**Question Type**	**Legislative Requirement**
Do records show that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O. Reg.. 169/03)?		Information	Not Applicable
Observation			
Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg.			

169/03).

Question ID	MRDW1094000	
Question	**Question Type**	**Legislative Requirement**
Are all water quality monitoring requirements imposed by the MDWL and DWWP being met?	Legislative	SDWA | 31 | (1)

Observation

All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met. Section 4.2, 4.3 and 4.4 of Schedule C of the MDWL 137-101prescribes that the collection and analysis of process wastewater discharged to Lake Ontario.

Table 7 of Section 4.4 of Schedule C of the MDWL prescribes monthly composite samples of wastewater and analysis of suspended solids (TSS). Section 1.5 of Schedule C prescribes that the annual average concentration of Total Suspended Solids shall not exceed 25 mg/L.

Records provided for the inspection review period indicate that the System monitors TSS using monthly composite grab samples.

The annual average concentration (mg/L) of TSS in 2020 was <2 mg/L MDL. A parameter below the method detection limit indicated by (<), cannot be detected as the concentration is lower than the minimum concentration that can be measured and reported with 99% certainty.

Question ID	MRDW1096000	
Question	**Question Type**	**Legislative Requirement**
Do records confirm that chlorine residual tests are being conducted at the same time and at the same location that microbiological samples are obtained?	Legislative	SDWA | O. Reg. 170/03 | 6-3 | (1)

Observation

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

Question ID	MRDW1081000	
Question	**Question Type**	**Legislative Requirement**
Are all microbiological water quality monitoring requirements for distribution samples being met?	Legislative	SDWA | O. Reg. 170/03 | 10-2 | (1),SDWA | O. Reg. 170/03 | 10-2 | (2),SDWA | O. Reg. 170/03 | 10-2 | (3)

Observation

All microbiological water quality monitoring requirements for distribution samples were being met. Schedule 10, Section 10-2 of O.Reg.170/03 indicates that at least eight distribution samples plus one additional distribution sample for every 1,000 people served by the system are to be taken each month with at least one
sample being taken each week.

The population served, based on service connections, is approximately 19,544, indicating twenty-seven (27) samples are to be taken each month and tested for E.coli and total coliform, with at least 25% of those also being tested for heterotrophic plate count (HPC).

Distribution sample results reviewed for the inspection review period indicated that eight (8) samples were collected each week.

Question ID	MRDW1083000	
Question	**Question Type**	**Legislative Requirement**
Are all microbiological water quality monitoring requirements for treated samples being met?	Legislative	SDWA | O. Reg. 170/03 | 10-3

Observation

All microbiological water quality monitoring requirements for treated samples were being met. Section 10-3 of Schedule 10 of O. Reg. 170/03 requires that the Owner of a drinking water system and the Operating Authority for the system ensure that a water sample is taken at least once every week and tested for E. coli, total coliforms and general bacteria population expressed as colony counts on a heterotrophic plate count.

A review of sample records provided during the inspection period indicates that one treated water sample was collected from the System each week.

Question ID	MRDW1084000	
Question	**Question Type**	**Legislative Requirement**
Are all inorganic water quality monitoring requirements prescribed by legislation conducted within the required frequency?	Legislative	SDWA | O. Reg. 170/03 | 13-2

Observation

All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency. Section 13-2 (1) of Schedule 13 of O. Reg. 170/03 states that the owner of a large municipal drinking water system and the operating authority for the system shall ensure that at least one water sample is taken every 36 months, if the system obtains water from a raw water supply that is ground water. The owner shall ensure that each of the samples taken is tested for every parameter set out in Schedule 23.

Samples for Schedule 23 inorganic parameters were analyzed on January 11, 2021.

Question ID	MRDW1085000		
Question		**Question Type**	**Legislative Requirement**
Are all organic water quality monitoring requirements prescribed by legislation conducted within the required frequency?		Legislative	SDWA | O. Reg. 170/03 | 13-4 | (1),SDWA | O. Reg. 170/03 | 13-4 | (2),SDWA | O. Reg. 170/03 | 13-4 | (3)

Observation

All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency. Section 13-4 (1) of Schedule 13 of O. Reg. 170/03 states that the owner of a large municipal drinking water system and the operating authority for the system shall ensure that at least one water sample is taken every 36 months, if the system obtains water from a raw water supply that is ground water. The owner shall ensure that each of the samples taken is tested for every parameter set out in Schedule 24.

Samples for Schedule 24 organic parameters were analyzed on January 11, 2021.

Question ID	MRDW1086000		
Question		**Question Type**	**Legislative Requirement**
Are all haloacetic acid water quality monitoring requirements prescribed by legislation conducted within the required frequency and at the required location?		Legislative	SDWA | O. Reg. 170/03 | 13-6.1 | (1),SDWA | O. Reg. 170/03 | 13-6.1 | (2),SDWA | O. Reg. 170/03 | 13-6.1 | (3), SDWA | O. Reg. 170/03 | 13-6.1 | (4),SDWA | O. Reg. 170/03 | 13-6.1 | (5),SDWA | O. Reg. 170/03 | 13-6.1 | (6)

Observation

All haloacetic acid water quality monitoring requirements prescribed by legislation are being conducted within the required frequency and at the required location. Schedule 13-11 of O. Reg. 170/03 requires the owner of a drinking water system that provides chlorination or chloramination and the operating authority for the system shall ensure that at least one distribution sample is taken in each calendar quarter, from a point in the drinking water system's distribution system, or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of haloacetic acids.

Results provided by LUSI indicate that sampling was conducted every three months as required.

Question ID	MRDW1087000		
Question		**Question Type**	**Legislative Requirement**
Have all trihalomethane water quality monitoring requirements prescribed by legislation been conducted within the required frequency and at the required location?		Legislative	SDWA | O. Reg. 170/03 | 13-6 | (1)
Observation			
All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location. Section 13-6 of Schedule 13 of O. Reg. 170/03 requires that the owner of a drinking water system that provides chlorination and the operating authority for the system ensure that at least one distribution sample is taken every three months, from a point in the drinking water system's distribution system, or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of trihalomethanes. Each sample shall be tested for trihalomethanes. Results provided by LUSI indicate that sampling was conducted every three months as required.			

Question ID	MRDW1088000		
Question		**Question Type**	**Legislative Requirement**
Are all nitrate/nitrite water quality monitoring requirements prescribed by legislation conducted within the required frequency for the DWS?		Legislative	SDWA | O. Reg. 170/03 | 13-7
Observation			
All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS. Section 13-7 of Schedule 13 of O. Reg. 170/03 requires that the owner of a drinking water system and the operating authority for the system ensure that at least one water sample is taken every three months and tested for nitrate and nitrite. Results provided by LUSI indicate that sampling was conducted a minimum of every three months.			

Question ID	MRDW1089000		
Question		**Question Type**	**Legislative Requirement**
Are all sodium water quality monitoring requirements prescribed by legislation conducted within the required frequency?		Legislative	SDWA | O. Reg. 170/03 | 13-8
Observation			
All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency. Section 13-8 of Schedule 13 of O. Reg. 170/03 requires that the owner of a drinking water system and the operating authority for the system ensure that at least			

one water sample is taken every 60 months and tested for sodium.

Results provided by LUSI indicate that sampling was last completed September 16, 2019.

Question ID	MRDW1090000		
Question		**Question Type**	**Legislative Requirement**
Where fluoridation is not practiced, are all fluoride water quality monitoring requirements prescribed by legislation conducted within the required frequency?		Legislative	SDWA | O. Reg. 170/03 | 13-9
Observation			
All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency. Section 13-9 of Schedule 13 of O. Reg. 170/03 requires that the owner of a drinking water system and the operating authority for the system ensure that at least one water sample is taken every 60 months and tested for fluoride. Results provided by the LUSI indicate that sampling was last completed September 16, 2019.			

Question ID	MRDW1100000		
Question		**Question Type**	**Legislative Requirement**
Did any reportable adverse/exceedance conditions occur during the inspection period?		Information	Not Applicable
Observation			
There were reportable adverse/exceedances during the inpsection period. On October 26, 2020, an adverse water quality incident (AWQI) was reported due to observational issue of air entering the plumbing, observed at 309, 310, 35 and 216 Lakeview Court, Cobourg. LUSI indicated Kawartha Lawn Sprinkler Systems flushed an irrigation system with air for winter shut down at 310 and 316 Lakeview Court, Cobourg. LUSI staff immediately contacted the Haliburton Kawartha Pine Ridge (HKPR) Health Unit and Spills Action Centre to report the observation.			

Question ID	MRDW1101000		
Question		**Question Type**	**Legislative Requirement**
Have corrective actions (as per Schedule 17) been taken to address adverse conditions, including any other steps as directed by the Medical Officer of Health?		Legislative	SDWA | O. Reg. 170/03 | 17-1, SDWA | O. Reg. 170/03 | 17-10 | (1),SDWA | O. Reg. 170/03 | 17-10 | (2),SDWA | O. Reg. 170/03 |

		17-11,SDWA | O. Reg. 170/03 | 17-12,SDWA | O. Reg. 170/03 | 17-13,SDWA | O. Reg. 170/03 | 17-14,SDWA | O. Reg. 170/03 | 17-2,SDWA | O. Reg. 170/03 | 17-3,SDWA | O. Reg. 170/03 | 17-4,SDWA | O. Reg. 170/03 | 17-5,SDWA | O. Reg. 170/03 | 17-6,SDWA | O. Reg. 170/03 | 17-9

Observation

Corrective actions (as per Schedule 17) had been taken to address adverse conditions, including any other steps that were directed by the Medical Officer of Health. On October 26, 2020, an adverse water quality incident (AWQI) was reported due to observational issue of air entering the plumbing, observed at 309, 310, 35 and 216 Lakeview Court, Cobourg. LUSI indicated Kawartha Lawn Sprinkler Systems flushed an irrigation system at 310 and 316 Lakeview Court with air for winter shut down. Air entered plumbing at 309, 310, 315 and 216 Lakeview Court.

LUSI staff immediately flushed the system and contacted the Haliburton Kawartha Pine Ridge (HKPR) Health Unit and Spills Action Centre to report the observation.

Corrective actions include flushing, micro sample collected and verified free chlorine residual, observed at - 1.45 mg/L

A sample collected on October 26, 2020 at the dead end hydrant of Lakeveiw Court did not indicate the presence of E.coli or total coliform.

Question ID	MRDW1102000	
Question	**Question Type**	**Legislative Requirement**
Have corrective actions (as per Schedule 18) been taken to address adverse conditions, including any other steps as directed by the Medical Officer of Health?	Legislative	SDWA | O. Reg. 170/03 | 18-10 | (1),SDWA | O. Reg. 170/03 | 18-11,SDWA | O. Reg. 170/03 | 18-12,SDWA | O. Reg. 170/03 | 18-

		13,SDWA | O. Reg. 170/03 | 18-14,SDWA | O. Reg. 170/03 | 18-2,SDWA | O. Reg. 170/03 | 18-3,SDWA | O. Reg. 170/03 | 18-4,SDWA | O. Reg. 170/03 | 18-5,SDWA | O. Reg. 170/03 | 18-6,SDWA | O. Reg. 170/03 | 18-9
Observation		
Corrective actions (as per Schedule 18) had been taken to address adverse conditions, including any other steps that were directed by the Medical Officer of Health.		

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

Question ID	MRDW1104000	
Question	**Question Type**	**Legislative Requirement**
Were all required verbal notifications of adverse water quality incidents immediately provided as per O. Reg. 170/03 16-6?	Legislative	SDWA | O. Reg. 170/03 | 16-6 | (1),SDWA | O. Reg. 170/03 | 16-6 | (2),SDWA | O. Reg. 170/03 | 16-6 | (3),SDWA | O. Reg. 170/03 | 16-6 | (3.1),SDWA | O. Reg. 170/03 | 16-6 | (3.2), SDWA | O. Reg. 170/03 | 16-6 | (4),SDWA | O.

		Reg. 170/03 | 16-6 | (5),SDWA | O. Reg. 170/03 | 16-6 | (6)
Observation		
All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.		

Question ID	MRDW1114000	
Question	**Question Type**	**Legislative Requirement**
Does the owner have evidence that, when required, all legal owners associated with the DWS were notified of the requirements of the Licence & Permit?	Legislative	SDWA | 31 | (1)
Observation		
The owner had evidence that all required notifications to all legal owners associated with the Drinking Water System had been made during the inspection period. LUSI has developed and implemented a procedure 'QMS-P09 Communications' to describe the method of communication with the owner of the drinking water system. Item 7 'Evidence of Transmittal' of the procedure describes where formal communication or the transmittal of documents is made between the owner and operation authority, verification of the communication or transmittal via email or report shall be documented. This includes: meetings with the owner/operating authority; water committee; council meetings; annual/summary/operation report; management review and infrastructure review.		

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).

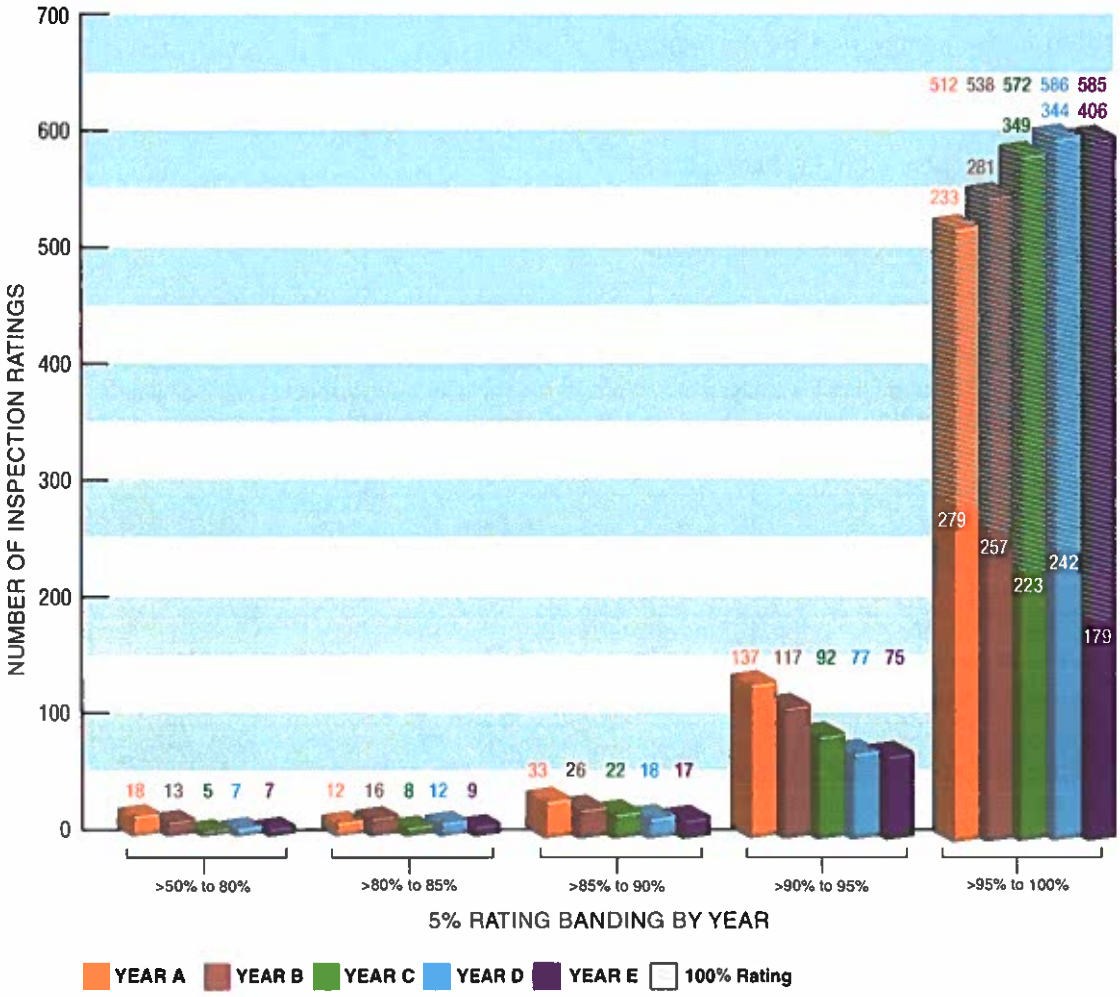
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

