

A G E N D A

THE THIRD MEETING OF THE ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM BOARD OF MANAGEMENT

**MICROSOFT TEAMS AND
COMMITTEE ROOM #304**

4:00 P.M.

OCTOBER 17, 2024

DISCLOSURES OF INTEREST

MINUTES

Confirmation of the minutes of the meeting held on September 26, 2024.

NEW BUSINESS

St. Thomas Area Secondary Water Supply System - Drinking Water Quality Management
System - 2024 Management Review

Report SWB-06-24 of the Environmental Compliance Coordinator. **Pages 2-80**

Ford Water Tower

Report SWB-07-24 of the Manager of Development and Compliance. **Pages 81-82**

St. Thomas Area Secondary Water Supply System – 2025 Operating Budget, Capital Forecast,
and Water Rates

Report SWB-08-24 of the Environmental Compliance Coordinator. **Pages 83-86**

NEXT MEETING

ADJOURNMENT



Report No.
SWB 06-24

File No.

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

Meeting Date:
October 17, 2024

Department: Environmental Services

Prepared By: Karel Kamerman, B.Sc., C.Tech.
Environmental Compliance Coordinator

Attachment
2024 Management Review
Meeting Minutes for the
STDWS and STASWSS

Subject: STASWSS DWQMS 2024 Management Review

Recommendation:

THAT: Report SWB 06-24 relating to St. Thomas Area Secondary Water Supply System (STASWSS) Drinking Water Quality Management System (DWQMS) – 2024 Management Review, be received for information.

Background:

As the Operating Authority for the St. Thomas Water Distribution System (STWDS) and St. Thomas Area Secondary Water Supply System (STASWSS), the City of St. Thomas Environmental and Infrastructure Services is required to maintain accreditation to the Drinking Water Quality Management Standard (DWQMS). One requirement of the DWQM Standard is to conduct a meeting on an annual basis that evaluates the continuing suitability, adequacy, and effectiveness of the Quality Management System, which has been developed to meet the DWQM Standard. This annual meeting is labelled the Management Review Meeting and was conducted on September 5, 2024.

As part of the Management Review Meeting, information related to 16 mandatory topics of discussion were reviewed pertaining to the DWQMS and the City’s drinking water system operations and maintenance. The minutes of the meeting are provided as an attachment to this report. Please note that the minutes relate to both the STDWS and the STASWSS for efficiency in reporting. Discussion and decisions made as part of the Management Review have been recorded and compiled in the meeting minutes, which were recorded by the Environmental Compliance Coordinator.

The Management Review Meeting was held on September 5, 2024, and was attended by Kevin De Leebeeck (OA Owner Representative/Top Management), Shayne Reitsma (QMS Representative), Chris Andrew (Manager of Water and Sewer) and Karel Kamerman (Environmental Compliance Coordinator).

Action Items identified as part of the Management Review Meeting have been added to the Corrective and Preventative Action Tracking Spreadsheet. As per the DWQMS Continual Improvement Procedure, the Environmental Compliance Coordinator will follow up on the action items identified to ensure they are addressed within the associated timelines.

Financial Impact:

There is no financial impact to the Board related to this report.

Respectfully,

Karel Kamerman, B.Sc., C.Tech
Environmental Compliance Coordinator

Reviewed By:

City Engineer

Mgr. Develop. &
Compliance



DWQMS Management Review

St. Thomas Water Distribution System and St. Thomas Area Secondary Water Supply System

September 05, 2024

2:00 PM

St. Thomas City Hall – ES Upper Boardroom

MEETING MINUTES

Attendee(s)

Present: **Kevin De Leebeeck** – Director of Environmental & Infrastructure Services and City Engineer, City of St. Thomas
Shayne Reitsma – Manager of Development & Compliance, City of St. Thomas
Karel Kamerman – Environmental Compliance Coordinator
Chris Andrew – Manager of Water/Sewer

Agenda Items

a. Incidents Of Regulatory Non-Compliance

The St. Thomas Water Distribution System (STWDS) annual MECP inspection was held on December 13, 2023, for the period of December 1, 2022, to November 30, 2023. The Inspection Report and Inspection Risk Rating documentation, attached, was received in late January 2024. The STWDS received a score of 100.00%, noting zero (0) non-compliant matters.

STWDS Inspection Finding	Actions Taken:
N/A	N/A

For the St. Thomas Area Secondary Water Distribution System (STASWSS), the MECP inspection was held on December 19, 2024, for the period of December 1, 2022, to November 30, 2023. The Inspection Report and Inspection Risk Rating documentation, attached, was received in late January 2024. The STASWSS received a score of 100.00%, noting zero (0) non-compliant matters.

STASWSS Inspection Finding	Actions Taken:
N/A	N/A

b. Incidents Of Adverse Drinking-Water Tests

One (1) adverse drinking water event was reported for the STWDS. The adverse was related to a connection failure in a trench during the connection of a temporary water source in preparation for construction in the area. Reporting and corrective actions were taken in accordance with regulatory requirements.

STWDS AWQI	Actions Taken:
AWQI 162588: Reported July 14, 2023 On July 14, 2023 during overland water supply connection to apartment building MN 82 Parkside Drive the connection failed in the trench, which resulted in the potential for contaminated water to be directed to the users within MN 82 Parkside Drive.	- Dry trench conditions achieved - Connection to overland disinfected with >1% sodium hypochlorite and reconnected. - Boil Water Advisory issued for Building - Flushing completed in laundry room and apartments on each floor of the building. - Microbiological Samples taken from all three floors; all samples returned 0 EC / 0 TC.

One (1) adverse drinking water event was reported for the STASWSS over 2023. The adverse was related to a low chlorine residual witnessed in the system. Reporting and corrective actions were taken in accordance with regulatory requirements.

