

ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM

JOINT BOARD OF MANAGEMENT

Thursday, September 22, 2016 at 4:00 p.m.

EMPS

AGENDA

DISCLOSURES OF INTEREST

Minutes

Review and approval of the minutes of June 23, 2016

Reports

1. Report SWB05-16 - St. Thomas Area Secondary Water Supply System Drinking Water Works Permit and the Municipal Drinking Water License
2. Report SWB06-16 - MOECC inspection – 100%
3. Verbal report from Nathan Bokma Water Pressure Study

Unfinished Business

1. Update on water model and EMPS pump replacement.

New Business

Adjournment



Corporation of the
City of St. Thomas

Report No.

SWB05-16

File No.

Directed to: Chairman Kohler and the Members of The Board of Management for The St. Thomas Area Secondary Water Supply System

Meeting Date:
September 22, 2016
Date Authored:
August 5, 2016

Department: Environmental Services

Prepared By: Lynn Stafford, C.E. T.
Compliance Coordinator

Attachments
Drinking Water Works Permit
and Municipal Drinking Water
Licence

Subject: St. Thomas Area Secondary Water Supply System Drinking Water Works Permit and the Municipal Drinking Water Licence

Recommendation:

THAT: Report SWB05-16, St. Thomas Area Secondary Water Supply System Drinking Water Works Permit and the Municipal Drinking Water Licence, be received for information.

Origin:

On August 31, 2011, the Ministry of the Environment Climate Change (MOECC) issued the St. Thomas Area Secondary Water Supply System its first Drinking Water Works Permit (DWWP) and Drinking Water Licence for a five year period.

In order to obtain re-certification, the MOECC must first approve the operational plan for the Drinking Water Quality Management System. In addition, the St. Thomas Area Secondary Water Supply System must have received accreditation from a third party external auditor before a DWWP and Drinking Water Licence will be issued, as per the Safe Drinking Water Act, 2002.

Analysis:

The St. Thomas Area Secondary Water Supply System was required to apply for a new DWWP and Drinking Water Licence in February 2016 in order to obtain re-certification.

The City of St. Thomas submitted an updated operational plan and accreditation from the third part external auditor, prior to the MOECC granting approval. The operational plan must include the 21 elements of the Drinking Water Quality Management System, as outlined below.

Required DWQMS Elements

1. Quality Management System
 - Preface
 - Ownership and Operation
2. Quality Management System Policy
3. Commitment and Endorsement
4. Quality Management System 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

The water system must be operated in accordance with the conditions of the DWWP and the Drinking Water Licence (attached) for the St. Thomas Area Secondary Water Supply system.

The MOECC recently sent approvals to the City of St. Thomas for both the DWWP and the Drinking Water Licence.



DRINKING WATER WORKS PERMIT

Permit Number: 190-201

Issue Number: 2

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

**The Joint Board of Management of the
St. Thomas Area Secondary Water Supply System**

**545 Talbot St.
P.O. Box 520
St. Thomas, ON N5P 3V7**

For the following municipal residential drinking water system:

St. Thomas Area Secondary Water Supply 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

DATED at TORONTO this 28th day of June, 2016

Signature

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

Schedule A: Drinking Water System Description

System Owner	The Joint Board of Management of the St. Thomas Area Secondary Water Supply System
Permit Number	190-201
Drinking Water System Name	St. Thomas Area Secondary Water Supply System
Schedule A Issue Date	June 28, 2016

1.0 System Description

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

Overview

The **St. Thomas Area Secondary Water Supply System** receives treated water from the Elgin Area Primary Water Supply System. The treated water is supplied from the Elgin Area Primary Water Supply System Water Treatment Plant near Port Stanley and is sent through Pipeline A – 750 mm and Pipeline B - 900 mm to the Elgin-Middlesex Pumping Station. The water is then delivered into the St. Thomas Area Secondary Water Supply System transmission main.

There are three connections from the St. Thomas Area Secondary Water Supply to the City of St. Thomas Distribution System through the East Chamber, the West Chamber and the St. George Chamber. The St. George Chamber is operational only when the pressure in the immediate vicinity falls below 380 kPa.

The Secondary Line also supplies water to the Municipality of Central Elgin, the Township of Southwold and the Municipality of Dutton-Dunwich.

The **St. Thomas Area Secondary Water Supply System** consists of:

- St. Thomas Booster Station located in Elgin-Middlesex Pumping Station Building
- Ford Tower
- East Chamber, West Chamber and St. George Chamber
- Approximately 11.2 km of water transmission main
- Ford Meter Chamber

Pumping Stations

St. Thomas Booster Station in the Elgin-Middlesex Pumping Station (EMPS) Building

Location	490 South Edgeware Road, Municipality of Central Elgin, ON
UTM Coordinates	NAD 83: UTM Zone 17: 488296 m E 4737955 m N
Pumping Equipment	Pump No. 1 - rated at 316 L/s at 41.1 m TDH
	Pump No. 2 - rated at 316 L/s at 41.1 m TDH
	Pump No. 3 - rated at 316 L/s at 41.1 m TDH
Rechlorination Equipment	A gas chlorination disinfection system with facilities shared between the Aylmer Secondary Water Supply System (ASWSS) and St. Thomas Area Secondary Water Supply System (STASWSS). The system includes:
	One (1) dual weigh scale with space for two (2) 68 kg cylinders (duty/standby) with automatic switchover (shared between ASWSS and STASWSS)
	One (1) 22.75 kg/d chlorinator and associated equipment (dedicated to ASWSS)
	One (1) 22.75 kg/d chlorinator and associated equipment (dedicated to STASWSS)
	One (1) 22.75 kg/d chlorinator and associated equipment (shared standby between ASWSS and STASWSS)
Instrumentation and controls	Chlorine residual analyzer located in the East Chamber
Standby Power	600 kW Diesel Engine Generator, shared by the Aylmer Secondary and the St. Thomas Secondary
Notes	A dual celled reservoir shared amongst the City of St. Thomas, Aylmer Secondary, the Town of Aylmer and the City of London/County of Middlesex, each cell 27,300 m ³ capacity

Elevated Storage Tanks

Ford Tower

Location	43897 Water Tower Line, St. Thomas, ON
UTM Coordinates	NAD 83: UTM Zone 17: 484884 m E 4738549 m N
Total Volume	763 m ³
Notes	Water level is monitored at the EMPS, which is regulated and controlled through operation of the St. Thomas pumps in the EMPS. SCADA is currently monitored 24/7 by operators at the EAPWSS (Elgin Treatment Plant)

Other Subsystem, Components

East Chamber

Location	490 South Edgeware Road, Municipality of Central Elgin, ON
UTM Coordinates	NAD 83: UTM Zone 17: 487948 m E 4737786 m N
Equipment	
Notes	Water supply to the City of St. Thomas Distribution System and is regulated through valves and monitored through SCADA system. Free Chlorine Analyzer

West Chamber

Location	2 South Edgeware Road, Waterworks Park, St. Thomas, ON
UTM Coordinates	NAD 83: UTM Zone 17: 484731 m E 4737807 m N
Equipment	
Notes	Water supply to the City of St. Thomas Distribution System and is regulated through valves and monitored through SCADA system. Free Chlorine Analyzer

St. George Chamber

Location	Intersection of Wellington Road and Ford Line, Township of Southwold, ON
UTM Coordinates	NAD 83: UTM Zone 17: 482804 m E 4737991 m N
Equipment	
Notes	Water supply from this chamber is provided to the City of St. Thomas Distribution System (includes suburban areas of Central Elgin and Township of Southwold – Lynhurst Subdivision) and only when pressures in the immediate vicinity within the water system fall below 380 kPa

Watermains

1.2 Watermains within the distribution system comprise:

1.2.1 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
St. Thomas Secondary Water Distribution System	February 8, 2016

1.2.2 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.