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**

Ministry of the Environment, Conservation and Parks - Inspection Summary Rating Record (Reporting Year - 2021-2022)

DWS Name:	COBOURG DRINKING WATER SYSTEM
DWS Number:	220000825
DWS Owner:	CORPORATION OF THE TOWN OF COBOURG
Municipal Location:	COBOURG
Regulation:	O.REG. 170/03
DWS Category:	DW Municipal Residential
Type of Inspection:	Focused
Inspection Date:	Jun-8-2021
Ministry Office:	Peterborough District Office

Maximum Risk Rating: 524

Inspection Module	Non Compliance Rating
Source	0 / 0
Capacity Assessment	0 / 30
Treatment Processes	0 / 214
Operations Manuals	0 / 14
Logbooks	0 / 14
Certification and Training	0 / 42
Water Quality Monitoring	0 / 112
Reporting & Corrective Actions	0 / 98
Overall - Calculated	**0 / 524**

Inspection Risk Rating:	**0.00%**

Final Inspection Rating:	**100.00%**

Inspection Rating Record Generated On 2021-09-28 (Inspection ID: 1-29515352)

Ministry of the Environment, Conservation and Parks - Detailed Inspection Rating Record (Reporting Year - 2021-2022)

DWS Name:	COBOURG DRINKING WATER SYSTEM
DWS Number:	220000825
DWS Owner Name:	CORPORATION OF THE TOWN OF COBOURG
Municipal Location:	COBOURG
Regulation:	O.REG. 170/03
DWS Category:	DW Municipal Residential
Type of Inspection:	Focused
Inspection Date:	Jun-8-2021
Ministry Office:	Peterborough District Office

All legislative requirements were met. No detailed rating scores.

Maximum Question Rating: 524

Inspection Risk Rating:	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 2021-09-28 (Inspection ID: 1-29515352)

APPENDIX 6

The Corporation of the Township of Hamilton

2021 DWQMS Internal Audit Report August

Hamilton Township DS

Drinking Water Quality Management Standard (DWQMS 2.0)

Internal Audit Report

For the period of:

August 1, 2020 to June 25, 2021

For:

Lakefront Utility Services Inc.,
as operating authority for:

Township of Hamilton
Hamilton Township Distribution System

Conducted by:

acclaims ENVIRONMENTAL
acclaims.ca

Audit dates: June 21-25, 2021
Report date: June 25, 2021

1.0 Overview & Objectives

Acclaims Environmental Inc. was retained to conduct an internal audit of the Lakefront Utility Services Inc.'s (LUSI's) quality management system (QMS) on June 21-25, 2021 to determine whether it conforms to the requirements of the Drinking Water Quality Management Standard (DWQMS 2.0); and to assess whether the QMS is effectively implemented.

The internal audit was conducted with one lead auditor, Brigitte Roth of Acclaims Environmental Inc.

This report summarizes the audit results in section 2.0 Audit Findings, categorizing positive findings, non-conformities and opportunities for improvement.

1.1 Risks and Opportunities

The risk-based approach was used in conducting this audit; which considers risks and opportunities to ensure that the audit focuses on matters that are significant for the auditee and for achieving the audit program objectives.

In any audit, potential risks can include those related to *ineffective*: planning / identification of external and internal issues; resources; audit team; communication; audit program implementation / monitoring / improvement; control of documented information; and availability of auditee and/or evidence.

Also, opportunities can include *efficiencies* such as: allowing multiple audits to be conducted in a single visit; minimizing time and distances travelling to sites; matching competencies of audit team to competencies needed; and aligning audit dates with the availability of auditee's staff.

This audit was conducted remotely, using information and communications technology (ICT) for audit interviews. Potential risks in conducting audits remotely include: issues related to ICT availability / capability / reliability; auditee knowledge and familiarity with ICT; evidence presented might not be representative; and additional follow-up may be required. Opportunities in conducting this audit remotely: supports business continuity, allows for internal audits to be conducted in extraordinary times; improved efficiency with auditees' time; can follow-up with requested information.

1.2 Scope

This internal audit was performed remotely, using information and communications technology (ICT). The COVID-19 pandemic response (in implementing measures to prevent the spread of the virus) has presented unique opportunities for organizations to explore alternative approaches for business continuity. Conducting audits remotely was one of these opportunities and is a permitted practice under normal operating conditions through the province's Municipal Drinking Water Licensing Program and through ISO 19011:2018 Guidelines for auditing management systems.

The Operational Plan and related documented information for the Hamilton Township Distribution System was reviewed for conformity to the DWQMS 2.0. This audit also reviewed the LUSI's planned processes and programs to evaluate how well QMS requirements are integrated into them.

Process audits examine the resources (equipment, materials and people) used to transform the inputs into outputs, the methods (procedures and instructions) followed and the measures collected to determine process performance. Process audits check the adequacy and effectiveness of the process controls established by procedures, work instructions, training and process specifications.

As the last internal audit was conducted on July 27-31, 2020, this audit focused on the period between August 1, 2020 and June 25, 2021.

1.3 Methodology

The audit was conducted in accordance with ISO 19011:2018 – Guidelines for auditing management systems.

The list of all auditing criteria is included in Appendix "A" – Audit Plan. Appendix "B" – Interviews, Documents and Records lists persons interviewed, along with documents and processes reviewed. Appendix "C" – Audit Checklists includes the checklists used to conduct the audit.

In order to conduct audits within scope, time and budgetary constraints, audit evidence is based on a sampling of processes, programs, and information available. The size of the sample selected is appropriate to the size and scale of the operation and information available. Objective evidence collected is based upon the sampling.

The conclusions presented in this report are based on information presented during the internal audit.

1.4 Audit Program Monitoring and Reviewing

The implementation of the audit program was monitored and, at appropriate intervals, reviewed to assess whether the objectives have been met and to identify opportunities for improvement. The results of this review will be included in this report, if applicable.

Performance indicators were used to monitor characteristics such as:

- conformity with the audit program, schedules and audit objectives,
- the ability to implement the audit plan,
- feedback from top management, auditees, auditors and other interested parties, and
- adequacy of documented information in the whole audit process.

The audit program review considered:

a) results and trends from monitoring,
b) conformity with procedures,
c) evolving needs and expectations of relevant interested parties,
d) audit program records,
e) alternative or new auditing methods / practices,
f) effectiveness of the actions to address the risks and opportunities, and internal and external issues associated with the audit program, and
g) confidentiality and information security issues relating to the audit program.

Corrective actions and opportunities for improvement from the results of audit program reviews, if any, are included in the internal audit report's section 2.0 Audit Findings.

1.5 Auditors

The Lead Auditor was Brigitte Roth, who has extensive auditing experience and is a certified auditor with the Environmental Careers Organization of Canada (ECO Canada). Auditor qualifications are included in Appendix "D" – Auditor CV and Training Certificates.

1.6 Confidentiality

The information gathered by Acclaims Environmental Inc. is the property of Lakefront Utility Services Inc. and the drinking water system owners only and will not be transmitted to any third party without the prior written consent of an authorized representative. All documents provided by the organization prior to and during the assessment are kept only for the purpose of audit review and audit report preparation.

2.0 Audit Findings

2.1 Positive Findings

The following positive audit findings were noted during the audit:

Commitment

- Staff interviewed were knowledgeable about their processes and programs and their roles' impacts on achieving the commitments included in the QMS Policy.
- Training is consistently provided to new leaders about the roles regarding the Statutory Standard of Care (s.19 of the SDWA), also providing an overview of the drinking water system.

Culture of continual improvement

- Consistently throughout the audit, improvements were noted with regards to achieving intended outcomes of drinking water system processes and programs (e.g. updated: process control narratives, chlorine analyzers, work order system now includes distribution system assets, repair truck).
- Water master plan recently approved by council helps prioritize infrastructure needs and timeframes.
- All opportunities for improvement identified in the previous internal and external audits have been verified as completed or are in progress.

Risk-based thinking

- Root cause analysis and corrective action processes were effectively completed or are ongoing for recent issues encountered (e.g. spill, chlorine analyzer alarm, changes in source water characteristics).
- Risk assessment workshops recently hosted with staff resulted in new preventive actions identified and logged in QMS Tracking spreadsheets.
- The updated water model helps ensure adequate water flows, supply vs. demand, fire flows.

Use of technology

- In-field capable technology is deployed (e.g. tablets, SpryPoint asset management system, remote meter reading) electronically records operational, maintenance, and compliance information, optimizing staff resources and helping to identify water losses.
- The upgrade of chlorine analyzers involved operational staff in the pilot testing and selection process.

2.2 Non-Conformities

No non-conformities were noted during the audit.

2.3 Opportunities for Improvement

The following is a list of opportunities for improvement noted in conducting this audit:

Reference	Opportunity for Improvement – Description
Director's Directions …Operational Plans (updated May 2021)	Consider describing in s.2.2 of QMS-P02 that ***Operational Plans audited by the accreditation body*** are kept for ***10 years***, as required by Director's Directions.

Reference	Opportunity for Improvement – Description
Financial Plans (as one of the five parts of the MDWL)	Consider placing the current ***owner-approved Financial Plan*** for the drinking water system ***online***, as required by O. Reg. 453/07 s.3.(1)5. (or linking to the location of current one available at the municipality's website).
QMS Representative (Elements 4 + 9)	Consider updating the position title appointed as the ***QMS Representative*** to "***Compliance Coordinator***", as it was confirmed through audit interview with the Manager of Water Capital Projects that the QMS Representative's duties are actually performed by the Compliance Coordinator. This also aligns with the responsibilities and authorities described in Appendix E of the Operational Plan.
Personnel Coverage (Element 11)	Consider adding references (in QMS-P08) to ***O. Reg. 128/04*** provisions (proposed through ERO notice no. 019-3513) regarding ***staff coverage in out-of-ordinary conditions*** (such as in pandemics and strikes / lock-outs).
Infrastructure Upgrade Records (Element 12, MDWL Sched. B s.5)	Consider ***establishing templates*** to help facilitate effective ***communication of requirements*** related to infrastructure improvement projects, as required by MDWL Schedule B s.5 Compliance. Templates would also enable consistent ***project record-keeping*** to prove project specifications are consistently met.
Procurement of essential supplies (Element 13)	Consider establishing a ***min/max inventory management system*** to ensure procurement of essential supplies and minimum critical stock levels on-hand. The existing work order system has the capability to ensure min/max levels are established and implemented.
Lead Sampling (Element 16 + O. Reg. 170/03 Sched. 15.1)	Consider describing in the introductory paragraph of QMS-D05-Lead Sampling that the ***table is aligned to regulatory relief*** provided in the MDWL Sched. D (O. Reg. 170/03's standard and reduced lead sampling tables are different).
Post-Emergency Incident Report Form (Element 18)	Consider including "***Date and time of emergency start***", "***Date and time of emergency end***", and "***name of person completing the form***" prompts under Emergency Details section of the Post-Emergency Incident Report form.
Staff suggestions (Elements 20 + 21)	Staff interviews have identified the following suggestions to consider: - ***Hiring OIT's seasonally*** to assist with personnel coverage for increased activities every spring and summer (e.g. GIS updates, hydrant inspections & maintenance, valve exercising, locates, re-construction & new projects). - ***Addressing on-call rotation*** (one week out of every 3 weeks) by ***cross-training staff*** across the water division. - ***Scheduling daily tailboard meetings*** to discuss priorities, assignment of work orders, tasks, etc. - ***Scheduling monthly water-specific meetings*** to help improve communications and staff engagement (e.g. look back / forward – OTJ hrs could be logged) – to share past successes, lessons learned, opportunities, plans forward, project statuses, changing conditions, etc. - Setting objectives & targets (KPI's) for ***annual valve exercising*** programs - Establishing ***operationally relevant objectives & targets*** for sampling, monitoring and tracking KPI's – improving planning & control of operations.

3.0 Conclusions

The results of the internal audit performed for the Township of Hamilton regarding the Hamilton Township Distribution System confirm that the quality management system established is effective in conforming with the requirements of the Drinking Water Quality Management Standard (DWQMS 2.0).

While opportunities for improvement are cited in this audit report, they do not undermine the positive programs and attitudes already in place among Lakefront Utility Services staff.

Brigitte Roth, BES, EP(EMSLA)

Appendix "A" – Audit Plan

Internal Audit Start Date:	June 21, 2021	Internal Audit End Date:	June 25, 2021

Date	Time	Auditor	Auditee	Process / Program	DWQMS Element – Standard and version: DWQMS 2.0																				
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
06-21 /06-22	8:00 – 4:00	BR	Doc. Info.	Desktop review – all systems' OP's	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06-22	10:00	BR	ALL	Opening Meeting	x																		x		x
06-22	12:30	BR	SB	Water supply & treatment ops		x			x		x	x	x	x	x	x	x			x		x			x
06-23	8:00	BR	LS	Construction & disinfection		x			x	x	x	x	x	x	x	x	x	x	x	x	x	x			x
06-23	10:00	BR	DP	Top Management responsibilities		x	x		x		x	x	x	x	x	x		x	x			x		x	x
06-23	1:00	BR	SW	Compliance Management		x		x	x	x	x	x	x	x	x	x	x					x	x	x	x
06-23	2:00	BR	SW	Sampling, testing, monitoring		x			x		x	x	x	x	x	x	x			x	x	x		x	x
06-24	8:00	BR	DH	Distribution system O&M		x			x		x	x	x	x	x	x	x		x	x	x	x			x
06-24	9:30 – 3:30	BR	Doc. Info.	Desktop review – all systems' OP's	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
06-24	3:30	BR	SN	Supply & treatment maintenance		x			x		x	x	x	x	x	x	x		x	x	x	x			x
06-25	10:00	BR	ALL	Closing Meeting	x																		x		x

Legend for QMS Elements: **1**-Quality Management System, **2**-Quality Management System Policy, **3**-Commitment and Endorsement, **4**-QMS Representative, **5**-Document and Records Control, **6**-Drinking Water System, **7**-Risk Assessment, **8**-Risk Assessment Outcomes, **9**-Organizational Structure, Roles, Responsibilities and Authorities, **10**-Competencies, **11**-Personnel Coverage, **12**-Communications, **13**-Essential Supplies and Services, **14**-Review and Provision of Infrastructure, **15**-Infrastructure Maintenance, Rehabilitation and Renewal, **16**-Sampling, Testing and Monitoring, **17**-Measurement and Recording Equipment Calibration and Maintenance, **18**-Emergency Management, **19**-Internal Audits, **20**-Management Review, **21**-Continual Improvement

Auditee initials: **DH** – Darren Hanbidge (Distribution Operator), **DP** – Dereck Paul (President & CEO), **LS** – Larry Spyrka (Manager of Capital Water Projects), **SB** – Shawn Bolender (Manager of Water Operations), **SN** – Scott Noble (WTP Operator), **SW** – Sarah Whitton (Water Compliance Coordinator), **ALL** – all interested.