STASWSS AWQI	Actions Taken:
AWQI 164134: Reported November 29, 2023 On Nov. 11, 2023 a section of the STASWSS was drained, refilled and isolated in order to facilitate the replacement of the "Ford Chamber" located at the corner of Clinton Line and Wonderland Road. On Nov. 29, 2023, in preparation for commissioning of the new Ford Chamber, flushing was initiated. The initial FCR reading at start of flushing was 0.03 mg/L. The AWQI was reported out of an abundance of caution.	- Operator continued to flush until residuals increased to 0.77 mg/L FCR. - Microbiological Sample taken; returned 0 EC, 0 TC and <10 HPC - Checked residuals daily. Flushing as required. - New On-line FCR analyzer commissioned and tied to SCADA.

c. Deviations From Critical Control Point Limits And Response Actions

One (1) deviation from the critical control points (CCP) related to chlorination was recorded in 2023 on the STASWSS. As described in section b. above, the instance involved a low chlorine residual reading. Response was in accordance with regulatory requirements and internal procedures.

d. Effectiveness Of The Risk Assessment Process

The Hazard Assessment Team convened on March 7, 2024 and undertook a review of the Hazard Analysis table for each of the drinking water systems operated by the City of St. Thomas. Adjustment was made to increase Critical Control Point for Low FCR from 0.05 mg/L to 0.20 mg/L.

e. Internal And Third-Party Audit Results

Several audits of the DWQMS (reports attached as appendices) were conducted since last management review. All audit findings were placed in the corrective action tracking spreadsheet, discussed in a follow-up meeting, and corresponding actions were taken for each identified non-conformance, as described below. Opportunities for Improvement (OFI's) identified by auditors are also placed in the corrective action tracking spreadsheet and discussed in a follow-up meeting. Actions may or may not be taken in response to OFI's, based on the merit of the finding.

An external audit by SAI Global was carried out on June 26 and 27, 2023. Zero (0) non-conformances and zero (0) OFI's were identified.

Two (2) Internal Audits for 2023 were carried out on April 20, 2023 (reported in 2023 Management Review Meeting) and October 19, 2023. From the October 19 audit, there were three (3) non-conformance and two (2) OFI's identified. The non-conformances were:

- **NC#1 Essential Supplies and Services**

2023 Flow meter calibrations were conducted by a service provider not listed in the Essential Supplies and Services listing. Further, no DWQMS Sign-Off form (DWF-ADMIN-801) could be provided for the service provider.

- **ACTION(S) TAKEN:**
 1. Obtained DWQMS sign-off from service provider.
 2. Provided refresher training to staff with ability to book service provider on Essential supply and services procedure.
 3. Updated ES&S procedure (DW-ADMIN-800) with new calibration party.

- **NC#2 Measurement and Recording Equipment Calibration and Maintenance**

Flow meter calibration records provided identified equipment in the field as being different than that listed in the Equipment Listing (DWF-ADMIN-1100) (Promag 50 vs. Badger).

- **ACTION(S) PLANNED:**
 1. Research possibility of Lucity to send out notice of equipment changes.
 2. Alternatively, consider Management of Change procedure.

- **NC#3 Measurement and Recording Equipment Calibration and Maintenance**

8 Pocket Calorimeters are listed in the Equipment Listing (DWF-ADMIN-1100). Procedure DW-ADMIN-1100 requires that internal verification checks be conducted monthly. Records provided indicate 7 units verified in July and September, and only 3 in August.

- **ACTION(S) TAKEN:** Lucity was set up such that the 20th of the month is demarked as deadline to complete handheld verifications. If the WO is not closed by then it sends notices to Manager and Supervisor, providing 10ish days to have the work completed.

One (1) Internal Audit for 2024 has been completed, so far. The audit was completed on April 10/11, 2024, there were six (6) items of non-conformance and 9 opportunities for improvement identified. The non-conformances were:

- **NC#1: Document and Records Control**

Several records provided over the course of the audit were not the most recent version (ie. Training Tracker, Calibration Records).

- **ACTION(S) PLANNED:** Provide record naming recommendations/convention to help aid in records management to record holders. Include in Records Control Procedure.

- **NC#2 Document and Records Control**

Several records could not be found in the locations identified in the Records Control Procedure (DW-ADMIN-200).

- **ACTION(S) TAKEN:** Procedure DW-ADMIN-200 Record Control updated to reflect current filing locations

- **NC#3 Risk Assessment Outcomes**

Deviations from Critical Control Points are not being captured on Corrective Action Forms as described in the CCP procedures.

- **ACTION(S) TAKEN:** CCP procedures updated to reflect how deviations are to be recorded/tracked for each CCP to aid reporting during Management Review process. Deviation record keeping mechanisms updated and reflected in CCP and ERP procedures, as necessary.

- **NC#4 Competencies**

Training records could not be provided for operator-to-operator training events as listed in the Training Tracking Spreadsheet as described within the Competency and Training Procedure (DW-ADMIN-500).

- **ACTION(S) PLANNED:** Review MECP document on On the job training, review recordkeeping in Lucity and if compliant, describe the process in the procedure effectively. Provide training to staff and management to record on-the-job training events on the forms.

- **NC#5 Competencies**

No completed Competency Form (DWF-ADMIN-500) could be produced for the most recent hire, as required by the Competency and Training Procedure (DW-ADMIN-500).

- **ACTION(S) TAKEN:** Completed Competency interview for JS (most recent hire at the time of audit) and complete a competency form.
- **ACTIONS PLANNED:** Review records of Competency Form completion and complete interviews for any Operator that does not have one on file.