1.2.3 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 Joint Board of Management of the St. Thomas Area Secondary Water Supply System
Permit Number	190-201
Drinking Water System Name	St. Thomas Area Secondary Water Supply System
Schedule B Issue Date	June 28, 2016

1.0 Applicability

- 1.1 In addition to any other 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.
- 1.2 The definitions and conditions of the licence shall also apply to this drinking water works permit.

2.0 Alterations to the Drinking Water System

- 2.1 Any document issued by the Director as a Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance, where applicable, with the conditions of this drinking water works permit and the licence.
- 2.2 All Schedule C documents issued by the Director for the drinking water system shall form part of this drinking water works permit.
- 2.3 All parts of the drinking water system in contact with drinking water which are:
 - 2.3.1 Added, modified, replaced, extended; or
 - 2.3.2 Taken out of service for inspection, repair or other activities that may lead to contamination,shall be disinfected before being put into service in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:
 - 2.3.1.1 The ministry's Watermain Disinfection Procedure, effective December 28, 2016;
 - 2.3.1.2 AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
 - 2.3.1.3 AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
 - 2.3.1.4 AWWA C654 – Standard for Disinfection of Wells.
- 2.4 The owner shall notify the Director within thirty (30) days of the placing into service or the completion of any addition, modification, replacement or extension of the drinking water system which had been authorized through:
 - 2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this drinking water works permit;

- 2.4.2 Any Schedule C to this drinking water works permit respecting works other than watermains; or 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 For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:
- 2.5.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;
- 2.5.2 Constitutes maintenance or repair of the drinking water system; or
- 2.5.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.
- 2.6 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.
- 2.7 For greater certainty, any alteration to the drinking water system made in accordance with this drinking water works permit may only be carried out after other legal obligations have been complied with 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 drinking water system may be altered 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:
- Has been prepared by a Professional Engineer;
 - Has been designed only to transmit water and has not been designed to treat water;
 - Satisfies the design criteria set out in the Ministry of the Environment and Climate Change publication "Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – June 2012", as amended from time to time; and
 - Is consistent with or otherwise addresses the design objectives contained within the Ministry of the Environment and Climate Change 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 Professional Engineer 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 of the Environment and Climate Change, 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.

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 Raw water pumps and treatment process pumps in the treatment system;
 - 4.1.2 Coagulant feed systems in the treatment system, including the location and number of dosing points;
 - 4.1.3 Valves;
 - 4.1.4 Instrumentation and controls, including SCADA systems, and software associated with these devices;
 - 4.1.5 Filter media, backwashing equipment and under-drains in the treatment system; or,
 - 4.1.6 Spill containment works.
- 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 and associated equipment;
 - 4.2.2 Re-circulation devices within distribution system storage facilities;

- 4.2.3 In-line mixing equipment;
 - 4.2.4 Chemical metering pumps and chemical handling pumps;
 - 4.2.5 Chemical storage tanks (excluding fuel storage tanks) and associated equipment; or,
 - 4.2.6 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 of the Environment and Climate Change.
- 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 Fuel storage tanks and spill containment works, and associated equipment; or
 - 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.
- 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 of any unit process within a treatment subsystem;
 - 4.4.3 A deterioration in the quality of drinking water provided to consumers;
 - 4.4.4 A reduction in the reliability or redundancy of any component of the drinking water system;
 - 4.4.5 A negative impact on the ability to undertake compliance and other monitoring necessary for the operation of the drinking water system; or
 - 4.4.6 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”, as published by the Ministry of the Environment and Climate Change, 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.
- 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 atmosphere:
- 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 add, modify or replace a drinking water system component set out in condition 5.1 for an activity that is not directly 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 oxide 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 populations shall not exceed the applicable point of impingement limit, and at non-sensitive populations shall not exceed the Ministry of the Environment and Climate Change half-hourly screening level of 1880 ug/m³ 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 of the Environment and Climate Change, 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.



MUNICIPAL DRINKING WATER LICENCE

Licence Number: 190-101
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, this municipal drinking water licence is issued under Part V of the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32 to:

**The Joint Board of Management of the
St. Thomas Area Secondary Water Supply System**

**545 Talbot St.
P.O. Box 520, City Hall
St. Thomas, ON N5P 3V7**

For the following municipal residential drinking water system:

St. Thomas Area Secondary Water Supply 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

DATED at TORONTO this 28th day of June, 2016

Signature

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

Schedule A: Drinking Water System Information

System Owner	The Joint Board of Management of the St. Thomas Area Secondary Water Supply System
Licence Number	190-101
Drinking Water System Name	St. Thomas Area Secondary Water Supply System
Schedule A Issue Date	June 28, 2016

The following information is applicable to the above drinking water system and forms part of this licence:

Licence

Licence Issue Date	June 28, 2016
Licence Expiry Date	June 27, 2021
Application for Licence Renewal Date	December 27, 2020

Drinking Water Works Permit

Drinking Water System Name	Permit Number	Issue Date
St. Thomas Area Secondary Water Supply System	190-201	June 28, 2016

Permit To Take Water

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

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:	190-301
Alternately, if one Financial Plan is developed for all drinking water systems owned by the owner, the Financial Plan Number shall be:	190-301A

Accredited Operating Authority

Drinking Water System or Operational Subsystems	Accredited Operating Authority	Operational Plan No.	Operating Authority No.
St. Thomas Booster Station in the Elgin-Middlesex Pumping Station Building	OCWA	190-401 A	St. Thomas Booster Station in the Elgin-Middlesex Pumping Station Building
Water Supply System	City of St. Thomas – Environmental Services Operations Division	190-401 B	Water Supply System

Schedule B: General Conditions

System Owner	The Joint Board of Management of the St. Thomas Area Secondary Water Supply System
Licence Number	190-101
Drinking Water System Name	St. Thomas Area Secondary Water Supply System
Schedule B Issue Date	June 28, 2016

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 that, based on generally available information, may be emitted from a component of the drinking water system to the atmosphere in a quantity that is significant either in comparison to the relevant point of impingement limit or if a point of impingement limit is not available for the compound, then based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the EPA at a point of impingement;

“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 the table that was prepared by a Professional Engineer in accordance with O. Reg. 419/05 and the procedure document listing the appropriate point of impingement concentrations of each compound of concern emitted from a component of the drinking water system and providing comparison to the corresponding point of impingement limit;

“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;

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

“**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;

“**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**” means any point in the natural environment that is not on the same property as the source of the contaminant and as defined by section 2 of O. Reg. 419/05;

“**point of impingement limit**” means the appropriate standard from Schedule 1, 2 or 3 of O. Reg. 419/05 and if a standard is not provided for a compound of concern, the appropriate criteria listed in the Ministry of the Environment and Climate Change publication titled “Summary of Standards and Guidelines to support Ontario Regulation 419: Air Pollution – Local Air Quality (including Schedule 6 of O. Reg. 419 on Upper Risk Thresholds)”, dated February 2008, as amended;

“**procedure document**” means the Ministry of the Environment and Climate Change procedure titled “Procedure for Preparing an Emission Summary and Dispersion Modelling Report” dated July 2005, as amended;

“**Professional Engineer**” means a Professional Engineer who has been licensed to practice in the Province of Ontario;

“**provincial officer**” means a provincial officer appointed pursuant to section 8 of the SDWA;

“**publication NPC-300**” means the Ministry of the Environment and Climate Change publication titled “Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning” dated August 2013, as amended;

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

“**sensitive populations**” means any one or a combination of the following locations where the health effects of nitrogen oxides emissions from emergency generators shall be considered using the point of impingement limit instead of the Ministry of the Environment and Climate Change screening level for emergency generators:

- (a) health care units (e.g., hospitals and nursing homes),
- (b) primary/junior public schools,
- (c) day-care facilities, and
- (d) playgrounds;

“**subsystem**” has the same meaning as in Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts);

“**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;

2.0 Applicability

- 2.1 In addition to any other 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 Drinking Water Works Permit

- 7.1 A drinking water works permit identified in Schedule A of this licence is the applicable permit on the date identified as the Schedule A Issue Date.