Appendix "B" – Documents and Records

The list of documents and records were reviewed, and observations made during the audit include:

- Lakefront Utility Services Inc. staff interviews June 22-24, 2021, organized by last name:
  - Shawn Bolender (Manager of Water Operations)
  - Darren Hanbidge (Distribution Operator)
  - Scott Noble (WTP Operator)
  - Dereck Paul (President & CEO)
  - Larry Spyrka (Manager of Capital Water Projects)
  - Sarah Whitton (Water Compliance Coordinator)
- QMS Operational Plan (OP) for the Hamilton Township Distribution System, dated May 25, 2021
- availability of the February 2021 version of the OP (deemed current, with minor revision since) at LUSI's website at https://www.lakefrontutilities.com/regulatory-water/ accessed on June 21, 2021
- QMS Policy for the Hamilton Township Distribution System, signed December 21, 2020
- QMS Policy is available at https://www.lakefrontutilities.com/water/, accessed on June 21, 2021
- Commitment and Endorsement by Top Management (in April 2019)
- Commitment and Endorsement signed by the distribution system Owner, Township of Hamilton in March 2019
- Quality Management System Representative appointment, dated May 6, 2019
- OP Element 5 Document and record control
- QMS-P01-Document Control, dated May 27, 2021
- QMS-P02-Record Control, dated May 27, 2021
- OP Element 6 Drinking Water System
- OP Appendix B
- OP Element 7 Risk Assessment
- QMS-P03-Risk Assessment procedure, dated May 27, 2021
- QMS-P06-Critical Control Points procedure, dated May 27, 2021
- QMS-D02-Risk Assessment Outcomes for the Cobourg Drinking Water System, inclusive of the Hamilton Township Distribution System, dated April 12, 2021
- QMS-CRP01-Coagulant Dosing, dated February 2, 2019
- QMS-CRP02-Post Filtration Turbidity, dated May 27, 2019
- QMS-CRP03-Primary Disinfection, dated May 28, 2019
- QMS-CRP04-Secondary Disinfection, dated May 20, 2021
- QMS-CRP05-System Pressure, dated May 30, 2019
- QMS-D03-CCP & CCL, dated November 19, 2020
- OP Element 9
- OP Element 10 Competencies
- QMS-P08-Operator Duties, dated June 10, 2021
- On-the-job training records related to SpryPoint Introduction on May 4, 2021
- OP Element 11 Personnel Coverage
- QMS-P08-Operator Duties, dated June 10, 2021
- OP Element 12 Communications
- QMS-P09-Communications, dated June 14, 2021
- OP Element 13 Essential supplies and services
- QMS-P10-Essential Supplies + Services, dated June 14, 2021
- QMS-D11-Essential Supplies & Services, dated May 28, 2021

- QMS-FR03-Notice to essential supplies and service providers, dated November 4, 2020
- OP Element 14 Review and provision of infrastructure
- OP Element 15 Infrastructure maintenance, rehabilitation and renewal
- OP Element 16 Sampling, testing and monitoring
- QMS-P07-Sampling, Testing + Monitoring, dated June 3, 2021
- QMS-D05-Lead Sampling, dated May 10, 2021
- OP Element 17 Measuring & recording equipment calibration & maintenance
- QMS-P13-Calibration and Maintenance, dated June 14, 2021
- OP Element 18 Emergency management
- Water Systems Emergency Plan (WSEP), dated September 28, 2020
- Emergency Contact List, dated May 20, 2021
- Post-Emergency Incident Report, dated July 25, 2019
- Spill to the natural environment, dated May 18, 2021
- MECP letter re: May 18, 2021 Spill Event, dated May 31, 2021 (that includes the Post-Emergency Incident Report and SGS Certificate of Analysis, dated May 20, 2021).
- OP Element 19 Internal audits
- QMS-P04-Internal Audit, dated July 16, 2020
- 2020 External Audit reports by NSF International Strategic Registrations for the Hamilton Township Distribution System, dated November 23, 2020 (for audit conducted on Nov. 17, 2020)
- 2020 Internal Audit Report by Acclaims Environmental Inc., dated August 3, 2020
- OP Element 20 Management review
- QMS-P05-Management Review, dated May 27, 2021
- DWQMS Annual Management Review report for the Hamilton Township Distribution System (January – December 2020)
- LUSI Board Report – Water Operations, dated April 2021, February 2021, and December 2020
- OP Element 21 Continual improvement
- QMS-P11-Continual Improvement, dated April 30, 2021
- QMS-FR01-Corrective Action Report, dated April 30, 2019
- QMS Tracking spreadsheet

Appendix "C" – Audit Checklists

DOCUMENT REVIEW – DWQMS 2.0 *(Condition Expected)*	DOCUMENT REVIEW – Auditor Comments *(Condition Found)*

1. Quality Management System (QMS)
PLAN – The OP shall ***document a QMS*** that ***meets the requirements*** of this Standard.
DO – The OA shall ***establish and maintain the QMS*** in accordance with the requirements of this Standard and the ***policies and procedures*** documented in the OP.
 	
Director's Directions – Minimum Requirements for Operational Plans **(updated May 2021, no later than April 1, 2022)** also specifies:
- Each municipal residential drinking water system shall have OP's that ***apply to all parts of the DWS***, that can ***incorporate by reference*** other documents deemed necessary by the owner or OA.
- A ***single OP*** may be prepared for multiple DWS that have ***same owner*** and operated by ***same OA***.
- For ***Limited Scope – Transitional*** (if applicable), shall contain Schedule B parts of DWQMS PLAN.
- All OP's shall have:
  - ***procedure for version control*** – ensuring ***version # and/or revision date*** on every page of any ***physical*** copy; ***version # and/or revision date*** recorded on or ***otherwise embedded*** in every ***electronic*** copy; or if in ***separate files***, up-to-date ***list or index*** maintained of ***all OP documents***, including ***version #'s and dates.***
  - ***a title*** that generally describes the ***municipal DWS('s)*** to which the OP's apply.
  - ***A completed copy of Subject System Description Form in Schedule "C"*** that includes name of DWS's, MDWL #'s, operational subsystem to which plans apply
- OP's submitted to Director shall be submitted ***electronically as a single file in PDF or other format acceptable*** to the Director; and be ***copied to the OA*** in charge of the DWS, if the OA is not the owner.
- OP's subject to an audit by an accreditation auditor shall be ***retained for a minimum of 10 years*** by the ***owner*** of the OP's and the ***accredited OA***.
Owners shall make OP's ***current version*** (hard copy) or reflecting "***major revision***" (electronic on website) of ***available for viewing*** by the public – at ***principal office*** of owner within the area served by the DWS and/or ***on a website*** that is accessible to the public (but not any part that could threaten H&S of an individual or safety and quality of drinking water, competitive position, or trade secrets, etc.)
	Viewed the QMS Operational Plan (OP) for the Hamilton Township Distribution System, dated May 25, 2021.
	
	Evaluated the OP's conformity to the Director's Directions as noted in this section of the checklist (updated May 2021). Noted availability of the February 2021 versions of the OP (deemed current, with minor revision since) at LUSI's website at https://www.lakefrontutilities.com/regulatory-water/ accessed on June 21, 2021. Confirmed the Subject System Description is completed and available by reference.
	
	OFI: Consider describing in s.2.2 of QMS-P02 that Operational Plans audited by the accreditation body are kept for 10 years, as required by Director's Directions (referenced in Element 1 of the DWQMS checklist).
	
	Confirmed MDWL renewals for each system are underway (Cobourg DWS, exp. June 22, 2021 and Hamilton Township Dist. System, exp. Aug. 17, 2021; Colborne DWS, exp. June 22, 2021 (new OA); Grafton DWS, exp. July 19, 2021 – extended to March 2022).
	
	OFI: Consider placing the current owner-approved Financial Plan for the drinking water system online, as required by O. Reg. 453/07 s.3.(1)5. (or linking to the location of current one available at the municipality's website).
	
	Confirmed documented information meets the requirements of the DWQMS with supporting information provided in each of the sections of this checklist. Through the process / program audit interviews conducted, confirmed the QMS is implemented, well-maintained and effectively meets the requirements of the Operational Plans and the updated DWQMS 2.0.
	
	The documented QMS conforms to the requirements of the standard with noted **positive audit findings (POS)**, **non-conformities (NC's)** and **opportunities for improvement (OFI's)** within the designated areas of this checklist.

2. QMS Policy **PLAN** – The OP shall ***document a QMS Policy*** that provides the foundation for the QMS, and: a) includes a ***commitment*** to the ***maintenance and continual improvement of the QMS***, b) includes a commitment to the ***Consumer to provide safe drinking water***, c) includes a commitment to ***comply with applicable legislation and regulations***, and d) is in a form that ***can be communicated*** to all OA ***personnel***, the ***Owner*** and the ***Public***. **DO** – The OA shall ***establish and maintain a QMS*** that is consistent with the QMS Policy.	Viewed the QMS Policy for the Hamilton Township Distribution System, signed December 21, 2020 by President & Manager of Water Operations December 21, 2020. Confirmed the text of the QMS Policy is available at https://www.lakefrontutilities.com/water/, accessed on June 21, 2021.
3. Commitment and Endorsement **PLAN** – The OP shall contain a ***written endorsement*** of its contents by ***Top Management*** and the ***Owner***. **DO** – Top Management shall provide ***evidence*** of its ***commitment*** to an effective QMS by: a) ensuring that a ***QMS is in place that meets*** the requirements of this Standard, b) ***ensuring*** that the OA is aware of all applicable ***legislative and regulatory requirements***, c) ***communicating*** the ***QMS*** according to the procedure for communications, d) ***determining, obtaining or providing*** the ***resources needed*** to maintain and continually improve the QMS.	Viewed the signed Commitment and Endorsement by Top Management (in April 2019) for the distribution system and signed by the Owner, Township of Hamilton in March 2019.
4. QMS Representative **PLAN** – The OP shall ***identify*** a ***QMS representative***. **DO** – Top Management shall ***appoint and authorize*** a QMS representative who, irrespective of other responsibilities, shall: a) ***administer*** the QMS by ***ensuring that processes and procedures needed*** for the QMS are ***established and maintained***, b) ***report to Top Management*** on the ***performance*** of the QMS and any need for ***improvement***, c) ensure that ***current versions of documents*** required by the QMS are being ***used at all times***,	Viewed the Quality Management System Representative appointment, dated May 6, 2019 and included within each of the drinking water system's operational plans; appointing the Manager of Water Systems as the QMS Representative. **OFI**: Consider updating the position title appointed as the QMS Representative to "Compliance Coordinator', as it was confirmed through audit interview with the Manager of Water Capital Projects that the QMS Representative's duties are actually performed by the Compliance Coordinator. This also aligns with the responsibilities and authorities described in Appendix E of the Operational Plan.

DOCUMENT REVIEW – DWQMS 2.0 *(Condition Expected)*	DOCUMENT REVIEW – Auditor Comments *(Condition Found)*
d) ensure that ***personnel*** are ***aware*** of all applicable ***legislative and regulatory requirements*** that pertain to their duties for the operation of the Subject System, and e) promote ***awareness of the QMS*** throughout the OA.	
5. Document and Records Control **PLAN** – The OP shall document a procedure for Document and Records control that describes how: a) ***Documents required*** by QMS are: i. kept ***current, legible*** and readily ***identifiable*** ii. ***retrievable*** iii. ***stored, protected, retained and disposed of***, and b) ***Records required*** by the QMS are: i. kept ***legible***, and readily ***identifiable*** ii. ***retrievable*** iii. ***stored, protected, retained and disposed of***. **DO** – The OA shall implement and conform to the procedure for Document and Records control and shall ensure that QMS documentation for the Subject System includes: a) the ***OP*** and its associated ***policies and procedures***, b) Documents and Records determined by the OA as ***being needed*** to ensure the effective ***planning, operation and control*** of its operations, and c) the results of ***internal and external Audits*** and ***management reviews.***	Viewed OP Element 5 Document and record control. Links to QMS-P01 – Document Control and QMS-P02 – Record Control. Viewed QMS-P01-Document Control, dated May 27, 2021 and QMS-P02-Record Control, dated May 27, 2021. QMS-P01 includes a table that lists internal QMS documentation, who it is issued and/or maintained by, and copies / locations.
6. Drinking Water System (DWS) **PLAN** – The OP shall ***document***, as applicable: a) for the Subject System: i. the name of the ***Owner*** and ***OA***, ii. if the system includes equipment that provides ***Primary Disinfection*** and/or ***Secondary Disinfection***: A. a ***description of the system*** including all applicable ***Treatment System processes*** and ***Distribution System components***, B. a Treatment System ***process flow chart***, C. a description of the ***water source***, including: I. general ***characteristics of the raw water*** supply, II. ***common event-driven fluctuations***, and III. any resulting ***operational challenges and threats.*** iii. if the system does not include equipment that provides Primary Disinfection or Secondary Disinfection: A. a description of the system including all Distribution System components, and B. a description of any ***procedures*** that are in place to ***maintain disinfection residuals***. b) if the Subject System is an Operational Subsystem, a summary ***description*** of the ***Municipal Residential Drinking Water System it is a part of*** including the name of the ***OA(OA's)*** for the other Operational Subsystems. c) if the Subject System is ***connected to one or more*** other Drinking Water Systems owned by different ***Owners***, a summary description of those systems which: i. indicates whether the Subject System ***obtains water from or supplies water to*** those systems, ii. names the ***Owner*** and ***OA(OA's)*** of those systems, and iii. identifies which, if any, of those systems that the Subject System ***obtains*** water from are relied upon to ***ensure the provision of safe drinking water.*** **DO** – The OA shall ensure that the ***description*** of the Drinking Water System is ***kept current.***	OP Element 6 Drinking Water System links to Appendix B, providing details on: - Drinking water system owner, - Drinking water system operator, - Applicable licences, - Raw water source description, - SCADA, - Water treatment process, - Process flow diagrams (included in Appendix C), - Distribution system (included in Appendix D), - Operational challenges and threats.
7. Risk Assessment **PLAN** – The OP shall document a risk assessment process that: a) Considers potential hazardous events and associated hazards, as identified in MOECC document titled ***Potential Hazardous Events for Municipal Residential Drinking Water Systems***, dated February 2017 as it may be amended. A copy of this document is available at www.ontario.ca/drinkingwater. b) ID's ***additional potential*** hazardous events & associated hazards, c) ***assesses*** the ***risks*** assoc. w/ the ***occurrence*** of hazardous events, d) ***ranks*** the hazardous events according to the ***associated risk***, e) ***identifies control measures*** to address the potential hazards and hazardous events, f) identifies ***Critical Control Points***,	Viewed OP Element 7 Risk Assessment links to QMS-P03-Risk Assessment procedure, dated May 27, 2021. Confirmed documented information meets requirements of this element. Every calendar year, the currency and validity of the assumptions in the risk assessment process considers: significant equipment or process changes, changes to applicable regulations, increases in demand, and changes in raw water characteristics. Links to QMS-P06-Critical Control Points and QMS-D02-Risk Assessment Outcomes (both of which are reviewed as a part of Element 8). Noted consideration of the Ministry's potential hazardous events and associated hazards included as part of QMS-D02-Risk Assessment Outcomes, including:

DOCUMENT REVIEW – DWQMS 2.0 *(Condition Expected)*	DOCUMENT REVIEW – Auditor Comments *(Condition Found)*
g) identifies a method to ***verify, at least once every calendar year***, the ***currency*** of the information and the ***validity of the assumptions*** used in the risk assessment, h) ensures that the risks are ***assessed at least once every thirty-six months***, and i) considers the ***reliability and redundancy of equipment***. **DO** – The OA shall ***perform*** a risk assessment ***consistent with the documented*** process.	- long term impacts of climate change, water supply shortfall, extreme weather events, sustained extreme temperatures, chemical spill impacting source water, terrorism and vandalism, sustained pressure loss, backflow, sudden changes to raw water characteristics, failure of primary disinfection, failure of secondary disinfection, algal blooms – and additional potential hazardous events.
8. Risk Assessment Outcomes **PLAN** – The OP shall document: a) the ***identified potential hazardous events and associated hazards***, b) the ***assessed risks associated with the occurrence*** of hazardous events, c) the ***ranked*** hazardous events, d) the ***identified control measures*** to address the potential hazards and hazardous events, e) the identified ***Critical Control Points*** and their respective ***Critical Control Limits***, f) procedures and/or processes to ***monitor the Critical Control Limits***, g) procedures to ***respond to deviations from the Critical Control Limits***, and h) procedures for ***reporting and recording deviations*** from the Critical Control Limits. **DO** – The OA shall ***implement and conform*** to the procedures.	Viewed OP Element 8 Risk Assessment Outcomes, which links to QMS-D02-Risk assessment outcomes and QMS-P06-Critical Control Points procedure, dated May 27, 2021. Noted that the procedure describes minimum requirements (e.g. items required by O. Reg. 170/03 and the PDDW in Ontario, independent of the risk assessment ranking). Most CCL's are monitored via SCADA (with HIHI and LOLO alarm setpoints), some are monitored manually (e.g. distribution chlorine residuals). Any changes to CCL limits are tracked through the SpryPoint work order management system – documenting the changes to the limits and reasons for changes. Viewed QMS-D02-Risk Assessment Outcomes for the Cobourg Drinking Water System, inclusive of the Hamilton Township Distribution System, dated April 12, 2021. Highest risk priority numbers fall in the "moderate" range, with critical response procedures listed in the table for Cobourg / HT: coagulant dosing (QMS-CRP01-Coagulant Dosing, dated February 2, 2019); post filtration turbidity (QMS-CRP02-Post Filtration Turbidity, dated May 27, 2019); primary disinfection (QMS-CRP03-Primary Disinfection, dated May 28, 2019); secondary disinfection (QMS-CRP04-Secondary Disinfection, dated May 20, 2021); system pressure (QMS-CRP05-System Pressure, dated May 30, 2019). Viewed QMS-D03-CCP & CCL, dated November 19, 2020. Confirmed documented information meets requirements of this element.
9. Org. Structure, Roles, Responsibilities and Authorities **PLAN** – The OP shall: a) describe the ***organizational structure*** of the OA including ***respective roles, responsibilities and authorities***, b) delineate ***corporate oversight*** roles, responsibilities, authorities in the case where the OA operates multiple Subject Systems, c) identify the ***person, persons or group of people*** within the management structure of the org. responsible for undertaking the ***Management Review*** described in Element 20, d) identify the person, persons or group of people, having ***Top Management responsibilities*** required by this Standard, along with their responsibilities, & e) identify the ***Owner*** of the Subject System. **DO** – The OA shall ***keep current*** the description of the organizational structure including respective roles, responsibilities and authorities, and shall ***communicate*** this information to OA ***personnel*** and the ***Owner***.	OP Element 9 includes the organizational chart, defining who is Owner, which roles are part of "top management", who is the QMS Representative. **OFI**: [links to OFI identified in Element 4] Consider correcting the "QMS Representative" references (currently assigned to the Manager of Water Capital Projects, however the Compliance Coordinator is the person responsible for the duties). This update would better reflect actual roles, responsibilities and authorities carried-out within the organization, and improve alignment with Appendix E lists of responsibilities and authorities by role / job title.
10. Competencies **PLAN** – The OP shall ***document***: a) ***competencies*** required for personnel performing duties directly ***affecting drinking water quality***, b) activities to ***develop and/or maintain competencies*** for personnel performing duties directly affecting drinking water quality, and c) activities to ensure that personnel are ***aware of the relevance of their duties*** and ***how they affect*** safe drinking water. **DO** – The OA shall undertake ***activities*** to: a) ***meet and maintain competencies*** for personnel directly affecting drinking water quality and shall ***maintain records*** of these activities, and b) ***ensure that personnel are aware*** of the relevance of their duties and how they affect safe drinking water and shall ***maintain records*** of these activities.	OP Element 10 Competencies references QMS-P08-Operator Duties, dated June 10, 2021, which provides an overview of required Operator certification and training requirements; duties of ORO and alternate ORO; and personnel coverage. OP Appendix F describes some additional competency requirements – many of which are soft-skills related (e.g. budget prep, contract management, research, verbal / written communications, technical writing, supervisory, computer skills, etc.). Viewed On-the-job training records related to the following: - SpryPoint Introduction, May 4, 2021 – reviewed reports for water quality, watermain break repairs, new / re-construction, hydrant flushing, callout incidents; with noted opportunities for improvement in the meeting.
11. Personnel Coverage **PLAN** – The OP shall document a procedure to ensure that ***sufficient personnel meeting identified competencies*** are available for duties that ***directly affect*** drinking water quality. **DO** – The OA shall ***implement and conform*** to the procedure.	OP Element 11 Personnel Coverage and QMS-P08-Operator Duties, dated June 10, 2021– section 4 Personnel coverage addresses normal work hours, on-call coverage, and non-scheduled on-call coverage. Confirmed it meets the requirements of this element.

DOCUMENT REVIEW – DWQMS 2.0 *(Condition Expected)*	DOCUMENT REVIEW – Auditor Comments *(Condition Found)*
	OFI: Consider adding references (in QMS-P08) to O. Reg. 128/04 provisions (proposed through ERO notice no. 019-3513) regarding staff coverage in out-of-ordinary conditions (such as in pandemics and strikes / lock-outs, previously presented under O. Reg. 75/20).
12. Communications **PLAN** – The OP shall document a ***procedure*** for communications that describes ***how*** the ***relevant aspects of the QMS*** are ***communicated*** between Top Management and: a) the ***Owner***, b) OA ***personnel***, c) ***Suppliers*** that have been identified as essential under Plan (a) of Element 13 of this Standard, and d) the ***Public***. **DO** – The OA shall ***implement and conform*** to the procedure.	OP Element 12 Communications links to QMS-P09-Communication and QMS-P10-Essential Supplies and Services. Viewed QMS-P09-Communications, dated June 14, 2021. Describes open communication relationship with Owners, OA personnel, the public, stakeholders – and communicating "relevant aspects" of the QMS. Top Mgmt / Owner – meetings, water committee, council meetings, annual/summary reports, management review (incl. infrastructure review), electronic / verbal / written communication. With each newly elected council, members of council receive an introduction to the QMS and the OP, a copy of the OP is provided, ensuring awareness of their roles, responsibilities under the Standard of Care, sign Commitment to Quality & Endorsement. Top Mgmt / Board – through regular board meetings, between members of top management through Management Review, Infrastructure Review, electronic / verbal / written communication. Top Mgmt / Staff – through QMS references and related procedures, operational activities' alignment with procedures; QMS orientation; document review / development sessions; internal audit interviews; risk assessment; emergency response plan review and testing. (CSR's understand where policy and OP are available, if requested). Top Mgmt / Essential Suppliers / Service Providers – meet requirements defined in QMS-P10-Essential Supplies and Services, must understand their impacts on the QMS policy commitments, complete QMS-FR03. Top Mgmt / Public –references "relevant aspects" communicated to residential, commercial, and industrial consumers. Links to QMS Policy, OP, Annual report, billing inserts; phone / e-mail / in-person. Communications during emergencies are referenced in the Water Systems Emergency Plan under section 5. Emergency Notificaiton. Confirmed documented information meets the requirements of this element.
13. Essential Supplies and Services **PLAN** – The OP shall: a) identify all ***supplies and services essential*** for the delivery of ***safe drinking water*** and shall state, for each supply or service, the ***means to ensure its procurement***, and b) include a procedure by which the OA ***ensures the quality*** of essential supplies and services, in as much as they may affect drinking water quality. **DO** – The OA shall implement and conform to the procedure.	OP Element 13 Essential supplies and services links to QMS-P10-Essential Suppliers + Services. Viewed QMS-P10-Essential Supplies + Services, dated June 14, 2021 – which outlines how providers are selected, and minimum quality standards (with reference to MDWL s.14.0 Chemicals and Materials' specifications and O. Reg. 248/03 re: labs). Includes references to stock items, purchase requisition (general statement included), capital projects (e.g. contractors supplying supplies and services). The verification of purchased supplies is carried-out through visual inspection, with accompanying documentation reviewed to ensure compliance with applicable minimum standards; distribution and supply parts are inspected to ensure accompanying documentation is available (re: quality / regulatory requirements met); and services must meet quality and regulatory requirements. Links to QMS-D10-Essential Supplies and Services and QMS-FR03 – Essential Supplies and Services. Viewed QMS-D11-Essential Supplies & Services, dated May 28, 2021. Confirmed documented information meets the requirements of this element. Lists suppliers / service providers (with contacts, means of procurement, minimum quality requirements, dates of last signed QMS-FR03's) for: chemicals, fuel, distribution / supply parts, generator, instrumentation calibration, excavation, hydrovac, lab, well pump services. Viewed QMS-FR03-Notice to essential supplies and service providers, dated November 4, 2020. Includes quality expectations re: chemicals and materials (and evidence of product registrations); as well as lab testing requirements. Every two years, plan to have the forms re-signed-off by essential suppliers and service providers. Depending on the work they're doing, impacting DWS operations – the form is still completed re: expectations.
14. Review and Provision of Infrastructure **PLAN** – The OP shall document a procedure for ***reviewing the adequacy of the infrastructure necessary*** to operate and maintain the Subject System that: a) ***Considers the outcomes of the risk assessment*** documented under Element 8, and	OP Element 14 Review and provision of infrastructure links to water master plan, water model, asset management model, risk assessment outcomes, maintenance reports (re: reliability / capability of equipment), maintenance and inspection reports (treatment and distribution), SCADA performance, regulatory changes, condition assessments, operating budgets, water quality complaints.

DOCUMENT REVIEW – DWQMS 2.0 *(Condition Expected)*	DOCUMENT REVIEW – Auditor Comments *(Condition Found)*
b) ***Ensures that the adequacy of the infrastructure necessary*** to operate and maintain the Subject System is reviewed ***at least once every Calendar Year.*** **DO** – The OA shall ***implement and conform*** to the procedure and ***communicate the findings*** of the review to the ***Owner***.	Management Review meetings discuss results of Infrastructure Review in a table format – stating the review of risk assessment, maintenance reports, inspection reports and condition reports are considered. Management Review documents the infrastructure improvements carried-out in the calendar year.
15. Infrastructure Maintenance, Rehabilitation and Renewal **PLAN** – The OP shall document: a) a ***summary*** of the OA's ***infrastructure maintenance, rehabilitation and renewal programs*** for the Subject System, and b) a ***long term forecast of major infrastructure maintenance, rehabilitation and renewal activities***. **DO** – The OA shall: a) ***keep the summary*** of the infrastructure maintenance, rehabilitation and renewal programs ***current***, b) ensure that the ***long term forecast*** is ***reviewed at least once every Calendar Year***, c) ***communicate*** the programs ***to the Owner***, and d) ***monitor the effectiveness*** of the maintenance program.	OP Element 15 Infrastructure maintenance, rehabilitation and renewal links to Element 14 and the council-approved Financial Plan that outlines capital maintenance, rehabilitation and renewal needs for a 10-year period, with annual review of projects planned and adjustments to reflect changing conditions and priorities, along with opportunities to coordinate projects with the municipalities. Ongoing communications of project statuses are communicated via the water committee. Planned and unplanned maintenance activities are described (e.g. hydrant maintenance and flushing, valve exercising, equipment PM's, calibrations, responding to water quality complaints).
16. Sampling, Testing and Monitoring **PLAN** – The OP shall document: a) a ***sampling, testing and monitoring procedure*** for ***process control and finished drinking water quality*** including requirements for sampling, testing and monitoring at the ***conditions most challenging*** to the Subject System, b) a description of ***relevant sampling, testing or monitoring*** activities, if ***any***, that take place ***upstream*** of the Subject System, and c) a procedure that describes how sampling, testing and monitoring results are ***recorded and shared*** between the ***OA*** and the ***Owner***, where applicable. **DO** – The OA shall implement and conform to the procedures.	OP Element 16 Sampling, testing and monitoring links to QMS-P07-Sampling, testing + monitoring. Viewed QMS-P07-Sampling, Testing + Monitoring, dated June 3, 2021; which describes samples taken in accordance with O. Reg. 170/03 by certified operators in accordance with the Ministry's document "Practices for the Collection & Handling of Drinking Water Samples". Viewed the following for each drinking water system (as applicable): - QMS-D05-Lead Sampling, dated May 10, 2021 summarizes the lead sampling requirements, based on regulatory relief for samples from plumbing provided through the updated MDWL. **OFI**: Consider describing in the introductory paragraph of QMS-D05-Lead Sampling that the table is aligned to regulatory relief provided in the MDWL Schedule D (O. Reg. 170/03's standard or reduced lead sampling tables are different). Accredited labs are used where needed in the testing of drinking water samples. Monitoring is carried-out via SCADA and through visual inspections of the systems. The sharing of any sample results with Owner is carried out through the water committee and management review; and annually through the Annual Report. Any adverse sampling, testing and monitoring results are shared on an as-needed basis (noted communication with owner section added to the QMS-P07 procedure in the latest revision).
17. Measurement and Recording Equipment Calibration and Maintenance **PLAN** – The OP shall document a ***procedure*** for the ***calibration and maintenance*** of ***measurement and recording*** equipment. **DO** – The OA shall ***implement and conform*** to the procedure.	OP Element 17 Measuring & recording equipment calibration & maintenance links to QMS-P13-Calibration and maintenance. Viewed QMS-P13-Calibration and Maintenance, dated June 14, 2021 and describes in-house verification and calibration processes. QMS-D08-Instrument Calibration lsits the equipment that requires in-house verification and/or calibration conducted on a routine basis. Noted expiration date check on the primary / secondary standards when used for verification / calibration purposes – prior to use. SpryMobile Work Orders used to track and manage the status of equipment's internal verification, calibration and maintenance; and third-party contractors are hired to conduct verification and/or calibration of equipment listed on QMS-D08-Instrument Calibration. This list is verified annually to ensure it is accurate.
18. Emergency Management **PLAN** – The OP shall document a ***procedure*** to ***maintain a state of emergency preparedness*** that includes: a) a ***list of potential emergency situations*** or service interruptions, b) ***processes*** for emergency ***response and recovery***, c) emergency response ***training and testing*** requirements, d) ***Owner and OA responsibilities*** during emergency situations, e) ***references to municipal*** emergency planning measures as appropriate, and f) an ***emergency communication protocol*** and an ***up-to-date list*** of emergency ***contacts***. **DO** – The OA shall ***implement and conform*** to the procedure.	OP Element 18 Emergency management currently links to Coburg & Hamilton Township DWS – Emergency Plan, Colborne DWS – Emergency Plan, Grafton DWS – Emergency Plan and Emergency Response Procedures (ERPs). Viewed LUSI's Water Systems Emergency Plan (WSEP), dated September 28, 2020, that includes drinking water system-specific information within section 1. Noted the link to each DWS's OP to obtain additional operator coverage information (which could include emergency / strike / lock-out coverage provisions of O. Reg. 170/03). The WSEP describes emergency classifications: Level 1 (alert); Level 2 (minor); Level 3 (major); Level 4 (disaster), Emergency Task Force contact list (and Emergency Contact List, dated May 20, 2021 – aligned with the ETF contact list (minus other departments' support members), complete with all current staff names encountered during the audit).