- **NC#6 Competencies**

Training records do not demonstrate conformance with the training needs as listed in the Training Matrix (DWF-ADMIN-502 Rev. 2.9).

- **ACTION(S) PLANNED:** Expand new Training Plan to include items listed in the Training matrix. Review listing of training needs and update as deemed necessary and prudent. Review DWQMS and ensure new plan reflects all roles necessary. Implement new plan.

In 2024, the City procured a new accrediting body in order to renew our accreditation to the DWQMS. NSF Canada is the City's new accreditation body. NSF identified that due to separate ownership of the systems operated by City of St. Thomas, separate accreditations are required for each system, and therefore separate audits are to be completed for each system.

Re-accreditation audits are completed in 2 parts, a desktop documentation audit, followed by an on-site verification audit. The documentation audits were completed on the STASWSS and STWDS DWQMS operational plans on July 11, 2024 and resulted in zero (0) non-conformances and zero (0) opportunities for improvement for each system. The on-site verification audits were conducted on July 15-17, 2024 and resulted in three (3) Minor Non-conformances and four (4) Opportunities for Improvement for the STASWSS, and the identification of the same three (3) Minor Non-conformances and five (5) Opportunities for Improvement for the STWDS. The non-conformances were successfully closed with NSF, and the City of St. Thomas Env. Services Water and Sewer Services has been granted accreditation to the DWQMS for all 4 drinking water systems operated for the next three year period. A summary of the non-conformances and the action(s) taken is below:

- **MNC#1 Measurement and Recording Equipment Calibration and Maintenance**

Processes to calibrate measurement and recording equipment are not fully effective. BIDS Technical Services Chlorine Analyzer Calibration report - March 28, 2024 - Calibration standards used expired February 2024.

- **ACTION(S) TAKEN:** Up to date verification standards were obtained in March 2024. Analyzers in question were verified by a third party with calibration standards that were valid in June 2024, which were viewed during the audit. Implemented a review process for calibration reports upon receipt to verify information recorded is accurate, adequate, and complete prior to filing. The calibration procedure (DW-ADMIN-1100) has been updated to reflect this new review process. An annual recurring work order has been programmed into the Maintenance Management System to trigger replacement of the standards on an annual basis, regardless of the date of expiration.

- **MNC#2 Measurement and Recording Equipment Calibration and Maintenance**

Management interviews revealed that expected practice is to routinely adjust online analyzers when reading variance with handheld Colorimeter exceeds 0.05 mg / l (≤ 1.0 mg / l concentration) and proportionately higher >1.0 mg / l concentration.

Audit interviews and records revealed that operator practice is to adjust online analyzers when reading variance with handheld Colorimeter exceeds 0.1 mg / l

E.g. Albert Roberts Booster Station – June 26, 2024 (readings 1.27 / 1.17 – variance 0.1 – no adjustment made); June 27, 2024 (readings 0.87 / 0.97 – variance 0.1 – no adjustment made) ~Ford Chamber – July 16, 2024 (readings 0.90 / 0.83 – variance 0.07 – no adjustment made).

- **ACTION(S) TAKEN:** Staff have been trained to adjust in-line analyzers where the variance exceeds 0.05 mg/L.

The Equipment Calibration Procedure (DW-ADMIN-1100) has been updated to reflect the need to adjust analyzers that have drifted out of calibration by 0.05 mg/L. The DWQMS "A Re-Orientation" training slideshow that is utilized as a template for the next scheduled DWQMS refresher and orientation training has been revised to include the 0.05 mg/L as a trigger for adjustment.

- **MNC#3 Communications**

Essential Supplier communication processes are not fully effective. There is no evidence available to demonstrate required DWQMS communications with the following approved essential suppliers:

- Elgin Pure Water - Anchem

- **ACTION(S) TAKEN:** Obtain sign-off forms from Elgin Pure Water and Anchem Sales. Elgin Pure Water provided sign-off on August 5, 2024, Anchem Sales refused to sign due to low volume purchased. We removed Anchem as listed supplier from DW-ADMIN-800, sourced new alternate supplier (R&S Pools and Spas) which have been added to the Essential Suppliers listing and are currently awaiting the return of the sign-off form.

Provided training to the Inventory Control Clerk and Operations Clerk on the Essential Supplies and Services Procedure and listing. Directing them to order essentials only from the providers listed first, sourcing from others only if necessary and to provide some description why an item had to be sourced from outside of the listing via email to Supervisor if and when that is necessary, who will communicate to the Env. Coordinator when the listing needs to change. Training was provided on July 31, 2024.

f. Results Of Emergency Response Testing

Emergency Response Testing was completed through the debrief of 2 real emergency situations encountered during the 2023 year. Summaries are provided below of the resulting actions taken in response of the debrief exercise to better responses in the future.

SYSTEM - Event	Action Items Identified (Status)
STWDS – Temporary overland connection failure	• Consider setting some parameters around a smaller and larger scale boil water advisory response and update ERP procedure DW-ERP-350 Boil Water Advisories to provide a planned response to both events. (Due to the large variations in possible circumstances resulting in a Boil Water Advisory, response will be made in consultation with MECF and PHU in all cases.) • Provide a word copy of City Template Boil Water Advisory on intranet files. (COMPLETE)
STASWSS – Flowmeter Bypass	• Create a communication procedure within the DWQMS that outlines the responsibility of the