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.
- 9.2 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 of the Environment and Climate Change 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 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.
- 14.1.2 The requirement for the owner to comply with NSF 372 shall come into force no later than June 28, 2018.
- 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; or

- 14.3.6 Any particular chemical or material where the owner has written documentation signed by the Director that indicates that the Ministry of the Environment and Climate Change 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 substantial completion of the alteration.
- 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 by 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 maintain 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.

Schedule C: System-Specific Conditions

System Owner	The Joint Board of Management of the St. Thomas Area Secondary Water Supply System
Licence Number	190-101
Drinking Water System Name	St. Thomas Area Secondary Water Supply System
Schedule C Issue Date	June 28, 2016

1.0 Additional Sampling, Testing and Monitoring

Drinking Water Health and Non-Health Related Parameters

- 1.1 For a drinking water system or drinking water subsystem identified in column 1 of Tables 1 and 2 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

2.0 Studies Required

- 2.1 Not Applicable

Schedule D: Conditions for Relief from Regulatory Requirements

System Owner	The Joint Board of Management of the St. Thomas Area Secondary Water Supply System
Licence Number	190-101
Drinking Water System Name	St. Thomas Area Secondary Water Supply System
Schedule D Issue Date	June 28, 2016

1.0 Lead Regulatory Relief

- 1.1** Any relief from regulatory requirements previously authorized by the Director in respect of the drinking water system under section 38 of the SDWA in relation to the sampling, testing or monitoring requirements contained in Schedule 15.1 of O. Reg. 170/03 shall remain in force until such time as Schedule 15.1 of O. Reg. 170/03 is amended after June 1, 2009.

2.0 Other Regulatory Relief

Not Applicable



Corporation of the
City of St. Thomas

Report No.
SWB 06-16

File No.

Directed to: **Members of the Board of Management for the St. Thomas Area Secondary Water Supply System**

Meeting Date: September 22, 2016

Date Authored: September 15, 2016

Department: Environmental Services

Attachments

Prepared By: Nathan Bokma, P. Eng.
Manager of Development and Compliance

#1 – STASWSS Inspection Report 2016

Subject: **St. Thomas Area Secondary Water Supply System
2016 MOECC Drinking Water Inspection Report**

Recommendations:

THAT: Report SWB 06-16, St. Thomas Area Secondary Water Supply System – 2016 MOECC Drinking Water Inspection Report, be received for information.

Origin:

On May 19, 2016, the Ministry of the Environment and Climate Change (MOECC) conducted an inspection of the St. Thomas Area Secondary Water Supply System. From this inspection, a drinking water inspection report documenting the results of the inspection was received from MOECC outlining a description of the drinking water system, capacity assessment, treatment processes, operations manuals, certification and training, DWQMS reporting and corrective actions, water quality assessment, and other inspection findings.

An annual inspection is carried out to confirm compliance with MOECC legislation and authorizing documents such as Orders, Certificates of Approval, license/permit requirements. The inspection also evaluates conformance to the MOECC drinking water policies and guidelines as well as best management practices.

Analysis:

The drinking water inspection report found the Owner and its Operating Authority to be fully compliant with all applicable water legislation, which resulted in an excellent final inspection rating of 100%. The drinking water inspection report did not have any further recommendations for ways to improve the system.

Respectfully Submitted,

Nathan Bokma, P. Eng.
Manager of Development and Compliance

Reviewed By:

Treasury

Env Services

Planning

City Clerk

HR

Other

Ministry of the Environment
and Climate Change

Ministère de l'Environnement et de
l'Action en matière de changement
climatique

Safe Drinking Water Branch
3232 White Oak Road, 3rd Floor
London ON N6E 1L8
Tel (519) 873-5094
Fax (519) 873-5096

Direction du contrôle de la qualité de l'eau
potable
Bureau du district de London
3^e étage
3232, chemin White Oak
London (Ontario) N6E 1L8
Tel (519) 873-5094



June 29, 2016

File no. EL-ST-SO-540

The Corporation of the City of St. Thomas
Environmental Services
545 Talbot Street
St. Thomas, ON
N5P 3V7

Attention: Mr. Justin Lawrence, Director, Environmental Services and City Engineer

Re: St. Thomas Area Secondary Water Supply System Inspection Report (WW# 260078897)
Inspection conducted on May 19, 2016

Dear Mr. Lawrence,

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

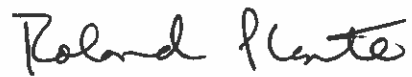
In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (II&E) Secretariat and advice of internal/external risk experts. The Inspection Summary Rating Record (IRR) provides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

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

Please note the attached IRR methodology memo describing how the risk rating model has improved to better reflect the health related and administrative non-compliance found in an inspection report. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspector's Annual Report. If you have any questions or concerns regarding the rating, please contact Tom Clubb, Drinking Water Program Supervisor, at (519) 873-5122.

If you have any questions regarding the report, please feel free to call me at (519) 873-5022.

Yours truly,



Roland Plante
Provincial Officer
London District Office
roland.plante@ontario.ca

cc. Mr. Chris Andrew, Water Sewage and Drainage Foreman
Lynn Stafford, Compliance Coordinator
Blair Tully, OCWA Senior Operations Manager
Elgin-St. Thomas Health Unit
Catfish Creek Conservation Area
Kettle Creek Conservation Area



Ministry of the Environment and Climate Change

**ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM
Inspection Report**

Site Number:	260078897
Inspection Number:	1-CLR2S
Date of Inspection:	May 19, 2016
Inspected By:	Roland Plante

Table of Contents

Owner Information.....	2
Inspection Details.....	2
Inspection Summary.....	5
Introduction	5
LMR – Capacity Assessment	5
LMR – Treatment Processes	5
LMR – Treatment Process Monitoring	6
LMR – Distribution System.....	7
LMR – Operations Manuals	8
LMR – Logbooks	9
LMR – Contingency / Emergency Planning	9
LMR – Security.....	9
LMR – Certification and Training	10
LMR – Water Quality Monitoring	10
LMR – Water Quality Assessment	11
LMR – Reporting and Corrective Actions.....	11
Non Compliance with Regulatory Requirements and Actions Required.....	13
Summary of Best Practice Issues and Recommendations.....	14
Signatures	15

Appendix A: Key Reference and Guidance Material for Drinking Water Systems

Appendix B: Inspection Rating Record

OWNER INFORMATION:

Company Name: ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM JOINT BOARD OF MANAGEMENT
Street Number: 545
Street Name: TALBOT St
City: ST. THOMAS
Province: ON
Unit Identifier:
Postal Code: N5P 3V7

CONTACT INFORMATION

Type: Owner Representative
Phone: (519) 631-1680
Email: jlawrence@stthomas.ca
Title: Director, Environmental Services & City Engineer
Name: Justin Lawrence
Fax: (519) 631-2130

Type: Compliance Coordinator
Phone: (519) 631-1680
Email: lstafford@city.st-thomas.on.ca
Title: Compliance Coordinator
Name: Lynn Stafford
Fax: (519) 631-2130

Type: Foreman
Phone: (519) 631-0368
Email: candrew@city.st-thomas.on.ca
Title: Foreman, Water, Sewage and Drainage
Name: Chris Andrew
Fax: (519) 631-5542

INSPECTION DETAILS:

Site Name: ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM
Site Address:
County/District: St. Thomas
MOECC District/Area Office: London District
Health Unit: ELGIN-ST. THOMAS HEALTH UNIT
Conservation Authority:
MNR Office:
Category: Large Municipal Residential
Site Number: 260078897
Inspection Type: Announced
Inspection Number: 1-CLR2S
Date of Inspection: May 19, 2016
Date of Previous Inspection:

COMPONENTS DESCRIPTION

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

Site (Name): St. Thomas Area Secondary Distribution System

Type:**Sub Type:****Comments:**

The St. Thomas Secondary Area Secondary Water Supply System is owned by the St. Thomas Area Secondary Water Supply System Joint Board of Management which includes the City of St. Thomas, the Municipality of Central Elgin and the Township of Southwold. Operational duties and maintenance are provided by two operating authorities the City of St. Thomas Environmental Services, Operations Division, Water Section and the Ontario Clean Water Agency (OCWA).

At the time of inspection, OCWA was responsible for the operation of the Elgin Middlesex Pumping Station and Re-chlorination Facility which includes the following:

- a reservoir and booster pumping and re-chlorination station located in Lot 9, Concession 9, former Township of Yarmouth housing storage, treatment, pumping and control facilities including: a dual-celled reservoir shared amongst the City of St. Thomas, the Town of Aylmer and the City of London/County of Middlesex, each cell 27,300 m³ capacity;
- three (3) (two duty, one standby) high lift pumps each rated at 316 L/s at 41.1 m TDH;
- a gas chlorine disinfection system with facilities shared between the Aylmer Secondary Water Supply System (ASWSS) and the St. Thomas Area Secondary Water Supply System (STASWSS) as noted below:
- one (1) dual weigh scale with space for two (2) 68 kg cylinders (duty/standby) with automatic switchover (shared between ASWSS and STASWSS);
- one (1) 22.75 kg/d chlorinator and associated equipment (dedicated to ASWSS);
- one (1) 22.75 kg/d chlorinator and associated equipment (dedicated to STASWSS);
- one (1) 22.75 kg/d chlorinator and associated equipment (shared standby between ASWSS and STASWSS);
- instrumentation and controls as per design drawings;
- Standby Power: a 600 kW diesel engine standby power generator set and associated equipment located in a separate room shared between the St. Thomas and Aylmer Secondary Systems. The City of St. Thomas Environmental Services, Operations Division, Water Section is responsible for the operation of approximately 11 km long watermain, consisting of a 6.5 km segment of 750 mm diameter watermain and a 4.5 km segment of 500 mm diameter watermain from the Elgin Middlesex Pump Station to the Ford Metering Chamber at the intersection of Wonderland Road and Clinton Line in the Township of Southwold including all appurtenances. The City of St. Thomas is also responsible for the operations and maintenance of the Ford Tower which is an elevated water storage tank having a capacity of 763 m³ located on Water Tower Line.

Site (Name): St. Thomas Area Secondary Water Supply System Pumping Station

Type: Treated Water POE

Sub Type: Pumphouse

Comments:

The St. Thomas Secondary Water System Joint Board of Management is the Owner of the St. Thomas Secondary Water System Pumping Station and re-chlorination treatment equipment located at the Elgin Middlesex Pumping Station (EMPS). The potable water from the reservoir located at the EMPS is then pumped into the secondary system. Water is continuously monitored for free chlorine residual at the East Chamber. The secondary transmission water line continues westerly down South Edgeware Road to the West Chamber located at Water Works Park. The St. George Chamber in addition to the East and West Chambers also supplies potable water to the St. Thomas Distribution system and is typically only operational during system pressure events below 380 kPa. Free chlorine residuals are continuously monitored at the East Chamber (EMPS Re-Chlorination Facility) West Chamber, Southwold Chamber and the Ford Meter Chamber.

Site (Name): Ford Water Tower

Type: Treated Water POE

Sub Type: Reservoir

Comments:

The Ford Water Tower is an elevated storage tank located at 42897 Water Tower Line which was installed to service the Ford Motor Company Assembly Plant. The tank has a storage capacity of 763 m³ (167,840 imperial gallons), from which a pipeline extends west from the base of the tank to the Ford Meter Chamber located at the intersection of

Clinton Line and Wonderland Road.

INSPECTION SUMMARY:

Introduction

- The primary focus of this inspection is to confirm compliance with Ministry of the Environment and Climate Change (MOECC) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period.

This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O.Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.

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

This 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.

Documentation reviewed in association with this report included, but were not limited to:

1. Ministry of the Environment, the Joint Board of Management of the St. Thomas Area Secondary Water Supply System, Municipal Drinking Water Licence # 190-101, dated July 30, 2012; and
2. Ministry of the Environment, the Joint Board of Management of the St. Thomas Area Secondary Water Supply System, Municipal Drinking Water Works Permit # 190-201, dated August 31, 2011.

Other operational documents maintained by the Owner for the period June 01, 2015 until April 30, 2016 were also reviewed in conjunction with this compliance evaluation.

Capacity Assessment

- 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.

There are flow meters installed at the East Chamber, West Chamber, Ford Chamber, and the Southwold Chamber.

- The flow measuring devices were calibrated or verified in accordance with the requirements of the Municipal Drinking Water Licence issued under Part V of the SDWA.

The Owner indicated that the flow meters are calibrated by a service technician on a yearly basis. Records indicate that the flow meters were calibrated in April and October 2015.

Treatment Processes

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

During the physical inspection of the water distribution system, it appeared that all equipment listed in Schedule A of the current Drinking Water Works Permit had been installed.

- 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

Treatment Processes

system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.

Primary and secondary disinfection is provided by the Elgin Area Primary Water Supply System and there is a re-chlorination facility within the Elgin Middlesex Pump Station (EMPS). Documentation reviewed for the inspection period includes log records and SCADA records. There is a Daily Report (SCADA data) that is generated and it summarizes the chlorine analyzer data on a daily basis from various sites and an operator reviews this information within 72 hours. Records indicate that there were low chlorine readings and these readings were attributed to SCADA errors, power outages, equipment malfunction and maintenance.

- **The owner had evidence indicating that all chemicals and materials that come in contact with water within the drinking water system met the AWWA and ANSI standards in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit Issued under Part V of the SDWA.**

The Owner provided a record to indicate that the sodium hypochlorite that is used for secondary disinfection of the drinking water met the NSF / ANSI Standard 60 for water treatment chemicals.