DOCUMENT REVIEW – DWQMS 2.0 *(Condition Expected)*	DOCUMENT REVIEW – Auditor Comments *(Condition Found)*
	ERP's exist specific to each DWS, as applicable: raw water supply main failure, raw water contamination, chlorination failure, chemically assisted filtration (alum) failure, treated water discharge main failure, SCADA-PLC failure, prolonged power failure, chemical leaks + spills, broken watermain, distribution system contamination, loss of distribution water storage, major fire flow condition, terrorism-vandalism. Plan over the next year to establish single set of LUSI ERP's where possible. Viewed Post-Emergency Incident Report, dated July 25, 2019 that is a form used for evaluating an emergency – describing what happened, procedures / actions taken, emergency action team's response evaluation, communications response evaluation, recommendations, and suggested amendments to the ERP. Viewed records of emergency responses activated and training / tests conducted since the last audit, including the following: - Spill to the natural environment, dated May 18, 2021. Stormwater- / Wastewater-related spill event found during inspection of stormwater line to manmade lagoon (with cause identified as faulty float switch, and overflow lateral connection to stormwater line not previously known to operational staff). - MECP letter re: May 18, 2021 Spill Event, dated May 31, 2021 (that includes the Post-Emergency Incident Report and SGS Certificate of Analysis, dated May 20, 2021). **OFI**: consider including "Date and time of emergency start", "Date and time of emergency end", and "name of person completing the form" prompts under Emergency Details section of the Post-Emergency Incident Report form.
19. Internal Audits **PLAN** – The OP shall document a ***procedure for internal Audits*** that: a) ***evaluates conformity of the QMS*** with the requirements of this Standard, b) identifies internal Audit ***criteria, frequency, scope, methodology and record-keeping*** requirements, c) considers ***previous internal and external Audit results***, and d) describes ***how QMS Corrective Actions are identified and initiated***. **DO** – The OA shall ***implement and conform*** to the procedure and shall ensure that internal Audits are conducted at ***least once every Calendar Year***.	OP Element 19 Internal audits links to QMS-P04-Internal audit. Viewed QMS-P04-Internal Audit, dated July 16, 2020. Includes a description of all required aspects of this element. Viewed the 2020 External Audit reports by NSF International Strategic Registrations for the Hamilton Township Distribution System, dated November 23, 2020 (for audit conducted on Nov. 17, 2020) No non-conformities and the following opportunities for improvement were noted (updates are underlined): - El. 4/9 – clarify the current position / title for the QMS Representative. (ongoing) - El. 17 – clearly and consistently identify all instruments with serial number and/or asset tag in associated records. (re: SCADA tag for one instrument – SpryPoint updated with instrument details; ongoing process – noted tag ID's and serial numbers recorded in QMS-D08) - El. 21 – clarify types of potential non-conformities that would trigger a preventive action to be initiated – and – clarify how effectiveness of corrective / preventive action is verified / recorded. (updated Element 21 to reflect the current and existing practice – see Element 21 section for more information). Viewed the 2020 Internal Audit Report by Acclaims Environmental Inc., dated August 3, 2020. No non-conformities were identified, and the following opportunities for improvement were noted (updates are underlined): - El. 1 – Consider referencing the SDWA in OP El. 1 section. Noted OP El. 1 now includes SDWA reference. - El. 5 – Cross-reference files re: consistency of references (e.g. risk assessment outcomes ref's in QMS-D02, QMS-D05, QMS-P03), risk assessment ratings for L, S, D inconsistent in QMS-P03 and QMS-D02), Ministry document date, "Feb. 2017", Cobourg / Hamilton RPN's and CCP's, OP El. 8 link to QMS-D03, QMS-D03 link to QMS-FR10 (now FR06), OP El. 9 link to App. D (now E), OP El. 10 link to App E (now F). Noted in the updated QMS-P03 correct reference to QMS-D02, correct Ministry doc date of Feb. 2017 and consistent risk ratings for L,S,D. Noted QMS-P03 and QMS-D02 alignment; correct QMS-FR10 reference. Confirmed OP El. 9 and El. 10 properly reference appendices. - El. 8 – CCP for distribution free chlorine (e.g. 0.20 mg/L) – Noted free chlorine residual CCL's now defined. - El. 14 – OP El. 14 ref re: infrastructure reviews during Management Reviews with prioritization spreadsheet and priorities reflect RA outcomes) – noted completed through the tracking spreadsheet. - El. 17 – QMS-D08 "once every 12 months" re: update MDWL terms & conditions re: flows & CT. Confirmed completed through the updated QMS-D08.
20. Management Review **PLAN** – The OP shall document a ***procedure for management review*** that ***evaluates*** the continuing ***suitability, adequacy and effectiveness*** of the QMS and that includes consideration of: a) incidents of ***regulatory non-compliance***, b) incidents of ***adverse drinking water tests***,	OP Element 20 Management review links to QMS-P05-Management Review. Viewed QMS-P05-Management Review, dated May 27, 2021 which describes the responsibility for planning / scheduling management reviews every Q1 per calendar year (by Compliance Coordinator). It defines quorum for management reviews (4 of 6 people), with agenda provided 2-3 weeks in advance with items a) to p) addressed in the Management Review Report.

DOCUMENT REVIEW – DWQMS 2.0 *(Condition Expected)*	DOCUMENT REVIEW – Auditor Comments *(Condition Found)*
c) ***deviations from Critical Control Point limits*** and ***response actions***, d) the ***effectiveness of the risk assessment*** process, e) ***internal and third-party Audit*** results, f) ***results of emergency response testing***, g) ***operational performance***, h) ***raw water supply and drinking water quality trends***, i) follow-up on ***action items*** from ***previous management reviews***, j) the ***status*** of management ***action items*** identified between reviews, k) ***changes that could affect*** the QMS, l) ***Consumer feedback***, m) the ***resources needed*** to maintain the QMS, n) the ***results of the infrastructure review***, o) ***OP currency, content and updates***, and p) ***staff suggestions***. **DO** – Top Management shall ***implement and conform*** to the procedure and shall: a) ensure that a management review is conducted ***at least once every Calendar Year***, b) consider the ***results of the management review*** and identify ***deficiencies and actions*** items to address the ***deficiencies***, c) provide a ***record of any decisions and action items*** related to the management review including the ***personnel responsible*** for delivering the action items and the ***proposed timelines*** for their implementation, and d) ***report*** the ***results of the management review, the identified deficiencies, decisions and action items to the Owner***.	Viewed the DWQMS Annual Management Review report for the Hamilton Township Distribution System (January – December 2020). Confirmed the report included items a) to p). Viewed examples of communications with Owner with LUSI Board Report – Water Operations, dated April 2021, February 2021, and December 2020 – which summarizes system performance by drinking water system and highlights treated water statistics, major maintenance activities, lead sample results and any special areas of focus for each.
21. Continual Improvement **PLAN** – The OA shall develop a ***procedure*** for ***tracking and measuring continual improvement*** of its QMS by: a) ***reviewing and considering*** applicable ***best management practices***, including any published by the Ministry of the Environment and Climate Change and available on www.ontario.ca/drinkingwater, at least once every thirty-six months; b) documenting a process for ***identification and management*** of QMS ***Corrective Actions*** that includes: i. ***investigating the cause***(s) of an identified non-conformity, ii. ***documenting the action(s) that will be taken*** to correct the non-conformity and prevent the non-conformity from re-occurring, and iii. ***reviewing the action(s) taken*** to correct the non-conformity, ***verifying that they are implemented*** and ***are effective in correcting and preventing*** the re-occurrence of the non-conformity. c) documenting a process for identifying and implementing ***Preventive Actions*** to eliminate the occurrence of potential non-conformities in the QMS that includes: i. ***reviewing potential non-conformities*** that are identified to determine if preventive actions may be necessary, ii. ***documenting the outcome of the review***, including the action(s), if any, that will be taken to prevent a non-conformity from occurring, and iii. ***reviewing the action(s) taken to prevent*** a non-conformity, ***verifying that they are implemented and are effective*** in preventing the occurrence of the non-conformity. **DO –** The OA shall ***strive to continually improve the effectiveness of its QMS*** by implementing and conforming to the procedure.	OP Element 21 Continual improvement links to QMS-P11-Continual Improvement, dated April 30, 2021. The procedure describes the process for corrective and preventive actions – accounting for best management practices within each and links to the QMS-FR01-Corrective Action Report. Viewed the QMS-FR01-Corrective Action Report, dated April 30, 2019 – which includes describing the non-conformity, issue description, root cause analysis (5 why's), corrective action plan – including containment plan and permanent action plan, and acceptance by QMS Rep. Through an external audit finding, this is now a work order in SpryPoint that includes prompt for defining the measure of success and "pending" status until the measure of success is achieved. The sign-off of the work order is "field complete" status. The tracking spreadsheets include measure of success column. Noted references from QMS-P11-Continual Improvement to SpryPoint for recording corrective and preventive actions. Viewed the DWS-specific QMS Tracking spreadsheets and reviewed the identified continual improvement items since the last audit. Items tracked include: - one DWQMS non-conformity (adjustments to CCL's in SCADA, now linked to SpryPoint for tracking and preventive action with SCADA updates in CCL alarm history page and popup window); - all previous internal audit findings are logged with actions and their completion dates logged; - one opportunity for standard of care training presentation to new CAO (completed in December); - all external audit findings logged with actions and completion dates logged (for items completed); - risk assessment outcomes preventive actions (initiated April 12, 2021); and - emergency scenario outcomes preventive actions / OFI's (initiated April 13, 2021 and April 27, 2021).

<table>
<tr><th>Process:</th><th>Auditee(s):</th><th>Audit Date:</th></tr>
<tr><td rowspan="2">1.0 Adequate Resources? (s. 9, 11, 13, 14-15)
1.1 What are the different roles and responsibilities involved?
1.2 What are the resources required to carry out this/these tasks? Such as:
a. Staff (and adequate staff coverage)
b. Supplies
c. Equipment
d. Facilities / space
1.3 Are there enough resources?
1.4 Are there special requirements for the resources?
a. How do we ensure the quality of supplies / equipment?</td><td rowspan="2">4.0 Process Under Control? (s. 5, 17)

4.1 Do you rely on documents to provide details of what tasks are required?

a. SOPs? Forms? WO’s? MRF’s? Standards or Guidelines?
b. Are they current / legible / identifiable / retrievable / stored / protected / retained?

4.2 Are documents disposed of? Why? When?

4.3 Does the work area appear safe, organized and clean?

4.4 If resources include measurement and recording equipment, is this equipment calibrated and maintained? How?</td><td>6.0 Who? (s. 2, 3-4, 10)
6.1 What are the competencies for these duties?

6.2 What types of activities can develop competencies / experience?

6.3 Do staff involved know how their duties affect drinking water quantity / quality?

6.4 Do staff know what the quality policy states?

6.5 How do staff know what legal requirements apply to their tasks?</td></tr>
<tr><td>2.0 Process Input?
2.1 What are your process inputs?
a. Legal/other requirements
b. Work orders or maintenance requests
c. Internal or external customers
2.2 Is there a “previous process step” that feeds into this one?
2.3 Are you happy with the supplies / data / information provided by the previous step?</td><td>7.0 Output? (s. 5)
7.1 What is the output of your process?
7.2 What records do you produce?
a. Are they legible / identifiable / retrievable / stored / protected / retained?
b. Are they complete?
7.3 Are records disposed of? Why? When?</td></tr>
<tr><td>3.0 Measured? (s. 8, 12, 16)

3.1 What things do you check, sample, monitor or test?

3.2 Where do you record results? Are records complete?

3.3 Is the information reviewed, analyzed or checked for effectiveness (in meeting requirements)?

3.4 Do you communicate results? To whom? verbally? In Writing?</td><td>5.0 What If Out-of-Control? (s. 7-8, 12, 18)

5.1 What types of things can go wrong? (out-of-ordinary / emergencies / service interruptions)
5.2 What actions are taken when they do go wrong?
5.3 What notifications? To whom?
5.4 What do you document? Where?
5.5 Is there an emergency contact list? Is it maintained?</td><td>8.0 Stakeholder Satisfaction? (s. 12, 20)
8.1 Are relevant stakeholders satisfied with this work?
a. internal / external customers,
b. government agencies,
c. public,
d. owner,
e. top management
8.2 How do you know?

9.0 Evidence of Continual Improvement? (s. 21)
9.1 What are some improvements related to this process that you have seen / implemented in the past year?

9.2 Is there anything you’d like to change about this process?</td></tr>
</table>

Process: Water supply & treatment O&M	**Auditee(s):** Shawn Bolender (Mgr. Water Ops.)	**Audit Date:** June 22, 2021 12:30 PM
1.0 Adequate Resources? (s. 9, 11, 13, 14-15) Have adequate resources to do job well. Process to obtain resources – could be improved (e.g. disconnect with ORO / QMS / Supervisor roles) – e.g. filling roles with vacancies, designating in line with requirements. Consistently meet compliance, expectations. Adequate buy-in for safety, equipment, etc. Staffing is challenging with recent layoffs – to be reevaluated. Have reliable local contractors (e.g. excavations).	**4.0 Process Under Control?** (s. 5, 17) SpryPoint asset management system – recurring monthly maintenance programs (at their frequencies) – staff using the system more easily now, more of a habit. Sarah – Compliance Coordinator keeps a close eye on SpryPoint. New SWAN analyzers – previous analyzers are end-of-life, three units' cost analysis incl. maintenance requirements – ahead of other competing products. All operational staff were involved in the process to evaluate what would work well. Training tracking (past year with pandemic, carrying over unused budget from 2020) – online training ongoing.	**6.0 Who?** (s. 2, 3-4, 10) Supportive, open for staff can come with issues and suggestions; proactive with the information (e.g. broken now or may break later) – influencing risk. Analyse issues – determine funding (whether immediate or for future budgets). Open / training budget has improved in recent years. Manager position higher level re: efficiencies / improvements – therefore, rely on staff to have openness / mindset. Class III Treatment and Class III Distribution & supply. Other competencies: collaborative, openness, professional (with stakeholders, public), operational and regulatory knowledgeable / experience.
2.0 Process Input? Water master plan presented to council last night – well laid out map of infrastructure needs (18 mos) – helped to fill a gap – e.g. zone one tower (1,300 m3); now planning 5,000 m3 reservoir. Good roadmap for next year, and next 20 years. Financial plan (for MDWL renewal) is aligned with the Water master plan (Cobourg).		**7.0 Output?** (s. 5) SCADA trending, alarms, all associated (historians) Logbooks Call-out reports Certification / training records
3.0 Measured? (s. 8, 12, 16) Reconstruction – involved as Manager (e.g. water model completed) – ensure it is being used in all reconstruction activities (whether municipality's, or private). Watermain disinfection procedure – re: upgrades to requirements SCADA – all operators / Compliance Coordinator reviewed process control narrative – adjustments year by year – now better aligns with requirements OP's been updated to ensure alignment with processes / procedures.	**5.0 What If Out-of-Control?** (s. 7-8, 12, 18) e.g. probe re: new SWAN – inserted too far in? - possibly paddle struck; pulled reference electrode out of raw water and no spare (realized and corrected). May's spill event – lucky to have been discovered (e.g. stormwater – manhole check for dechlorination unit). Corrective actions implemented (designed overflow pipe from storm to sanitary – intended; however sloped from sanitary to storm – plugged) – would now surface in parking lot instead. Adjusted floats / replaced – now set-up to spill in parking lot (visual indicator). Ensure high level alarms in place as well. Watermain breaks ("NOC")	**8.0 Stakeholder Satisfaction?** (s. 12, 20) Public, Board and council, Upper management Typical KPI's presented through the board – re: work orders, samples – WO system helps to prove. A&S reports made public. Lack of complaints – ensure "thank you" for calling. **9.0 Evidence of Continual Improvement?** (s. 21) larger scale maintenance items; SpryPoint implementation – previously treatment only – now includes distribution programs (e.g. flushing information updated) Repair truck for water distribution team (previously only pick-up truck) – now have proper-sized truck – design of workbench, cabinets, lighting, etc. – delayed slightly for pandemic – resources needed for responding to breaks, distribution system issues.