	Operating Authority to notify the respective OROs of all members of the STASWSS at any time when work is being completed either by the St. Thomas, or if they are made aware of work being done to valving at the EMPS by others that has potential to affect the neighboring systems. (COMPLETE)
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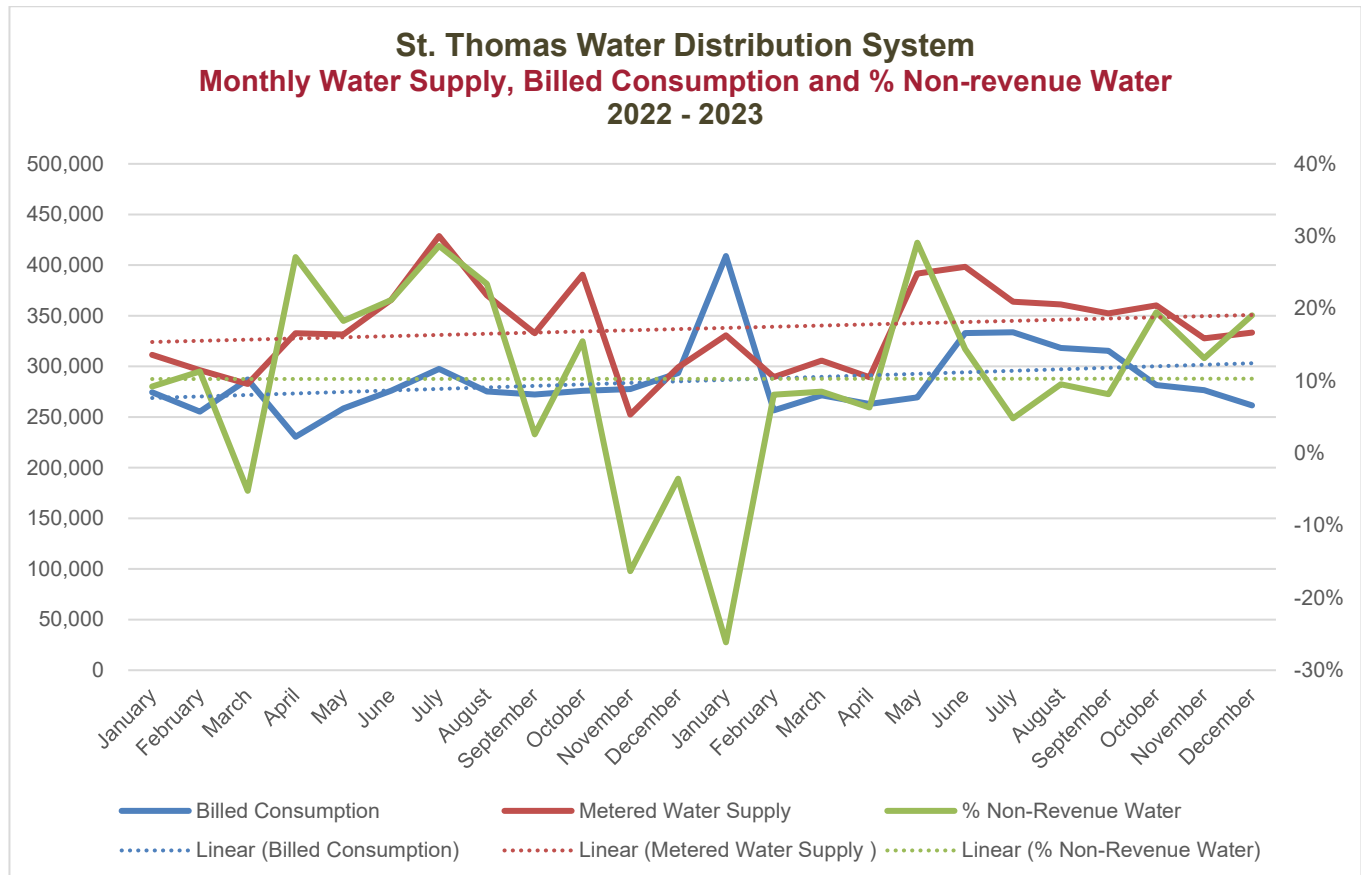
g. Operational Performance

- 2023 Summary and Annual Reports for St. Thomas WDS and St. Thomas Area Secondary WSS were reviewed.

- Supply and Demand Flow Trends – STWDS

Over the 2023 year, the St. Thomas DWS obtained 68%, or 2,791,290 m³ of its water supply needs through the Albert Roberts Booster Station. The additional 1,312,788 m³ was supplied to the system through the St. Thomas Secondary Area Water Supply System. Monthly billed consumption, water supply and non-revenue water trends are presented in the graph below.

Total Water Supply increased in 2023 from 3,994,210 m³ to 4,104,078 m³ a 2.75% increase and Total Billed Consumption increased in 2023 from 3,273,891 m³ to 3,589,158 m³, a 9.6% increase. The large variation in non-revenue water observed during last year's management review (the result of lengthy use of estimated readings) is improving. System water loss, however, continues to be best analyzed on a year-to-year basis. In 2023, an estimated 104,772 m³ of water was authorized unbilled usage, and unauthorized unbilled usage and system water losses were estimated to be 410,148 m³, resulting in a system water loss percentage of 9.99%.