- **Up-to-date plans for the drinking-water system were kept in a place, or made available in such a manner, that they could be readily viewed by all persons responsible for all or part of the operation of the drinking water system in accordance with the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

The Owner indicated that up-to-date plans are kept at the works building and they are in digital format for review.

Treatment Process Monitoring

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

Secondary disinfection is measured in the distribution system by operators on a regular basis. Several chlorine residual samples are taken each week to ensure that secondary disinfection is maintained throughout the distribution system. Chlorine residuals samples are taken during bacteriological sampling and also to verify the accuracy of the chlorine analyzers located throughout the distribution system. The chlorine analyzers also monitors the chlorine residual in the distribution system continuously and the SCADA system will alert an operator if a specific set point (low and high chlorine) is reached.

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

The Owner has SCADA records for chlorine residual monitoring at several points in the distribution system. An operator reviews the SCADA data at least every 72 hours and puts the time and their initials on the electronic file to show it has been reviewed and inserts comments to explain specific data points.

- **Samples for chlorine residual analysis were tested using an acceptable portable device.**

The operators use a Hach colorimeter to test the chlorine residual concentrations in the water distribution system. This device is also used to check the calibration of the continuous chlorine analyzers. The operators check the calibration of the colorimeters on a monthly basis and a service technician checks the colorimeters on an annual basis.

- **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.**

The chlorine analyzers at the chamber facilities are linked to the SCADA system which is capable of calling out alarms to operators when a set point is reached for low and high chlorine. The operator either acknowledges the alarm remotely or may visit the site to investigate the cause of the alarm. Details of the responses are written in the site logbook and / or on the daily summary sheets.

Treatment Process Monitoring

- **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.**

The chlorine analyzers continuously monitor the chlorine residual in the distribution system and the SCADA system captures the data. The data provided included an average for each hour of every day for each chlorine analyzer in the distribution system. On the Daily Reports, the operator notes information relating to events such as low chlorine readings. The OIC must ensure that a note is made for each reading below 0.05 mg/L. The SCADA data provided was in a "xls format".

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

Operators calibrate the chlorine analyzers as per manufacturer specifications or as required during their daily checks and records are maintained of these calibrations. Also, a service technician performs maintenance on the chlorine analyzers on a yearly basis.

Distribution System

- **The owner had up-to-date documents describing the distribution components as required.**

The Owner indicated that there have not been any change to the system during this inspection period.

- **There is a backflow prevention program, policy and/or bylaw in place.**

The Owner indicated that there is By-Law No. 44-2000 in place for the Regulation of the water supply. Backflow prevention devices for the secondary system are tested on a yearly basis and documents were provided showing the testing of these devices. Part 8.1 of the bylaw indicates that "no person shall connect, cause to be connected, or allow to remain connected to the waterworks distribution system any piping, fixture, fitting, container or appliance, in a manner which under any circumstances, may allow water, waste water, non-potable water, or any other liquid, chemical or substance to enter the water works distribution system. This means for "protection from contamination" shall be in accordance with the requirements of the Ontario Building Code Act, 1997, as amended from time to time."

- **The owner had a program or maintained a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system.**

There is an above ground reservoir (Ford Tower) and the operators conduct an external inspection yearly. The Owner is presently conducting a study to determine if the tower is needed in the water distribution system. The Owner indicated that Landmark conducted a clean and inspection of the tower on July 05, 2011.

- **The owner had implemented a program for the flushing of watermains as per industry standards.**

The Owner has a maintenance procedure for the flushing of watermains. The Owner indicated that distribution system flushing occurs annually in the fall and that hydrants are maintained at the same time.

- **Records confirmed that disinfectant residuals were routinely checked at the extremities and "dead ends" of the distribution system.**

Chlorine residuals are continuously monitored in the water distribution system by the chlorine analyzers. These analyzers are installed at several different points in the distribution system and will alert operators when the chlorine residual falls outside pre-set limits for low and high chlorine residual.

- **A program was in place for inspecting and exercising valves.**

The Owner indicated that a program for exercising valves was in place. There are logsheet records that indicate

Distribution System

that operators undertake inspections of valve chambers. Valves are exercised manually but are not closed.

- **There was a program in place for inspecting and operating hydrants.**

The Owner has a maintenance schedule for the operation of fire hydrants. Log records indicate that hydrants are exercised once per year and there are log records maintained of this activity. There are only a few hydrants located in the secondary distribution system.

- **There was a by-law or policy in place limiting access to hydrants.**

St. Thomas bylaw #44-2000, Part 5 deals with the "Operation of Water System". Section 5.3 indicates that "no person other than a person authorized by the Engineer for that purpose shall be permitted to open or otherwise interfere with or operate or take water from any fire hydrant, and this includes any hydrant located within private property."

- **The owner was able to maintain proper pressures in the distribution system and pressure was monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate.**

SCADA records and logbook entries show that pressure was maintained in the distribution system. The Owner indicated that there were no consumer complaints regarding low pressure in the distribution system.

- **The donor had provided an Annual Report to the receiver drinking water system.**

The Owner receives an Annual Report from the Elgin Area Primary Water Supply System.

Operations Manuals

- **Operators and maintenance personnel had ready access to operations and maintenance manuals.**

The Operation and Maintenance Manual was developed by the City of St. Thomas and the Table of Revisions indicates that it was last updated on April 15, 2015. An electronic copy of this manual can be found at the Municipal Works office.

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

The Operations Manual is dated May 2015 (version 3). There is a Record of Revisions page for updates to the manual. The manual contains the following sections: Introduction, System Overview, Operating Procedures, Maintenance, Record Keeping and Forms, Emergency Planning, Water Sampling and Quality Assurance, Safety, Public Relations. The Appendix Section contains the following: St. Thomas Area Secondary WSS Permit and Licence, Distribution System Map, Standard Operating Procedures, and Distribution System Sampling Requirements.

The Operations Manual states that waterworks staff and operators also have other resources for information and training including the following: St. Thomas DWQMS, Design Guidelines for Drinking Water Systems, Engineering Standards and Specifications, AWWA Standards and Specifications, NFPA Codes and Standards, Provincial Standards and Specifications, Manufacturer Specifications, Operator Training Courses and Seminars and Conferences.

- **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.**

The St. Thomas Area Secondary Water Supply System Operations and Maintenance Manual meets the requirements stipulated in the current Municipal Drinking Water Licence, section 16.0.

Logbooks

- **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.**

The Owner indicated that only certified operators perform drinking water tests in the water distribution system.

- **For every required operational test and every required sample, a record was made of the date, time, location, name of the person conducting the test and result of the test.**

A review of Chain of Custody forms and log records related to regulated water samples indicate that the appropriate information is being recorded by operators. Sample results for chemical and bacteriological samples are provided by a licenced laboratory.

- **The operator-in-charge ensured that records were maintained of all adjustments made to the processes within his or her responsibility.**

A review of system information indicates that the operators-in-charge (OIC) inputs data into logsheets concerning observations, adjustments and maintenance performed on the drinking water system.

- **Logs or other record keeping mechanisms were available for at least five (5) years.**

The Owner is aware of the record keeping requirements and has indicated that records are kept for an extended period of time.

Contingency/Emergency Planning

- **Spill containment was provided for process chemicals and/or standby power generator fuel.**

At the EMPS, there is a new fuel tank for the diesel generator and this tank has an electronic monitor to alert operators of potential leaks with the containment system. Secondary containment is provide for the sodium hypochlorite used for secondary disinfection.