Process: (QMS Rep) / Construction Projects	**Auditee(s):** Larry Spyrka, Mgr. Water Capital Proj	**Audit Date:** June 23, 2021 8:00 AM
1.0 Adequate Resources? (s. 9, 11, 13, 14-15) Have adequate resources – e.g. 250 new homes per year for next few years – have internal wish list for replacement projects. Harden street, St. Clair street – starting next month - $1.2 M – water / sewer replacements – Albert St. old Asbestos cement; next year – Blake, Birke, Victoria – watermain replacements. Twinning (12" and 6") – replacing 12" – 1.2 km's in 2022. Water quality related projects for improved water quality. (e.g. Matthew from King to University; Spring Street – now planning cross streets). Project-related resources (CIMA+ and GHD are PM's, staff will review 50% / 90% drawings and send tenders (prepared by consultants, reviewed by team to ensure requirements are all included) – oversee projects – ensure numbers / requirements make sense prior to issuing tenders. On-site supervision – verification of quality requirements met is done by consultant. Operators oversee projects – e.g. major connection back to system – operators oversee. Work controlled by PM's prior to connections (new system to existing). If anything goes wrong, then water system can be isolated / shutdown. Contractor Behans hires a third party for the "Operator" role, Liquid Logic "Operator" and LUSI's own "Operator" also observes. Supplies essential for projects (F3) Notice to Essential Supplies and Service Providers – NSF 60 / 61/ 372 / AWWA standards, accredited lab – jobs coming up, Behan have contract – will sign-off on the form – re: water quality requirements.	**4.0 Process Under Control?** (s. 5, 17) Larger projects – Manager of Ops also involved – hands-on support (e.g. water modelling) – proving watermain pipes are adequate; verifying the system plans meet demand requirements (e.g. one area's 200 mm main is not adequate to meet fire flows). Manager of Ops will oversee connections – ensuring staff are on-site to witness this. Darren – Supervisor – oversees projects meeting requirements as well. Set of tender documents – ensuring up-to-date, reflecting requirements. Need to budget to ensure third party for the "operator" role. Municipal Drinking Water Licence - new requirements (e.g. updated watermain disinfection procedure) are communicated to consultants overseeing PM's. Latest MECP watermain disinfection procedure is provided with LUSI's procedure as well. Consultants will oversee (e.g. GAC) the disinfection procedure for facilities' upgrades. For all systems – pre-construction meeting among team members, samples, ensuring disinfection requirements are met (e.g. concentration met, sample results indicate no bacti, etc.). System start-up procedure re: GAC replacement – taken out-of-service, backwash GAC 3x, following samples confirmed req'ts met, etc. Water tower project in 2019 – ensured booster station pumps would function as intended – verified 3 booster pumps were in good condition – zone two above tracks; also ensured good condition of back-up generator. Planned for second generator in case it was necessary to hook-up.	**6.0 Who?** (s. 2, 3-4, 10) Larry belongs to Development Review Team – representing LUSI's water side (other representatives for other in-ground infrastructure). Any development in town – will receive drawings, reports, Wednesday meetings – CA's present, fire, other reps – bring drawing – ensure valves, hydrants in correct spacings, water services (not in driveway location) – separation between water and sewer, if too close – need to move one or other. Water model is used to prove flows for subdivision would be adequate (max day flow under fire condition). Set of drawings marked up – reviewed by Shawn who marks up – then provide comments (e.g. backflow preventers following plumbing code, shut-off water scenarios, new service for fire suppression – disinfection requirements and swabbing, etc.) Appointed QMS Representative – reviewed DWQMS responsibilities listed under Element 4 (Sarah - Compliance Coordinator / keyholder – is the QMS Rep essentially) – she'll make adjustments. All QMS duties listed in Element 4 are Sarah's. In WFH scenarios, able to access latest documents through VPN's – recommendations from auditors; MECP changes proposed through e-mails and ERO (EBR) – Sarah (with support from Shawn) has implemented all changes – she's very thorough. Management Reviews are held (for reports to top management) – Derek is well-informed regarding needs for improvement (Larry will participate in these discussions). Larry ensures the communication to contractors (res. Development) re: policies and OPS standards.

Process: (QMS Rep) / Construction Projects	**Auditee(s):** Larry Spyrka, Mgr. Water Capital Proj	**Audit Date:** June 23, 2021 8:00 AM
2.0 Process Input? Water master plan – includes 1 to 5-year projects (e.g. new water tower, water plant replacements of analyzer); 5- to 10-year plan; beyond 10-year plan – e.g. tower rehabilitation (invested in better quality, next maintenance – 25 years) ROV inspections (1/10 years); 15 years wash outside; 25 years – more work… WTP – analyzers (chlorine replacements); flow meters (maintenance program) Financial Plan – budgets, group efforts for planning re: what staff needs are to do job (chlorine tonner monorail system hoists; generator inspections – upgrades to TSSA). Cobourg growth (doubling pop'n in 20 yrs) Infrastructure needs – e.g. mains, boosters, towers, reconstruction Infrastructure reviews – take a look at the 5-year plan – sometimes driven by the town (e.g. sewer collapse, planned in a future year) – design is always planned the prior year to the construction year – to plan costing / take to budget. Changing risks will move up timelines (if infrastructure breaks sooner). May reverse – e.g. 7 year plan – based on funds available. Water board – 7 year capital budget – aware of improvements required (only significantly changed once in past 6 years).	Anticipate risks / impacts (through risk analysis) and take actions to prevent the risks from happening or mitigate impacts when they happen. With the plant / water distribution operators – all together with different perspectives considered. e.g. time with water tower out of service – normal flushing activities were deferred due to water supply in this project timeframe. As-constructed / as-builts diagrams are normally obtained within a timely manner (with CIMA+ / GHD) – inserted into GIS (e.g. 1.2 km's new watermains, new valve locations, etc.). Larry will review all projects and ensure all Form 1's and Form 2's are completed and kept on file (verified prior to MECP inspections every year). Water Master Plan – plans for development, water demand issues, etc. MDWL, DWWP, PTTW's, water supply, treatment capacity, etc. Water master play – redundancies considered (looking to other systems when replacing one-of's) e.g. today – gas station lot, condo – disconnect service at main, ensure water services meet the requirements for the building matrix. Multi-plex to disconnect abandoned services back to the main (prevent leaks, not only at curb stop).	**7.0 Output?** (s. 5) Consultants submit plans – Liquid Logics (e.g. temporary watermains, swabbing prior to commissioning). CIMA+ reviews plans – Behan does majority of construction in town. Sampling records Tender documents – showing requirements Progress meetings on bi-weekly basis – agenda, updates on what has occurred, progress reports on major projects on bi-weekly basis. Project files – including e-mails, tote box by project number and project name. Stakeholder communications records Final documents – as-builts, etc. – forwarded to Sarah – placed on shared drive. Inspection reports (videos, etc.) – placed in shared drive. Crib intake
3.0 Measured? (s. 8, 12, 16) 8,500 Water meters – residential and ICI – changing to RF's – Water rates pay for most projects (not borrowing most times for projects) Look at all water sample report that comes in for all three systems – samples taken every week, each sample reports is reviewed (e.g. HPC's)	**5.0 What If Out-of-Control?** (s. 7-8, 12, 18) Unknowns are ongoing challenges in projects – e.g. thought 2" service; but actually 6" – things added, legacy issues. Valves' or watermains' locations. Drawings from decades ago are not correct. Keep a percent for contingencies.	**8.0 Stakeholder Satisfaction?** (s. 12, 20) Council, "Engage Cobourg" for Public engagement, Developers (e.g. Zone 3) – reports provided re: size watermains – will use water model to provide information to developers. Town projects underway vs. development water allocations – tracking growth. Phase 1 vs. Phase 2 developments – Phase 2 requires water tower infrastructure in place – reviewing with Planning division.

Process: (QMS Rep) / Construction Projects	**Auditee(s):** Larry Spyrka, Mgr. Water Capital Proj	**Audit Date:** June 23, 2021 8:00 AM
Track of when hydrant flushing is carried-out – re: customer calls Projects – cost monitoring (CIMA+ does PM) – smaller projects (e.g. hoist replacement) – PO's, ensuring cost within budget given (unless unforeseen situation) – cost adjustments and sign-off	Design work helps mitigate some of the unknowns – e.g. Geotech, drawings shared (in house information) – 50% drawings – e.g. hydrants within four valves of intersection, providing reasons why. 90% drawings – reviewed – blue lines show services, red circles for valves / hydrants – ensuring all follows criteria.	New water tower, new booster station – Class EA's required – consider long process, so need to start water tower consultations. Design 1 year, construction 1.5 years, etc. Other competing projects to allocate water to.
		9.0 Evidence of Continual Improvement? (s. 21) Inspections program related to capital projects – e.g. ROV of infrastructure – now a regular program. E.g. Clarifier – now once per 2 years inspections (reviewed annual performance of past 4 years); verified "base" is good. Newer equipment – e.g. turbidity, chlorine analyzer (SWAN) – with operators' input – implemented for raw water to test (e.g. zebra mussel control) – O&M for SWAN to existing equipment – all SWAN chlorine analyzers. Experience-based improvements. Water meter program – RF – better handle water losses (have more information to go on). Towers re: instantaneous readings – see water use on daily basis – transparency for consumers – also supporting water efficiency. Bulk water station removed – only used for projects (not to public anymore, large trucks in residential neighbourhoods – improving system) – access to water plant grounds 24/7 – security concern. Bulk water delivery stations in other towns.

Process: Top Management responsibilities	**Auditee(s):** Dereck Paul, President	**Audit Date:** June 23, 2021 10:00 AM
1.0 Adequate Resources? (s. 9, 11, 13, 14-15) Mgr. of Operations resignation, Larry as back-up. ORO of ops and capital. ORO for ops resided with Shawn. Opportunity to reassess structure. Align with the direction of the organization's goal to modernize and be best small utility. Need actions to back-up strategic plans. Currently have posting for Supervisor, hoping to have knowledge / experience to develop into Manager – outsourcing design, capital works (e.g. watermain breaks supported by service providers with operator oversight; locates; meter installation / reading) – blended resources – staff maintenance activities with support by providers. Flexibility to ramp-up activities and implementation of projects and programs. Core group of operators covering 24/7 operation and ensuring certified operator coverage. Capital work supported by vendors. Procurement policy process helps to qualify the service providers – supporting "stewards of community" – all vetted prior to work carried out. Master plan using an expert (CIMA+) to vet the process – elements filtered into the water rates study – ensuring adequate revenues to cover the infrastructure needs (capital investments per year). Now "bibles" – measuring the effectiveness of the organization – did we do what we said we should… Management have performance plans to (quarterly / 2x per year) – reviews, with objectives planned year-to-year; and again in June as a progress report.	**4.0 Process Under Control?** (s. 5, 17) Dashboard – essential tool for top management to quickly see what's happening. e.g. locates – very busy May to September – within required timeframe (otherwise non-compliant) – need to verify meet SpryPoint – allows Manager of Ops to see MCare – work orders – service requests with customer – turnaround time – 24 hrs / 48 hrs / 72… Dashboard consolidates all information.	**6.0 Who?** (s. 2, 3-4, 10) As president, promote the vision – prime communicator and conduit between council and the organization. Top management (directors, management staff) and with employees – Tuesday 29th – all employee meeting. Where we're going as organization (e.g. GIS, Smart map -KPI's – to reduce line losses). Hydrant flushing, backwash processes, reduce water loss. Working towards same direction.

<table>
<tr><td>Process: Top Management responsibilities</td><td>Auditee(s): Dereck Paul, President</td><td>Audit Date: June 23, 2021 10:00 AM</td></tr>
<tr><td>2.0 Process Input?
Water rate study – presented to council Jan/21 – recommendations for spending on capital for 5+ years, development charges.

June 21/21 – Water master plan – 18 months' work – 5, 10, 15, 20 and beyond plan. Infrastructure assessment – age, condition, value ($100M investment over 20-30 yrs) – ID'd critical infrastructure, towers / storage capacity, watermains. Plan for approval next meeting – transparency with public – "shovel ready" projects for federal / provincial grants, designed projects in advance – could shuffle projects.

Financial plan (as part of MDWL) recently updated – ensuring funding ($84M – rates, development charges); budgets – annual, rolling 5- and 7-year budgets.

Schedules – e.g. program based – hydrants flushed, valves exercised… ensuring work-life balance (approving vacations) – ensuring work is done.</td><td></td><td>7.0 Output? (s. 5)

Reports to the board, to water committees
Water master plan
Water rates study
Financial plan
Budgets

Operational records + corrective actions taken

MECP inspection results – 100% compliance in all systems</td></tr>
<tr><td>3.0 Measured? (s. 8, 12, 16)

Dashboard ongoing organizational performance

Critical – projects completed on an annual basis in accordance with master plan

Improving KPI's and reputation – e.g. reducing advisories, watermain breaks, line losses – provincial average 30%; 26% of world's freshwater supply – objective to reduce this water loss.

Water loss – less than 25% - accounting for backwash, hydrant flushing programs, fire dept – measuring tools – losses should be evaporation… should be between 10-15% max. want to set SMART goals (specific, measurable, achievable…)</td><td>5.0 What If Out-of-Control? (s. 7-8, 12, 18)

Mould growth in WTP – repairs had to be carried-out ensuring all spores addressed – impacting staff H&S. Need to do it correctly / once.

Reputable engineering firm to do work – including HVAC to ensure airflow to prevent this.

Statement of claim issued – in legal process. If paying for service providers, expect good work that meet requirements.

Plan to exercise valves on a frequency – not carried-out as effectively as planned – conversations to correct these (need external support to complete?)

Staff shuffling – e.g. WTP to distribution – changing conditions (one less system to oversee) – had to reduce staff. Decisions needed to be made.</td><td>8.0 Stakeholder Satisfaction? (s. 12, 20)
Board, water committee, council – reminders about responsibilities under standard of care – SDWA s.19.

New staff, new boards, new councils – all go through standard of care.
One-on-one conversations with stakeholders; always holding to higher standards – customer surveys have indicated satisfaction.