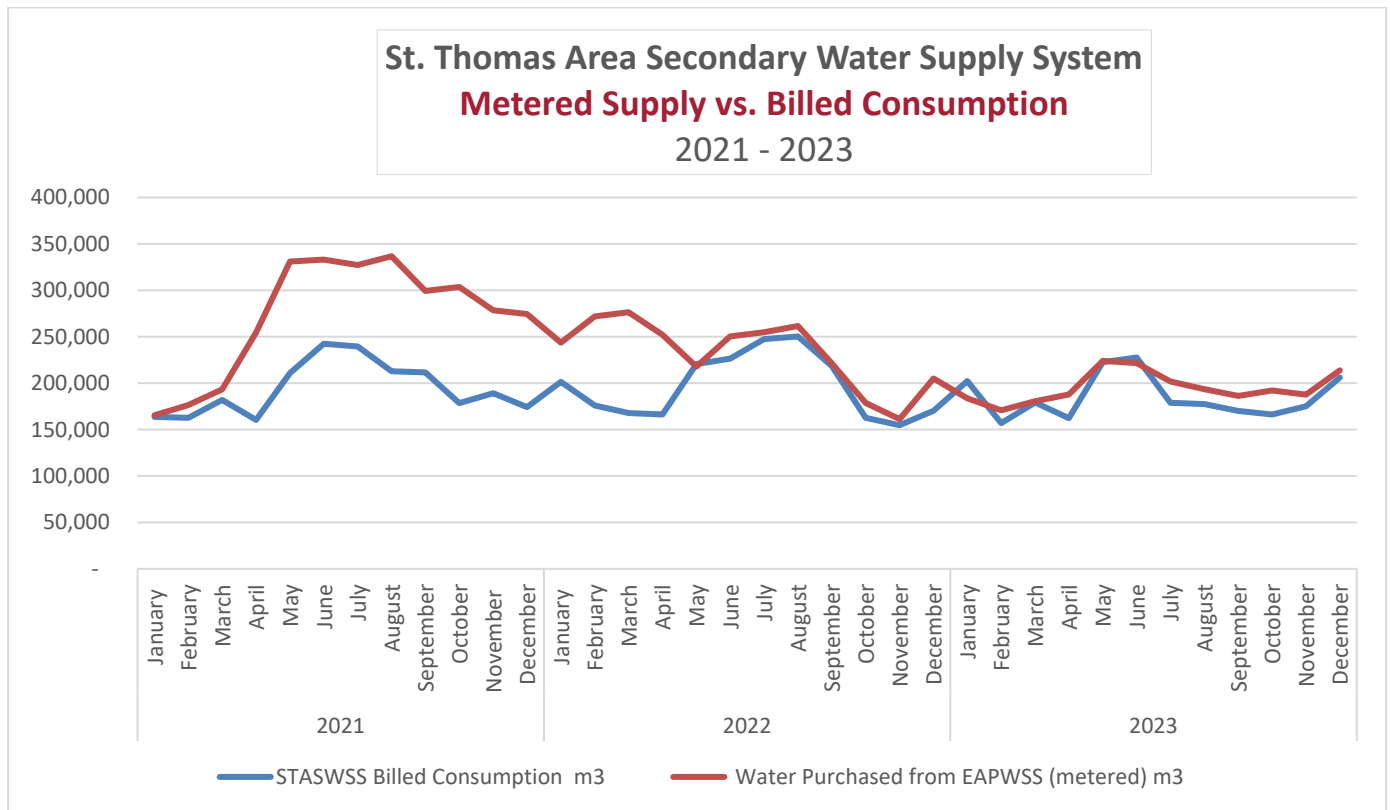
- Supply and Demand Flow Trends – STASWSS

Over the 2023 year, the STASWSS purchased a total of 2,343,328 m³ of water from the EAPWSS

The STASWSS delivered a total of 2,224,471 m³ to its customers, down from 2,362,316 m³ in 2022, a decrease of 5.8%. The flows delivered to each municipal partner in 2022 and 2023 are as shown in the table below. Unauthorized unbilled usage and system water losses of 118,857 m³ was witnessed, equating to a system water loss percentage of 5.1%.

Benefitting Municipality	2022 Billed Consumption from STASWSS (m ³)	2023 Billed Consumption from STASWSS (m ³)	% Change
City of St. Thomas	1,411,445	1,312,788	(6.99%)
Township of Southwold	890,371	854,454	(4.03%)
Municipality of Central Elgin	60,500	57,229	(5.41%)

The graph below demonstrates the STASWSS Metered Supply and Billed Consumption data for 2021 – 2023.



- Maintenance Tasks

The following table provides a summary of Maintenance tasks completed on the St. Thomas DWS in 2023.

St. Thomas DWS		
Task	Maintenance Standard	2023 Completion
Valve Turning	Ongoing	60%
Hydrant Checks	Annual Maintenance Frost Checks as required	100%
Hydrant Painting	As required	None

Fire Flow Testing	On Demand	30%
Directional Flushing	Annually	100% September

The table on the following page provides a summary of maintenance tasks completed on the STASWSS in 2023

St. Thomas Secondary WSS		
Task	Maintenance Standard	2023 Completion
Valve Checks	Ongoing	100%
Hydrant Checks	Annual Maintenance Frost Checks as required	100% 2 complete rounds
Hydrant Painting	As required	None
Fire Flow Testing	On Demand	None
Tower Inspection	Every 5 years	2023
Directional Flushing	Annually	100% September

h. Raw Water Supply and Drinking Water Quality Trends

Raw Water Supply

Raw water is supplied through the Elgin Area Primary Water Supply System. In 2023, a number of taste and odour complaints reporting a “metallic taste” were received from multiple locations throughout the city in early November. Reportedly, complaints were received from within MCE and Southwold at that time, as well, indicating that that issue was upstream to the EMPS. Following discussions, the EAPWSS re-initiated seasonal powder activated carbon addition into the treatment process, following which, no further complaints were received. No such complaints have been received in the past. In Fall 2021 we witnessed a colour and odour event related to lake turnover events, in 2022 pre-emptive communications were issued around lake turnover time, however, water quality was maintained at an aesthetically acceptable level, and no complaints were received. Lake turnover events that affect drinking water quality in the fall are happening on a more frequent basis.

Water Quality Test Results

Reviewed STWDS and STASWSS Annual and Summary Reports.

i. Follow-Up Action Items From Previous Management Reviews

All action items identified in previous management reviews have been addressed. Five (5) action items were identified in the most recent management review.