- **Clean-up equipment and materials were in place for the clean up of spills.**

Cleanup materials for spills are located at the EMPS and at the St Thomas Works Yard.

- **Standby power generators were tested under normal load conditions.**

The generator at the EMPS is serviced and tested on a regular basis and records are maintained of these activities.

Security

- **All storage facilities were completely covered and secure.**

The EMPS has a 2 cell reservoir with a number of access hatches that are locked and alarmed. The Ford Tower has a locked and alarmed door. Each of these sites has a security fence and a locked gate.

- **Air vents and overflows associated with reservoirs and elevated storage structures were equipped with screens.**

There are screened vents for the EMPS reservoir and the water tower has a screened air vent and a grate on the overflow pipe.

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

All facilities remain locked at all times. The Elgin-Middlesex Pumping Station (EMPS) has door and motion detector alarms, the Ford Tower and East and West Chambers have door alarms and fences with signage. All facilities are visited regularly by system operators.

Certification and Training

- **The overall responsible operator had been designated for each subsystem.**

The St. Thomas Area Secondary Water Supply System is classed as a Water Distribution Subsystem Class 3. At the time of inspection, the designated ORO possessed an operator certificate that was equal or greater than the classification level of the distribution system.

- **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**

The Owner must ensure that one or more operators are designated as operator-in-charge (OIC) for each day that the facility is in operation. An OIC can be any operator with an applicable certificate to the type of operated subsystem. An operator-in-training (OIT) cannot be designated as an OIC. Any log entries made by the OIT must be approved by the OIC and clearly documented in the log at the time of entry. There is a designated OIC and the Owner indicated that there are a number of operators that can act as OIC.

- **All operators possessed the required certification.**

Operator certificates reviewed indicate that all operators working on the St Thomas Area Secondary Water Supply System have the required certification for this type of water system.

- **Only certified operators made adjustments to the treatment equipment.**

The Owner and Operating Authority indicated that at the Elgin Middlesex Pump Station, only certified operators make adjustments to the treatment equipment for secondary disinfection.

- **An adequately licenced operator was designated to act in place of the overall responsible operator when the overall responsible operator was unable to act.**

During absences, the ORO assigns a back-up ORO to oversee the drinking water system and this person has the appropriate certificate to act as ORO. The Owner indicated that there are 2 operators that have the certification to oversee the water distribution system.

Water Quality Monitoring

- **All microbiological water quality monitoring requirements for distribution samples were being met.**

Distribution system water samples are being taken from pre-determined sites and analyzed on a weekly basis. On average, there are 4 bacteriological samples taken each week. During the review of documents, it was identified that several bacteriological samples that were delivered to the laboratory were above the recommended temperature range of 4.0 to 10.0 degrees Celsius. It is recommended that the Owner and Operating Authority review its sample handling and shipping procedures for bacteriological samples.

- **All trihalomethanes water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Trihalomethane (THM) sampling is required to be undertaken on distribution water on a quarterly basis. The Owner is taking THM samples from 1 site in the distribution system (endpoint). All sample results for this inspection period show that the treated water is within acceptable limits.

- **Trihalomethane samples were being collected from a point in the distribution system or connected plumbing system that was likely to have an elevated potential for the formation of trihalomethanes.**

- **The owner ensured that water samples were taken at the prescribed location.**

Distribution and end point samples are being taken at the appropriate locations.

- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same**

Water Quality Monitoring

location that microbiological samples were obtained.

The Chain of Custody forms reviewed for the inspection period indicate that a chlorine residual test is performed with each bacteriological sample taken in the distribution system.

- **The drinking water system owner submitted written notices to the Director that identified the laboratories that were conducting tests for parameters required by legislation, Order, Drinking Water Works Permit or Municipal Drinking Water Licence.**

The Owner has contracted the services of SGS Environmental Limited to analyse drinking water samples.

- **The owner indicated that the required records are kept and will be kept for the required time period.**

The Owner indicated that records related to the operation of the drinking water system are kept for an extended period of time.

Water Quality Assessment

- **Records did not show that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).**

The Owner took bacteriological and chemical samples during the report period and all but one sample result met the Ontario Drinking Water Quality Standards. A bacteriological sample taken on July 30, 2015 had a result of total coliform = 1 CFU.

Reporting & Corrective Actions

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

A bacteriological sample taken on July 30, 2015 has a result of total coliform = 1 CFU. There were 2 samples taken that day and only one sample was adverse. Resampling was undertaken on 2 consecutive days by the Owner indicated that the drinking water was not adverse.

- **All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.**

The Owner provided verbal notifications to the proper authorities (SAC, MOH) the same day the Owner was notified by the laboratory of the adverse bacteriological sample result.

- **All required written notices of adverse water quality incidents were provided as per O. Reg. 170/03 16-7.**

The Owner provided written notifications to the proper authorities within 24 hours of being notified by the laboratory of the adverse bacteriological sample result.

- **In instances where written notice of issue resolution was required by regulation, the notice was provided as per O. Reg. 170/03 16-9.**

The Notice of Resolution was provided by the Owner shortly after resample results were received from the laboratory. The notice outlined the corrective actions taken by the Owner.

- **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.**

There are chlorine residual analyzers at the East Valve Chamber, West Valve Chamber, Ford Meter Chamber, Southwold Meter Chamber, and the Wellington Chamber. These chlorine analyzers are linked to a dialer system to notify operators when alarm set points are reached. The Owner and Operating Authority indicated that operators

Reporting & Corrective Actions

acknowledge alarms but the type of response will depend on the alarm situation.

- **The Annual Report containing the required information was prepared by February 28th of the following year.**

The Owner provided information indicating that the Annual Report was completed on February 16, 2016.

- **Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.**

The Summary Report (report) for the St Thomas Area Secondary Water Supply System does have the required content as specified in O. Reg. 170/03, Schedule 22. The report has a summary of the quantities of flows and flow rates. The report must list any requirements of the Act, regulations or approvals that were not met during the report period. The report is required to be given to municipal council by March 31st of each year. The Owner provided information that indicated the report was presented to council on March 24, 2016.

- **All changes to the system registration information were provided within ten (10) days of the change.**

All information in the DWIS profile for the water distribution system was updated on April 14, 2016.

- **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.**

The Owner indicated that council members have previously attended a workshop outlining requirements of the Licence and Permit. On an annual basis, the Annual Report and Summary Report are presented to council members.

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

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

Not Applicable

SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES

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

Not Applicable

SIGNATURES

Inspected By:

Roland Plante

Signature: (Provincial Officer)



Reviewed & Approved By:

Tom Clubb

Signature: (Supervisor)



Review & Approval Date:

June 29, 2016

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



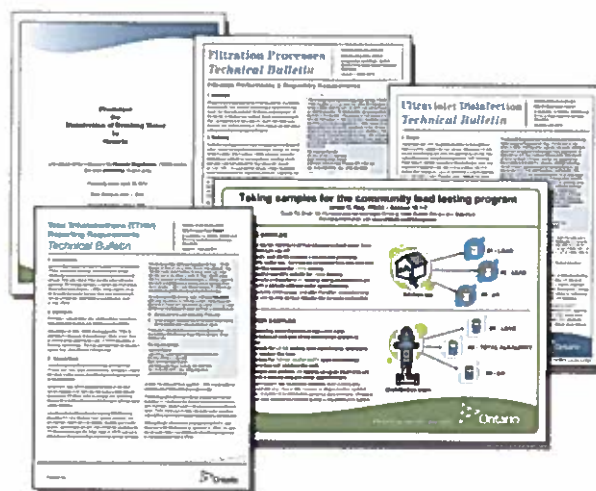
Key Reference and Guidance Material for Drinking Water Systems

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

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

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Public Information Centre if you need assistance or have questions at 1-800-565-4923/416-325-4000 or picemail.moe@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater and email drinking.water@ontario.ca to subscribe to drinking water news.