9.0 Evidence of Continual Improvement? (s. 21)
SCADA, GIS, mobile applications (operator tools), automation in different areas (e.g. refurbishment of tower – stirrer), electric heaters changed to gas, solar panels installed on rooftops – looking at reduction of cost, improved efficiencies. Car charging stations implemented – 2030 goal of electric fleet.</td></tr>
</table>

Process: QMS Rep / Compliance Management	**Auditee(s):** Sarah Whitton, Compliance Coord.	**Audit Date:** June 23, 2021 1:00 PM
1.0 Adequate Resources? (s. 9, 11, 13, 14-15) Need to ensure support for effectively carrying-out job's roles / responsibilities (especially, recognizing change in operational management role). Not only in documenting – but who will implement the requirements and ensure they aredone consistently…to support operations. Buy-in at all levels is important for the success of the system, and understands what needs to be done – a level of competency to understand and recognize the importance (not only a "paper" exercise). Have adequate time (if missed, usually affiliated with time – vacations, leaves, etc.). Staff departures, retirements…WFH scenarios – now more access to info, more webinars. Document resources (e.g. AWWA, standards, training) -are readily provided. Any service providers / suppliers on-site receive a form.	**4.0 Process Under Control?** (s. 5, 17) Temporary Mat Leave List for new person. Tracking spreadsheet re: MDWL, contracts ending, etc. Quarterly reporting to water committees and board – help ensure these are always ongoing as required. Training program for board, CAO – "top management" and higher. Communications with owner on any out-of-ordinary conditions – in a timely fashion – with resolutions. Corrective action process communicated with all owners – "problem statement", "containment", "corrective action", "preventive action", etc. Internal communications – ensuring highlights on activities of both groups – distribution very busy in summer, water treatment busy in various points – coordination of activities, projects, monthly tasks, etc.	**6.0 Who?** (s. 2, 3-4, 10) Everything! Ultimately – operational documents established to ensure high quality, safe, clean drinking water. Preparing for events before they happen. Reflections on past events – ensuring continual improvement is assured. Shift in culture – "doing things right" moving forward. Communication with smaller systems (e.g. Grafton) – more involved in decision-making, preparing reports and being transparent about ongoing issues. Competencies (for upcoming temporary replacement) – looking for someone with ISO experience to critically look at things, drinking water experience ideally (e.g. process control narrative, SOP's updated / created). Sheets for daily operations, well-organized person, ensuring each part / every box ticked. Confident person and steadfast in ensuring the requirements are always met.
2.0 Process Input? Schedule – e.g. A&S report – incl. all requirements (complete monthly), Management Review Work orders – update QMS on website (w A&S) Monthly tasks Quarterly sampling requirements, lead sampling Board reports – quarterly normally Sampling schedule for operators – ensuring quarterly, lead QMS tracking – CA's, OFI's – into a work order	"all employee" meeting once per year; more often in work-from-home / remote work conditions. **OFI**: Monthly water-specific meetings to help improve communications and staff engagement (look back / forward – OTJ hours could be logged for meaningful discussions aspects - savings) – sharing past successes, lessons learned from challenges, discussions on opportunities, answer questions on upcoming projects / plans, receive staff feedback / suggestions, align with operational activities.	**7.0 Output?** (s. 5) Login / sign-in sheets – printed at the plant, signed / scanned back. File-folders online – shared drive – others can find information (logically organized to find info) SCADA record, paper records (monthly) New operator very supportive in organizing information – central location of information. Awareness by temp replacement of records required and their locations.

3.0 Measured? (s. 8, 12, 16)	**5.0 What If Out-of-Control?** (s. 7-8, 12, 18)	**8.0 Stakeholder Satisfaction?** (s. 12, 20)
Sampling completed according to plan; MDWL requirements and DWWP Form 2's (Form 1's by Engineering); regulatory requirements are consistently met. Emergency response testing – improved in recent years (scenario-based previously) – using	May 2021 Spill event CCL response procedures – deviations previously occurred regularly – now a work order established to track changes. E.g. low chlorine response procedure, indicators (SCADA trends) – data review / assessment with a critical eye on information.	Everyone! Operationally depend on work done together; reporting to owner – all information is for compliance – good rapport with the owner.
Process: QMS Rep / Compliance Management	**Auditee(s):** Sarah Whitton, Compliance Coord.	**Audit Date:** June 23, 2021 1:00 PM
weather-related events; more realistic. Created SOP re: regulatory vs. process and any power or communications outages – how to ensure the ongoing monitoring of requirements continues in these outage scenarios. KPI's established – e.g. 100% hydrants flushed every year; any required maintenance; valve turning non-existent (for staffing-related reasons); work order - #locates, WQ complaints. Stakeholder engagement – board-level, new CAO, new board member, improving public communications about water-related information – allows public to ask questions – promote engagement. Sharing about plans in an organized fashion.		**9.0 Evidence of Continual Improvement?** (s. 21) **OFI:** Consider establishing operationally relevant objectives & targets for sampling, monitoring and tracking KPI's – influencing planning & control of operations (El. 5 DO b), El. 16). **OFI:** Consider establishing templates to help facilitate effective communication of requirements related to infrastructure improvement projects, as required by MDWL Schedule B s.5 Compliance. Templates would also enable consistent project record-keeping to prove project specifications are consistently met.

Process: Distribution O&M	**Auditee(s):** Darren Hanbidge, Distribution Operator	**Audit Date:** June 24, 2021 08:00 AM
1.0 Adequate Resources? (s. 9, 11, 13, 14-15) For this time of year, and with recent changes, feel light on staff resources – could use student(s) with OIT's to carry-out hydrant, valve programs, keeping GIS up-to-date (previously taking paper records and placing electronically – now need to keep up-to-date). GIS information is beneficial for field access to asset locations and other information; complete water quality complaint, watermain break response. This has impacted the ability to get valve turning program completed (normally a staff person and student). Succession planning is in the works, not currently being carried-out (e.g. Manager of Water Ops, Compliance Coord, Distribution Operator / Supervisor – all leaving within next few months) – job posted for Water Operations Supervisor. Ability to link with other project work with exercising valves (with records on which have been exercised), but only these situations. Have adequate resources – well-equipped with tools, trucks – recently updated. Stock levels are well-maintained, however lead time for stock is quite a bit longer – reassessed the stock levels and placed a large order 4 weeks ago (still awaiting the delivery) – stock is hard to get these days as experienced and communicated by contractors, supply companies, etc. Informal conversation with Manager of Ops regarding infrastructure upgrades and related budgets – have seen budgets allocated to group's equipment needs. Some projects had to be delayed / deferred for budget issues (unanticipated issues). Support projects related to valve turning (Operators do this) and tie-ins – operators inspect as the work is carried out.	**4.0 Process Under Control?** (s. 5, 17) Disinfection of new / reconstructed watermains is carried-out by third party, reports sent to the Manager – certified operators to carry this out. Disinfection of watermain breaks is carried-out by operators – group meeting to review all changes to the updated watermain disinfection procedure – OIC decides what class of break it is – ensuring steps required. SOP's Information, as required Watermain break form – to complete – lists several things – complete the information, hand-in to Sarah. Valve turning is recorded as you're completing these – completed on iPads or on phone. MCare – customer-driven orders through customer service department – information completed on an iPad in the field. Experienced operators help ensure consistency in work as well. Colorimeter and turbidimeter – each truck has one of each. Devices have an annual calibration by an outside company; and verification of the devices also occurs at the plant against a titrator.	**6.0 Who?** (s. 2, 3-4, 10) Make suggestions on what improvements need to be done, equipment updated, etc. Doing job every day helps achieve policy commitments, i.e. provide safe water and comply with requirements. Keeping records up-to-date – e.g. broken watermain, tie-in for new section – inputting the information, submitted to Sarah who files and keeps information. Class III Distribution & Supply (Grafton, Colborne, Cobourg) – minimum Class I, can operate and have advice from other more senior operators.

Process: Distribution O&M	**Auditee(s):** Darren Hanbidge, Distribution Operator	**Audit Date:** June 24, 2021 08:00 AM
2.0 Process Input? Customer-driven – meter changes (large project), complaints on meters, water quality, locates requests (esp. this time of year, slows down November due to frost). Hydrant flushing program timeline (currently ongoing) – SpryPoint system will identify hydrants that require attention – and will repair hydrants that require maintenance. Reactively-driven days – some plans, but can veer off-course when complaints, etc. come in. Schedule – sampling program – follow this (generally Mondays and Tuesdays following long weekends). Weekly bacti's, quarterlies, annual samples, lead sampling program in distribution		**7.0 Output?** (s. 5) Hydrant flushing records – start, stop, time, residual and turbidity records Logbooks at booster stations and water towers Plant logbooks No distribution logbook (forms on iPads record everything distribution operators do, like water quality complaint responses, etc.) Annual inspections – mostly involve Sarah, Shawn, Larry – could be called-in to help answer questions Operator certificates are posted in all plants (Colborne, Grafton, Cobourg / Hamilton Township – with Cobourg) Operator training hours have been obtained during pandemic through correspondence, online courses, H&S-related training (confined space entry, etc.) – if in-person, physically sep.
3.0 Measured? (s. 8, 12, 16) Track everything Any low chlorine (CCL is above 0.2 mg/L, reg. is 0.05 mg/L) or high turbidity (CCL is below 5 NTU) found in the system, results from a sample, water quality complaints. Also what's representative for the area – always aim for what's representative, and especially where possible better than CCL's listed. E.g. 1 mg/L free chlorine in some areas; and less than 1 NTU turbidity – so would aim for these figures. Will monitor for pressure through hydrants – if installing new pressure reducing valves (have annual checks as well – checking pressures upstream and downstream, contractor hired to	**5.0 What If Out-of-Control?** (s. 7-8, 12, 18) Nothing so far out-of-control that couldn't be handled by staff or have support to handle the situation within a 24-hour period. "Watermain breaks" are normal, have a good process in place. Tabletop sessions for reviewing mock emergencies – group discussion on what would happen. Experienced operators, contractors are also excellent with equipment operators, could always address in a short period of time. In an AWQI – would hand off to Manager / Compliance – but operators could carry- this out as well – numbers are available on the procedure for reporting to MECP SAC and local MOH. Once sample	**8.0 Stakeholder Satisfaction?** (s. 12, 20) Everyone with a tap is a stakeholder. Customer complaints – recorded and followed-up. No calls about the work of operators. Board, town **9.0 Evidence of Continual Improvement?** (s. 21) Equipment updates have enabled efficiency of work. GIS – having access to this – from operator standpoint. Able to complete forms / reports electronically – have helped prevent the loss of information – can very easily access through the intranet.

Process: Distribution O&M	**Auditee(s):** Darren Hanbidge, Distribution Operator	**Audit Date:** June 24, 2021 08:00 AM
carry-out maintenance as required on PRV's) – when there's a concern (customer-driven).	results returned, AWQI form completed within the timeframe.	**OFI:** Staffing levels could be improved with OIT students. Re-consider on-call rotation as operators are aware that this is going to be shortened – which impacts the work-life balance (going to be on-call 1:3weeks – currently 1:4 weeks). Manager could assist on-call, if required.

Process: WTP Operations & Maintenance	**Auditee(s):** Scott Noble, WTP Operator	**Audit Date:** June 24, 2021 3:30 PM
1.0 Adequate Resources? (s. 9, 11, 13, 14-15) Have ability to see operators' perspective / management perspective – tolerance in operations – have vehicles, clothing resources. OFI: Staffing levels could be improved with OIT students. Re-consider on-call rotation as operators are aware that this is going to be shortened – whichimpacts the work-life balance (going to be on- call 1:3weeks – currently 1:4 weeks). Managercould assist on-call, if required.: inventory management – ensuring spare parts on hand – to have critical stock. Asset tagging / listing through work order system hasbeen built-up over past few years. WO system has capability to ensure min/max system for stock levels (e.g. emergency – part removed from shelf – work order created to select asset; inventory integrated with asset – what parts used – running tally of quantities) – minimum levels for triggering reordering parts. Quarterly basis – inventory check (against work orders). Infrastructure / equipment conditions – treatment aspects implemented over time to improve water quality; works well – complex system. E.g. new analyzers installed, SCADA system is great – confidence in the infrastructure.	**4.0 Process Under Control?** (s. 5, 17) Senior operator knowledge SOP system in place – all accessible on V:\ shared drive – 12-13 SOP's – such as low chlorine response; clearwell out of service SOP, etc. CRP's – critical response procedures ERP's for out-of-ordinary conditions Working towards streamlining all operational documentation Process control narrative updates are ongoing (not since 2012) – incorporating operational knowledge – ensuring an understanding of all interlocks (at what point does it get triggered, what response takes place, what returns it…etc.) SpryPoint tracks and keeps records on measurement instruments and their calibration / verification statuses – analyzers listings – process-based or regulatory-based.	**6.0 Who?** (s. 2, 3-4, 10) To provide clean, safe potable water to the community. Activities are always keeping the high-level goal in mind - #1 priority in the decision making we do on daily basis. Class II Treatment and Distribution & Supply (Class III Distribution & Supply written). WW licences as well II in collection I in treatment. Class III Treatment plant. Plan on updating Treatment certificate in the fall. Personal goal to have Class III by year-end. OFI: Staffing levels could be improved with OIT students. Re-consider on-call rotation as operators are aware that this is going to be shortened – whichimpacts the work-life balance (going to be on- call 1:3weeks – currently 1:4 weeks). Managercould assist on-call, if required.On-call rotation only includes three teammembers (once every three weeks, on-call means only "off-call" two out of every three weeks). Learn the plant, new staff should be comfortable with operating the plant prior to going on-call. Especially with recent staffing level changes. Distribution / treatment – cross-training teams would be beneficial to improve on-call rotation for the entire system.
2.0 Process Input? Each operator leads their own day-to-day work – the way things are set-up. Colleagues – great operators – wealth of knowledge, understand daily requirements; could use some prioritization (based on risks, criticality) – "Supervisor of Water Systems" – OFI: Staffing levels could be improved with OIT students. Re-consider on-call rotation as operators are aware that this is going to be shortened – which		**7.0 Output?** (s. 5) Logbook entries – very descriptive Flip notebook to record personal notes (quick references with time; to later transcribe in logbook) SpryPoint WO system – (previously call-out sheet) – now in system – can document what incident was, what was done to correct it, follow-up requirements – yes order parts (for probe-related corrective actions).

impacts the work-life balance (going to be on- call 1:3weeks – currently 1:4 weeks). Managercould assist on-call, if required.daily tailboards to discuss priorities, assignment of WO's, tasks.		
3.0 Measured? (s. 8, 12, 16) Labs every day to verify accuracy of chlorine analyzers (some are process analyzers, some are regulatory) – process labs every day. Influent analyzer – water dosed into the contact tank 1.60 mg/L on way in; pH / temperatures /	**5.0 What If Out-of-Control?** (s. 7-8, 12, 18) e.g. this past Friday – first day on-call – call-out at 3pm – low chlorine on influent analyzer. Have laptop, could remote-in from home – could shutdown the plant, ensuring no water directed into clearwell / out of it. Shutdown booster station	**8.0 Stakeholder Satisfaction?** (s. 12, 20) Self, entire team (especially plant-related, and when on-call) – currently some transition with changing; Sarah – Compliance Coordinator – needs a pulse on the operations and changing conditions.
Process: WTP Operations & Maintenance	**Auditee(s):** Scott Noble, WTP Operator	**Audit Date:** June 24, 2021 3:30 PM
flows – regulatory CT analyzer will drift between 0.1 to 0.15 - Reservoir – discharge analyzer controls post chlorinator (trim system) – so that water never leaves the plant below 1.45 mg/L. CCP alarms for secondary – 0.55 mg/L in Cobourg at towers / booster station (slightly higher). Aluminum residuals at least weekly. Raw turbidity / temperatures taken daily – references for manual CT calculation (otherwise done on SCADA continuously online all the time). Have references for calculating CT manually. Verify analyzers at towers for secondary chlorine residuals – every M, W, F Weekly checks on all diesel generators – run monthly – check for battery, fuel, oil, record run hours on weekly in WO system.	(small tower) – prior to commuting for 30 minutes to work. Chlorine analyzers – no spare parts on-hand – through troubleshooting – determined the probe sensor had broken on the end (optic eye was loose / gone). Knew it wasn't the effluent analyzer – not used to prove CT – only used for process verification that dosing is correct. Needed to take a probe from another process analyzer – "live without" for the weekend – risk-based decision to keep the treated analyzer online – took from the zebra control analyzer – even with daily checks (still verifying raw water dosing, and conditions are correct). CRP-Low Chlorine was recently discussed / reviewed – checked the gas chlorination system, checked the tonner room for leaks, etc. ensuring everything aligned for average usage – grabbed samples to verify the root cause was actually the analyzer's probe.	**9.0 Evidence of Continual Improvement?** (s. 21) First 4-5 months – shifted from distribution to WTP – comfortable with knowledge, experience, background. Good changes implemented since then – updated ERP's, CRP's, SOP's, Process Control Narrative updated – good momentum to get these updates made and aligned. Scott brings past experiences, knowledge to the utility.