Item #	Action	Deadline	Responsible Party	Status
1.	Report St. Thomas Management Review Meeting Minutes to Owner.	10-31-2023	SR / KK	Completed
2.	Report STASWSS Management Review Meeting Minutes to Owner.	10-31-2023	SR / KK	Completed
3.	Research transition to Advanced Metering Infrastructure.	12-31-2023	CA / KDL	Research completed, meter pilot project currently underway.(June 6, 2024) Planned for 2026/city-wide
4.	Improved access and training on retrieval of info. for water records for ECC.	12-31-2023	CA / KK	Completed - Access to ERIS provided, additional training on Lucity
5.	Explore putting technology in place for operations level staff	12-31-2023	KDL / CA	Explored - Some tablets are in 2024 budget. date

	to have an efficient and effective record of knowledge transfers.			extended from Dec. 2023 to Dec. 2024 (June 6, 2024)
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j. The Status Of Management Action Items Identified Between Reviews

No Management action items were identified between the reviews.

Throughout the year, there are many discussions between the St. Thomas and Secondary System members with regards to the water distribution systems and their performance. Although there might not be any specific action items noted here, many discussions take place to help improve the system.

k. Changes That Could Affect The DWQMS, QMS Elements, Or Legislative Changes

STASWSS

- Connection to the SEBS / alternate feed procedures, etc.
- Realignment of secondary to facilitate highway 3 bypass.

STWDS

- Addition of the SEBS (Pressure Zone 3) – sampling program adjustments, etc.
-

l. Consumer Feedback (Including Any Concerns, Complaints, Or Expectations From Customers)

Over the 2023 calendar year, staff have responded to a number of service requests with regards to water quality and pressure issues. A summary of these service requests can be seen below:

Category of Complaint	St. Thomas
Water Quality (Chlorine-2, Nov Plastic Taste Event-7, Taste – 1, General – 5)	15
Water Pressure - low	5
Water Consumption – estimations and/or catastrophic water loss	8
Hydrants – leaks, hidden or flushing inquiries	11
Leaks	18

m. The Resources Needed to Maintain the Quality Management System

There are adequate resources available to St. Thomas staff to maintain the DWQMS.

n. The results of the infrastructure review

Infrastructure review is an ongoing process.

2025 Proposed projects are listed below. Meetings are held with Central Elgin and Southwold to allow for coordination of projects between the City, STASWSS, Central Elgin and Southwold in order to increase awareness of planned works within the vicinity.

STASWSS - Capital / Development Projects

- Ford Tower Removal Considerations
- Hwy 3 Bypass STASWSS re-routing/upsizing

St. Thomas - Capital / Development Projects

- Fairview Reconstruction – Elm to Talbot
- Centre Street Reconstruction – Stanley to Elgin
- Smith Avenue Reconstruction – Wellington to Forest
- Forest Avenue Reconstruction - Ross to Fifth
- Chestnut Street – Third to First
- First Avenue – Wellington to Steele

o. Operational Plan Currency, Content, And Updates

The St. Thomas and STASWSS Operational plans were updated effective June 1, 2024.

Significant changes made to the DWQMS since last management review include:

1. Introduction of Communication of System Maintenance, Repair or Renewal Projects (DW-SOP-110)
2. Rework and improvement of Coloured Water and Taste and Odour Complaint procedures with release of DW-SOP-510.

A few procedures underwent revision in response to audit findings in August 2024. Updates will be required in response to the system changes discussed in section k.

p. Staff Suggestions

No staff suggestions were made at this time about the DWQMS or the water distribution system.

Identified Action Items

Item #	Action	Deadline	Responsible Party
1.	Report St. Thomas Management Review Meeting Minutes to Owner.	10-31-2024	SR / KK
2.	Report STASWSS Management Review Meeting Minutes to Owner.	10-31-2024	SR / KK
3.	Confirm the process for BWA response with PHU RE; small building vs. area wide. Adjust procedure.	10-31-2024	KK
4.			
5.			

Next Meeting Date: Spring 2025 (TBD)

These minutes were completed by Karel Kamerman and reviewed by Shayne Reitsma, P.Eng.. Any

changes or discrepancies should be forwarded to kkamerman@stthomas.ca.

**Ministry of the Environment,
Conservation and Parks**Drinking Water and Environmental
Compliance DivisionSouthwest Region
733 Exeter Road
London, ON N6E 1L3
Phone: 519-873-5000**Ministère de l'Environnement, de la
Protection de la nature et des Parcs**Division de la conformité en matière d'eau
potable et d'environnement*Région Sud-Ouest*
733 rue Exeter
London, ON N6E 1L3
Tél: 519-873-5000

January 25, 2024

The Corporation of the City of St Thomas
545 Talbot Street
St Thomas, ON N5P 3V7Attention: Kevin De Leebeeck, Director of Environmental Services/City Engineer
Re: St Thomas Area Secondary Water Supply System Final Inspection Report (#260078897)

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. **Please note that due to a change in IT systems, the Inspection Rating Report (IRR) cannot be generated at the same time as the inspection report. The IRR will be sent separately and prior to any public release (typically within 1-2 month of the completion of the inspection).** If you have any questions regarding the report, please feel free to call me at (226) 926-1785.