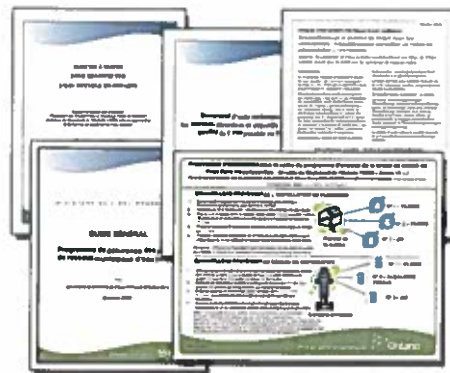
PUBLICATION TITLE	PUBLICATION NUMBER
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	7889e01
FORMS: Drinking Water System Profile Information, Laboratory Services Notification, Adverse Test Result Notification Form	7419e, 5387e, 4444e
Procedure for Disinfection of Drinking Water in Ontario	4448e01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	7152e
Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)	8215e
Filtration Processes Technical Bulletin	7467
Ultraviolet Disinfection Technical Bulletin	7685
Guide for Applying for Drinking Water Works Permit Amendments, Licence Amendments, Licence Renewals and New System Applications	7014e01
Certification Guide for Operators and Water Quality Analysts	
Guide to Drinking Water Operator Training Requirements	9802e
Taking Samples for the Community Lead Testing Program	6560e01
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	7423e
Guide: Requesting Regulatory Relief from Lead Sampling Requirements	6610
Drinking Water System Contact List	7128e
Technical Support Document for Ontario Drinking Water Quality Standards	4449e01

ontario.ca/drinkingwater

Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment.

Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le Centre d'information au public au 1 800 565-4923 ou au 416 325-4000, ou encore à picemail.moe@ontario.ca si vous avez des questions ou besoin d'aide.



Pour plus de renseignements sur l'eau potable en Ontario, consultez le site www.ontario.ca/eaupotable ou envoyez un courriel à drinking.water@ontario.ca pour suivre l'information sur l'eau potable.

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Prendre soin de votre eau potable – Un guide destiné aux membres des conseils municipaux	7889f01
Renseignements sur le profil du réseau d'eau potable, Avis de demande de services de laboratoire, Formulaire de communication de résultats d'analyse insatisfaisants et du règlement des problèmes	7419f, 5387f, 4444f
Marche à suivre pour désinfecter l'eau potable en Ontario	4448f01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids (en anglais seulement)	7152e
Total Trihalomethane (TTHM) Reporting Requirements: Technical Bulletin (février 2011) (en anglais seulement)	8215e
Filtration Processes Technical Bulletin (en anglais seulement)	7467
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	7685
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable, de modification du permis de réseau municipal d'eau potable, de renouvellement du permis de réseau municipal d'eau potable et de permis pour un nouveau réseau	7014f01
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802f
Prélèvement d'échantillons dans le cadre du programme d'analyse de la teneur en plomb de l'eau dans les collectivités	6560f01
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	7423f
Guide: Requesting Regulatory Relief from Lead Sampling Requirements (en anglais seulement)	6610
Liste des personnes-ressources du réseau d'eau potable	7128f
Document d'aide technique pour les normes, directives et objectifs associés à la qualité de l'eau potable en Ontario	4449f01

ontario.ca/eaupotable



Inspection Rating Record

APPLICATION OF THE RISK METHODOLOGY USED FOR MEASURING MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEM INSPECTION RESULTS



The Ministry of the Environment (MOE) has a rigorous and comprehensive inspection program for municipal residential drinking water systems (MRDWS). Its objective is to determine the compliance of MRDWS with requirements under the Safe Drinking Water Act and associated regulations. It is the responsibility of the municipal residential drinking water system owner to ensure their drinking water systems are in compliance with all applicable legal requirements.

This document describes the risk rating methodology, which has been applied to the findings of the Ministry's MRDWS inspection results since fiscal

year 2008-09. The primary goals of this assessment are to encourage ongoing improvement of these systems and to establish a way to measure this progress.

MOE reviews the risk rating methodology every three years.

The Ministry's Municipal Residential Drinking Water Inspection Protocol contains up to 14 inspection modules and consists of approximately 120 regulatory questions. Those protocol questions are also linked to definitive guidance that ministry inspectors use when conducting MRDWS inspections.

ontario.ca/drinkingwater

The questions address a wide range of regulatory issues, from administrative procedures to drinking water quality monitoring. The inspection protocol also contains a number of non-regulatory questions.

A team of drinking water specialists in the ministry assessed each of the inspection protocol regulatory questions to determine the risk (not complying with the regulation) to the delivery of safe drinking water. This assessment was based on established provincial risk assessment principles, with each question receiving a risk rating referred to as the Question Risk Rating. Based on the number of areas where a system is deemed to be non-compliant during the inspection, and the significance of these areas to administrative, environmental, and health consequences, a risk-based inspection rating is calculated by the ministry for each drinking water system.

It is important to be aware that an inspection rating less than 100 per cent does not mean the drinking water from the system is unsafe. It shows areas where a system's operation can improve. The ministry works with owners and operators of systems to make sure they know what they need to do to achieve full compliance.

The inspection rating reflects the inspection results of the specific drinking water system for the reporting year. Since the methodology is applied consistently over a period of years, it serves as a comparative measure both provincially and in relation to the individual system. Both the drinking water system and the public are able to track the performance over time, which encourages continuous improvement and allows systems to identify specific areas requiring attention.

The ministry's annual inspection program is an important aspect of our drinking water safety net. The ministry and its partners share a common commitment to excellence and we continue to work toward the goal of 100 per cent regulatory compliance.

Determining Potential to Compromise the Delivery of Safe Water

The risk management approach used for MRDWS is aligned with the Government of Ontario's Risk Management Framework. Risk management is a systematic approach to identifying potential hazards, understanding the likelihood and consequences of the hazards, and taking steps to reduce their risk if necessary and as appropriate.

The Risk Management Framework provides a formula to be used in the determination of risk:

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

(of the consequence)

Every regulatory question in the inspection protocol possesses a likelihood value (L) for an assigned consequence value (C) as described in **Table 1** and **Table 2**.

TABLE 1:	
Likelihood of Consequence Occurring	Likelihood Value
0% - 0.99% (Possible but Highly Unlikely)	L = 0
1 - 10% (Unlikely)	L = 1
11 - 49% (Possible)	L = 2
50 - 89% (Likely)	L = 3
90 - 100% (Almost Certain)	L = 4

TABLE 2:	
Consequence	Consequence Value
Medium Administrative Consequence	C = 1
Major Administrative Consequence	C = 2
Minor Environmental Consequence	C = 3
Minor Health Consequence	C = 4
Medium Environmental Consequence	C = 5
Major Environmental Consequence	C = 6
Medium Health Consequence	C = 7
Major Health Consequence	C = 8

The consequence values (0 through 8) are selected to align with other risk-based programs and projects currently under development or in use within the ministry as outlined in **Table 2**.