Appendix "D" – Auditor CV and Training Certificates

Curriculum Vitae: Brigitte Roth, BES, EP(EMSLA)

SUMMARY:

A management systems, compliance and risk management professional with 25 years' experience in:
- achieving legislative compliance,
- optimizing and integrating management systems,
- conducting risk assessments and analysis,
- preparing and improving emergency response plans,
- planning and executing annual emergency test exercises and debrief sessions,
- leading and carrying out compliance and management system audits, and
- developing and delivering training related to the above areas of expertise.

A certified environmental professional with ECO Canada, as EP(CEA) from 2005-2015 and currently as EP(EMSLA) since 2015; she has conducted environmental compliance, pollution prevention and management system audits at over 95 unique organizations of various industries in Ontario and at 66 golf courses under the Integrated Pest Management Accreditation Program. She has overseen the implementation and integration of management systems in conformity with ISO 14001, ISO 9001, ISO 17025, OHSAS 18001 and Ontario's Drinking Water Quality Management Standard.

Also experienced as an alternate Community Emergency Management Coordinator (CEMC) for the City of Guelph from 2015 to 2017 and a Planning Section Chief in the City's Emergency Operations Centre from 2014 to 2017.

PROFESSIONAL DESIGNATIONS:

2015, Environmental Professional – Environmental Management Systems Lead Auditor, ECO Canada
2005-2015, Environmental Professional – Compliance Auditor, ECO Canada

EDUCATION & KEY TRAINING:

2018, ISO/IEC 17025:2017, Waher Consulting Services
2016, Community Emergency Management Coordinator, Emergency Management Ontario
2014-2017, Emergency Management Certificate program courses, Justice Institute of British Columbia
2013, Project Management Certificate (with High Honours), Sheridan College
1998, Environmental Management System Lead Auditor, KPMG (Certificate No. E0034)
1997, Quality Management System Lead Auditor, KPMG (Certificate No. K193)
1996, Certificate of Environmental Assessment, University of Waterloo
1996, Bachelor of Environmental Studies (Honours Geography), University of Waterloo

EMPLOYMENT HISTORY:

Principal Consultant at Acclaims Environmental Inc.
January 2018 - present

Helping optimize the effectiveness of customers' integrated management systems through audits and facilitated sessions to improve:
- legislative compliance (e.g. emissions reporting, approvals and environmental protection plans)
- conformance to management system standards (e.g. DWQMS, ISO 14001, ISO 9001, ISO 45001)
- risk assessment and management
- emergency preparedness and business continuity

Trainer at Walkerton Clean Water Centre
October 2016 - present

Contract trainer for the following courses:
- Drinking Water Quality Management Standard (DWQMS)
- Internal Auditing for DWQMS
- Responsibilities under the Statutory Standard of Care
- Risk Assessment & Emergency Preparedness

Program Coordinator – Project and Program Management at City of Guelph
March 2017 – January 2018

For the City's Corporate Project Management Office (CPMO):
- Developed and promoted methodologies and standards,
- Reported to the Executive Team and city Council on the CPMO's performance,
- Promoted and trained on project management processes,
- Implemented project document and records control, and
- Researched and implemented best practices.

Quality Assurance Coordinator at City of Guelph
October 2008 – March 2017

Managed the processes related to:
- Municipal Drinking Water Licensing,
- Drinking Water Quality Management Standard (DWQMS) accreditation,
- Leading the audit team in internal audits and coordinating external audits,
- Risk assessment, analysis and emergency response plans, and
- Regular compliance reports to Top Management and city Council.

Pollution Prevention Coordinator / Senior Environmental Auditor at CASF
2001 – 2008

- Conducted over fifty pollution prevention and/or compliance audits at metal finishing sites.
- Designed and delivered Advanced Environmental Management Series of courses (Auditing 101; Pollution Prevention Planning & Materials Accounting; Regulatory Compliance; Spills Prevention, Emergency Preparedness and Response).
- Chaired annual Metal Finishing Conference committee from 2000-2008.

Environmental Management System Specialist at WESA Group Inc. (BluMetric Environmental Inc.)
2004 – 2006

- Conducted compliance and management system audits at industrial and municipal drinking water sites.
- Assisted with management system implementations (ISO 9001, ISO 14001, OHSAS 18001, DWQMS).
- Assisted industrial clients with Canada's National Pollutant Release Inventory annual reporting.
- Assisted in the application process for industrial facilities' Certificates of Approval (Air & Noise).

Quality and Environmental Coordinator at Kuntz Electroplating Inc.
1996 – 2001

- Project manager for ISO 9001, ISO 14001 and ISO 17025 implementation and maintenance.
- Facilitated annual reviews of quality policies, risk assessments and emergency response plans.
- Kept up-to-date on all changes in regulatory / customer requirements and reported to management.
- Developed and delivered various quality and environmental management system training programs.
- Managed external and internal audit plans for all management systems and functioned as lead auditor.

ENVIRON1\1E TAL CAREERS ORGANIZATION OF CANADA

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Brigitte **Roth**

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Environmental Professional - Environmental Management Systems Lead Auditor EP(EMSLA)

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Enviroumcntal Management Systems

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CWAE

CERTIFICATE OF ACHIEVEMENT

BRIGITTE ROTH

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Internal Auditing for the Drinking Water Quality Management Standard course

WWOCS Course 10 # 8194

September 24. 2020 to September 25, 2020

Oirec1or Approved Continuing Education Units: 1.4

Cal1 Kuhnke
CEO

5eptember 25, 2020
Date

WWWWCNC ca

APPENDIX 7

The Corporation of the Township of Hamilton
2021 DWQMS NSF Surveillance Audit Report
December

NSF International Strategic Registrations Audit Report

Lakefront Utility Services Inc.

207 Division Street
Cobourg, Ontario K9A 4L3 CAN

C0128651

Audit Type

Surveillance Audit

Auditor

Rose Johnson

Standard

Ontario's Drinking Water Quality Management Standard Version 2
(Exp Date: 07-FEB-2023)

Audit Date(s):

12/14/2021 - 12/14/2021

Recommendation

Ontario's Drinking Water Quality Management Standard Version 2 : Continue Certification, NO CARs

Executive Summary

Ontario's Drinking Water Quality Management Standard Version 2	This was an annual off site system audit of the Lakefront Utility Services / Hamilton Township Distribution System to the Ontario Drinking Water Quality Management System (DWQMS v.2) Standard. The quality management system was found to be effectively implemented. There were numerous strengths observed during the audit, including: - internal audit - risk assessment - communications - overall commitment to the QMS. There were no major or minor nonconformities (NCs) identified during this audit. There were five opportunities for improvement (OFIs) identified which do not require a formal response, but are included in this report for consideration by the DWQMS team. The support and cooperation of all involved in the audit is acknowledged and appreciated. Thank you for choosing NSF for your DWQMS accreditation.

Opportunities

Ontario's Drinking Water Quality Management Standard Version 2	See below

Corrective Action Requests

There is NO Corrective Action Request in this audit.

Site Information

The audit was based on a sampling of the company's management system.

Industry Codes

NACE:E 41

Scope of Registration

Ontario's Drinking Water Quality Management Standard Version 2 : Hamilton Township Distribution System, 139-OA2, Entire Full Scope Accreditation

Opportunities for Improvements

Ontario's Drinking Water Quality Management Standard Version 2

Opportunity	Observations / Auditor Notes
Opportunities for Improvements (DWQMS)-01	**Location of OFI** Documents - various; **Discussed With** Larry Spyrka & Mina Aminnejad; **Description** Documentation was found to generally meet the requirements of the Standard. Consideration could be given to: 1. clearly differentiating which documents apply to which system, e.g. QMS-D11 2. ensuring header/footers reflect current version, consistent with revision history, e.g. QMS-P08, Operational Plans 3. clearly referencing linked documents in procedures, e.g. QMS-P10 doesn't reference QMS-D11 under Associated Documents;
Opportunities for Improvements (DWQMS)-02	**Location of OFI** N/A; **Discussed With** Larry Spyrka & Mina Aminnejad; **Description** The risk assessment process was found to be overall effectively implemented. Consideration could be given to recording meeting minutes to clearly indicate the type of review (12 or 36 month), as well as names of review participants;
Opportunities for Improvements (DWQMS)-03	**Location of OFI** QMS-D11 Essential Supplies & Services; **Discussed With** Larry Spyrka & Mina Aminnejad; **Description** Processes to identify essential supplies and services were found to be overall effective. Consideration could be given to identifying primary and secondary suppliers, where applicable.;
Opportunities for Improvements (DWQMS)-04	**Location of OFI** QMS-D08 Instrument Calibration; **Discussed With** Larry Spyrka & Mina Aminnejad; **Description** Processes to verify / calibrate measuring equipment were found to be overall effectively implemented. An opportunity exists to clarify the frequency of performing internal pocket colorimeter verifications, e.g. quarterly.;
Opportunities for Improvements (DWQMS)-05	**Location of OFI** QMS-P11 Continual Improvement; **Discussed With** Larry Spyrka & Mina Aminnejad; **Description** Continual improvement processes were found to be overall effectively implemented. Consideration could be given to: 1. identifying all potential triggers for issuing CARs, e.g. internal observation, emergency situation 2. clarifying where root cause is recorded for corrective action investigations (e.g. QMS Tracking spreadsheet);

General Information

Operating Authority: Legal Name & Address	**Lakefront Utility Services Inc.**

	207 Division Street Cobourg, ON K9A 4L3
Language Preference: Correspondence	English
Language Preference: Audit	English
Owner: Legal Name and Address	The Township of Hamilton 8285 Majestic Hills Drive P.O. Box 1060 Cobourg, ON K9A 4W5
Owner Language Preference: Correspondence	English
Owner Language Preference: Audit	English
Applicant Representative Information; Include Name, Title, Phone, Fax, Email & Website	Larry Spyrka - Manager of Water Capital Projects / QMS Representative Lspyrka@lusi.on.ca Tel: 905-372-2193 Xt. 5238 www.lakefrontutilities.com
Accreditation Option	Full Scope - Entire DWQMS
Date of Previous Systems Audit:	December 14, 2019
Date of Previous On-Site Verification Audit:	November 17, 2020

Processes

Summary of Findings	
Requirement	**Finding**
1. Quality Management System	**C**
2. Quality Management System Policy	**C**
3. Commitment and Endorsement	**C**
4. Quality Management System Representative	**C**
5. Document and Record Control	**OFI**
6. Drinking-Water System	**C**
7. Risk Assessment	**OFI**
8. Risk Assessment Outcomes	**C**
9. Organizational Structure, Roles, Responsibilities, and Authorities	**C**
10. Competencies	**C**
11. Personnel Coverage	**C**
12. Communications	**C**
13. Essential Supplies and Services	**OFI**
14. Review and Provision of Infrastructure	**C**
15. Infrastructure Maintenance, Rehabilitation & Renewal	**C**
16. Sampling, Testing & Monitoring	**C**
17. Measurement & Recording Equipment, Calibration & Maintenance	**OFI**
18. Emergency Management	**C**
19. Internal Audits	**C**
20. Management Review	**C**
21. Continual Improvement	**OFI**

Mj	Major Non-Conformity. The auditor has determined one of the following: (a) a required element of the DWQMS has not been incorporated into a QMS: (b) a systemic problem with a QMS is evidenced by two or more minor conformities; or (c) a minor non-conformity identified in a corrective action request has not been remedied.
Mn	Minor Non-Conformity. In the opinion of the auditor, part of a required element of the DWQMS has not been incorporated satisfactorily into a QMS.
OFI	Opportunity for Improvement. Conforms to requirement, but there is opportunity for improvement.
C	Conforms to requirement.
	Not Applicable to this audit
*	Additional Comment added by auditor in the body of the report.

APPENDIX 8

The Corporation of the Township of Hamilton

Annual Report 2021- February 2022

HAMILTON TOWNSHIP DRINKING WATER SYSTEM 2021 ANNUAL REPORT FOR WATER WORKS
(R.170/03, Sec.11)

Drinking-Water System Number:	260039208
Drinking-Water System Name:	Hamilton Township Distribution System
Drinking-Water System Owner:	The Corporation of the Township of Hamilton
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2021 to December 31, 2021

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories.***
Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X]	**Number of Designated Facilities served:** [ ]
Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]	**Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]**
Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.	**Number of Interested Authorities you report to:** [ ]
Lakefront Utility Services Inc. Office 207 Division Street, Cobourg Ontario	**Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]**
https://www.lakefrontutilities.on.ca/regulatory/water/	

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
N/A	

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

N/A

Indicate how you notified system users that your annual report is available, and is free of charge.

[X] Public access/notice via the web
[X] Public access/notice via Government Office
[ ] Public access/notice via a newspaper
[X] Public access/notice via Public Request
[ ] Public access/notice via a Public Library
[ ] Public access/notice via other method _____

Describe your Drinking-Water System

The Hamilton Township Stand Alone Distribution System is supplied with potable water produced by the Cobourg Water Treatment Plant. The Cobourg WTP obtains raw water through a 1050 mm steel intake pipe that extends 860m into Lake Ontario. The Stand-Alone Distribution System extends north of Hwy. 401 from Ontario Street to Oliver's Lane. Treated water is supplied to approximately 119 homes in the area bounded by Ontario Street, Oliver's Lane, and June Avenue.

The Hamilton Township Stand Alone Distribution System includes a total of 19 fire hydrants and 36 distribution valves. There are no storage, pressure boosting, rechlorination facilities, or other external structures within the Hamilton Township Stand-Alone Distribution System.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite (for repairs)

Were any significant expenses incurred to?

[ ] Install required equipment
[ ] Repair required equipment
[X] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

PROJECT	ESTIMATED COST
Yard Hydrant for Water Quality Flushing	$4,801.34
Engineering- Water Main	$840.00
	$5,641.34

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

No incidents were reported in the *Hamilton Township Distribution System.*

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

*Note: Hamilton Township samples are part of Cobourg Drinking Water Sampling P*rotocol, *additional distribution sampling is outlined in the Cobourg Annual Report.*

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	**N/A – Refer to Cobourg DWS 2021 Annual Report**				
Treated					
Distribution	**52**	**0 – 0**	**0 – 0**	**52**	**0 – 1**

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

Testing is conducted as it relates to the Cobourg Drinking Water System.

Summary of additional testing and sampling carried out in accordance with the requirement of approval, order or other legal instrument.

N/A – Refer to Cobourg DWS 2021 Annual Report

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

N/A – Refer to Cobourg DWS 2021 Annual Report

Summary of lead testing under Schedule 15.1 during this reporting period

PERIOD 1			
	Residential	Commercial	**Distribution**
# of Samples Taken	0	0	1
Concentration Range, µg/L	N/A - System was subject to the Plumbing Exemption only pH & Alkalinity were sampled		
PERIOD 2			
	Residential	Commercial	**Distribution**
# of Samples Taken	0	0	1
Concentration, µg/L	0.04		

Summary of Organic parameters sampled during this reporting period or the most recent sample results

N/A – Refer to Cobourg DWS 2021 Annual Report

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

N/A – Refer to Cobourg DWS 2021 Annual Report