Sincerely,

*M. Morgan*Meghan Morgan
Provincial Officer, Water Inspector
London District Office
Meghan.Morgan@ontario.cacc. Southwestern Public Health Unit
Kettle Creek Conservation Authority



ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM
490 SOUTH EDGEWARE, ST. THOMAS, ON,
INSPECTION REPORT

Entity: CORPORATION OF THE CITY OF
ST THOMAS
ST. THOMAS AREA SECONDARY
WATER SUPPLY SYSTEM JOINT
BOARD OF MANAGEMENT

Inspection Start Date: November 23, 2023

Inspection End Date: January 18, 2024

Inspected By: Meghan Morgan

Badge #: 1315



(signature)

NON-COMPLIANCE

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

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

RECOMMENDATIONS

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

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

INSPECTION DETAILS

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

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

Question ID	DWMR1001000	Question Type	Information
Legislative Requirement(s): Not Applicable			
Question: What was the scope of this inspection?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices. This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O. Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA. This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements. A site visit was performed on December 13, 2023 by Water Inspector Meghan Morgan. Several documents were reviewed as part of the inspection, these documents include but are not limited to: 1. Operations and Procedures Manual most recently updated September 2019. 2. Drinking Water Works Permit #190-201 – Issue #3 dated September 30, 2021. 3. Municipal Drinking Water Licence #190-101 – Issue #5 dated September 30, 2021. 4. Certificates of analysis and operational documents maintained by the owner/operator for the inspection period. It should be noted that this inspection covers the period from December 1, 2022 to November 30, 2023.			

Question ID	DWMR1000000	Question Type	Information
Legislative Requirement(s): Not Applicable			
Question: Does this drinking water system provide primary disinfection?			

Compliance Response(s)/Corrective Action(s)/Observation(s):

This drinking water system provides for only secondary disinfection and distribution of water. Primary disinfection is undertaken by another regulated drinking water system which provides treated water to this drinking water system.

The St. Thomas 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 accredited Operating Authorities, the City of St. Thomas Environmental Services, Operations Division, Water Section, and the Ontario Clean Water Agency (OCWA). The City of St. Thomas is responsible for the operations and maintenance of the secondary water supply system and OCWA is responsible for the operations and maintenance for the St. Thomas Booster Station which is located in the Elgin-Middlesex Pumping Station (EMPS) Building.

Source water for this system is drawn from Lake Erie. Primary treatment of water received by the STASWSS is provided by the Elgin Area Primary Water Supply System via the Elgin-Middlesex Pumping Station (EMPS).

The STASWSS supplies water to the following surrounding water distribution systems: City of St. Thomas Distribution System; Central Elgin Distribution System and Southwold Distribution System.

Question ID	DWMR1018000	Question Type	Legislative
Legislative Requirement(s):			
SDWA 31 (1);			
Question:			
Has the owner ensured that all equipment is installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit?			
Compliance Response(s)/Corrective Action(s)/Observation(s):			
The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.			

Question ID	DWMR1021000	Question Type	Legislative
Legislative Requirement(s):			
SDWA 31 (1);			
Question:			
Is the owner/operating authority able to demonstrate that, when required during the inspection period, Form 2 documents were prepared in accordance with their Drinking Water Works Permit?			
Compliance Response(s)/Corrective Action(s)/Observation(s):			

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

The owner completed four (4) "Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System" documents for the following modifications/replacements: replacement of the backup chlorine booster pump at the EMPS; replacement of two surge anticipation valves at the EMPS; and replacement of control building and water meter chamber including flow meter, pressure sensor, chlorine analyzer and other appurtenances.

Question ID	DWMR1114000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Does the owner have evidence that, when required, all legal owners associated with the DWS were notified of the requirements of the Licence & Permit?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner had evidence that required notifications to all legal owners associated with the Drinking Water System had been made during the inspection period. The owner/operating authority has procedures in place that require DWQMS sign-off from new developments, this includes a sign-off that the developers have reviewed the MDWL and DWWP.			

Question ID	DWMR1025000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Were all parts of the drinking water system that came in contact with drinking water (added, modified, replaced or extended) disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All parts of the drinking water system were disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit with the following exception: The disinfection documentation showed that chemicals used for disinfecting new watermain met the safety criteria standards of NSF 61 (Drinking Water System Components). The owner is reminded of the requirement in the Ontario Watermain Disinfection Procedure, "Chemicals used for disinfection shall meet the requirements of both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/ANSI/CAN 60." NSF 60 is safety criteria standards for Drinking Water Treatment Chemicals.			

Question ID	DWMR1024000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 1-2 (2);			
Question: Do records confirm that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated as required?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined. Re-chlorination occurs at the St. Thomas Booster Station which is located within the Elgin-Middlesex Pumping Station to ensure an acceptable level of chlorine throughout the distribution system.			

Question ID	DWMR1033000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 7-2 (3); SDWA O. Reg. 170/03 7-2 (4);			
Question: Is the secondary disinfectant residual measured as required for the large municipal residential distribution system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The secondary disinfectant residual was measured as required for the large municipal residential distribution system. Ontario Regulation 170/03, Schedule 7-2 (3) requires the owner/operating authority of a large municipal residential system that provides secondary disinfection to ensure that at least seven distribution samples are taken each week and tested immediately for free chlorine residual. At least four of the samples must be taken on one day of the week, and at least three samples must be taken on a second day of the week, at least 48 hours after the samples taken on the first day. Grab samples are collected during different days of the week and tested for free chlorine from different locations within the distribution system. The system also uses process chlorine analyzers located at the East Chamber, West Chamber, Southwold Meter Chamber and the Ford Meter Chamber to continuously monitor the free chlorine residual within the distribution system. These continuous chlorine analyzers have alarm set points to ensure the free chlorine residual is maintained above 0.05mg/L. Records were reviewed of the grab samples taken in the distribution system by operators who collect manual samples and all results were greater than 0.05mg/L.			