The Question Risk Rating for each regulatory inspection question is derived from an evaluation of every identified consequence and its corresponding likelihood of occurrence:

- All levels of consequence are evaluated for their potential to occur
- Greatest of all the combinations is selected.

The Question Risk Rating quantifies the risk of non-compliance of each question relative to the others. Questions with higher values are those with a potentially more significant impact on drinking water safety and a higher likelihood of occurrence. The highest possible value would be 32 (4x8) and the lowest would be 0 (0x1).

Table 3 presents a sample question showing the risk rating determination process.

TABLE 3:

Does the Operator in Charge ensure that the equipment and processes are monitored, inspected and evaluated?

Risk = Likelihood × Consequence

C=1	C=2	C=3	C=4	C=5	C=6	C=7	C=8
Medium Administrative Consequence	Major Administrative Consequence	Minor Environmental Consequence	Minor Health Consequence	Medium Environmental Consequence	Major Environmental Consequence	Medium Health Consequence	Major Health Consequence
L=4 (Almost Certain)	L=1 (Unlikely)	L=2 (Possible)	L=3 (Likely)	L=3 (Likely)	L=1 (Unlikely)	L=3 (Likely)	L=2 (Possible)
R=4	R=2	R=6	R=12	R=15	R=6	R=21	R=16

Application of the Methodology to Inspection Results

Based on the results of a MRDWS inspection, an overall inspection risk rating is calculated. During an inspection, inspectors answer the questions related to regulatory compliance and input their “yes”, “no” or “not applicable” responses into the Ministry’s Laboratory and Waterworks Inspection System (LWIS) database. A “no” response indicates non-compliance. The maximum number of regulatory questions asked by an inspector varies by: system (i.e., distribution, stand-alone); type of inspection (i.e., focused, detailed); and source type (i.e., groundwater, surface water).

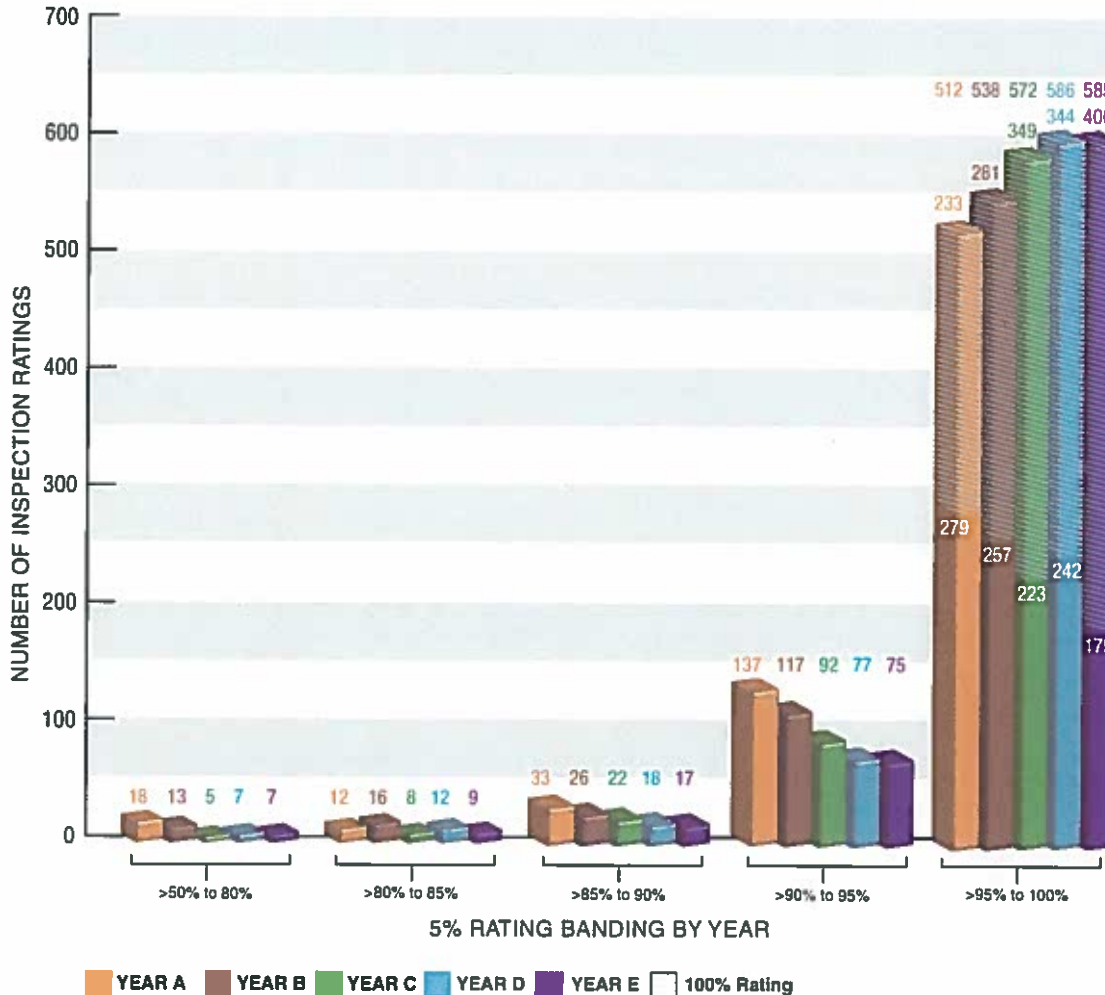
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

Application of the Methodology for Public Reporting

The individual MRDWS Total Inspection Ratings are published with the ministry's Chief Drinking Water Inspector's Annual Report.

Figure 1 presents the distribution of MRDWS ratings for a sample of annual inspections. Individual drinking water systems can compare against all the other inspected facilities over a period of inspection years.

Figure 1: Year Over Year Distribution of MRDWS Ratings



Reporting Results to MRDWS Owners/Operators

A summary of inspection findings for each system is generated in the form of an Inspection Rating Record (IRR). The findings are grouped into the 14 possible modules of the inspection protocol,

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

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

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

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2016-2017)

DWS Name: ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM
DWS Number: 260078897
DWS Owner: St. Thomas Area Secondary Water Supply System Joint Board Of Management
Municipal Location: St. Thomas

Regulation: O.REG 170/03

Category: Large Municipal Residential System

Type Of Inspection: Standalone

Inspection Date: May 19, 2016

Ministry Office: London District

Maximum Question Rating: 448

Inspection Module	Non-Compliance Rating
Capacity Assessment	0 / 22
Treatment Processes	0 / 47
Distribution System	0 / 4
Operations Manuals	0 / 42
Logbooks	0 / 26
Certification and Training	0 / 49
Water Quality Monitoring	0 / 67
Reporting & Corrective Actions	0 / 92
Treatment Process Monitoring	0 / 99
TOTAL	0 / 448

Inspection Risk Rating 0.00%

FINAL INSPECTION RATING: 100.00%

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2016-2017)

DWS Name: ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM
DWS Number: 260078897
DWS Owner: St. Thomas Area Secondary Water Supply System Joint Board Of Management
Municipal Location: St. Thomas

Regulation: O.REG 170/03
Category: Large Municipal Residential System
Type Of Inspection: Standalone
Inspection Date: May 19, 2016
Ministry Office: London District

Maximum Question Rating: 448

Inspection Risk Rating | 0.00%

FINAL INSPECTION RATING: | 100.00%