Question ID	DWMR1099000	Question Type	Information
Legislative Requirement(s):			

Not Applicable

Question:

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

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Question ID	DWMR1081000	Question Type	Legislative
Legislative Requirement(s):			
SDWA O. Reg. 170/03 10-2 (1); SDWA O. Reg. 170/03 10-2 (2); SDWA O. Reg. 170/03 10-2 (3);			
Question:			
For LMR systems, are all microbiological water quality monitoring requirements for distribution samples being met?			
Compliance Response(s)/Corrective Action(s)/Observation(s):			
All microbiological water quality monitoring requirements prescribed by legislation for distribution samples in a large municipal residential system were being met.			
Ontario Regulation 170/03 - Schedule 10-2 stipulates that distribution water samples are required to be collected for testing every week within the frequency prescribed by the Regulation. Based on the service population the Owner/Operating Authority is required to take a minimum of 8 distribution samples every month. Every distribution system sample must be analyzed for: E.coli; total coliforms; and 25% of the required samples must be tested for general bacteria population expressed as colony counts on a heterotrophic plate count. A review of the records for the inspection period indicate the number of microbiological samples collected ranged from 12-15 per month.			

Question ID	DWMR1096000	Question Type	Legislative
Legislative Requirement(s):			
SDWA O. Reg. 170/03 6-3 (1);			
Question:			
Do records confirm that chlorine residual tests are being conducted at the same time and at the same location that microbiological samples are obtained?			
Compliance Response(s)/Corrective Action(s)/Observation(s):			
Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.			

Question ID	DWMR1086000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 13-6.1 (1); SDWA O. Reg. 170/03 13-6.1 (2); SDWA O. Reg. 170/03 13-6.1 (3); SDWA O. Reg. 170/03 13-6.1 (4); SDWA O. Reg. 170/03 13-6.1 (5); SDWA O. Reg. 170/03 13-6.1 (6);			
Question: Are all haloacetic acid water quality monitoring requirements prescribed by legislation conducted within the required frequency and at the required location?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All haloacetic acid water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location. Haloacetic Acid samples are required to be collected and tested each calendar quarter from the distribution system in accordance with Schedule 13-6.1 of O.Reg. 170/03 with the frequency stipulated in Schedule 6-1.1(4), and shall be taken from a point in the drinking water system's distribution system that is likely to have an elevated potential for the formation of haloacetic acids. A review of sample records for the inspection period indicated that this requirement has been met and all sample results were below the standard.			

Question ID	DWMR1087000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 13-6 (1); SDWA O. Reg. 170/03 13-6 (2); SDWA O. Reg. 170/03 13-6 (3); SDWA O. Reg. 170/03 13-6 (4); SDWA O. Reg. 170/03 13-6 (5); SDWA O. Reg. 170/03 13-6 (6);			
Question: Have all trihalomethane water quality monitoring requirements prescribed by legislation been conducted within the required frequency and at the required location?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location. Trihalomethane samples are required to be collected and tested each calendar quarter from the distribution system in accordance with Schedule 13-6 of O.Reg. 170/03 with the frequency stipulated in Schedule 6-1.1(4), and shall be taken from a point in the drinking water system's distribution system that is likely to have an elevated potential for the formation of trihalomethanes. A review of sample records for the inspection period indicated that this requirement has been met and all sample results were below the standard.			

Question ID	DWMR1101000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 17-1; SDWA O. Reg. 170/03 17-10 (1); SDWA O. Reg. 170/03 17-11; SDWA O. Reg. 170/03 17-12; SDWA O. Reg. 170/03 17-13; SDWA O. Reg.			

170/03 | 17-14; SDWA | O. Reg. 170/03 | 17-2; SDWA | O. Reg. 170/03 | 17-3; SDWA | O. Reg. 170/03 | 17-4; SDWA | O. Reg. 170/03 | 17-5; SDWA | O. Reg. 170/03 | 17-6; SDWA | O. Reg. 170/03 | 17-9;

Question:

For LMR Systems, have corrective actions (as per Schedule 17 of O. Reg. 170/03) been taken to address adverse conditions, including any other steps as directed by the Medical Officer of Health?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Question ID	DWMR1104000	Question Type	Legislative
Legislative Requirement(s):			
SDWA O. Reg. 170/03 16-6 (1); SDWA O. Reg. 170/03 16-6 (2); SDWA O. Reg. 170/03 16-6 (3); SDWA O. Reg. 170/03 16-6 (3.1); SDWA O. Reg. 170/03 16-6 (3.2); SDWA O. Reg. 170/03 16-6 (4); SDWA O. Reg. 170/03 16-6 (5); SDWA O. Reg. 170/03 16-6 (6);			
Question:			
Were all required verbal notifications of adverse water quality incidents immediately provided as per O. Reg. 170/03 16-6?			
Compliance Response(s)/Corrective Action(s)/Observation(s):			
All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.			

Question ID	DWMR1113000	Question Type	Legislative
Legislative Requirement(s):			
SDWA O. Reg. 170/03 10.1 (3);			
Question:			
Have all changes to the system registration information been provided to the Ministry within ten (10) days of the change?			
Compliance Response(s)/Corrective Action(s)/Observation(s):			
All changes to the system registration information were provided within ten (10) days of the change.			

Question ID	DWMR1059000	Question Type	Legislative
Legislative Requirement(s):			
SDWA O. Reg. 128/04 28;			
Question:			

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

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Question ID	DWMR1060000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Do the operations and maintenance manuals meet the requirements of the DWWP and MDWL issued under Part V of the SDWA?			
Compliance Response(s)/Corrective Action(s)/Observation(s): 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. Municipal Drinking Water Licence #190-101 – Issue #5, Section 16 of Schedule B outline the minimum requirements for the Operation and Maintenance Manuals. A review of each of the Operation and Maintenance Manuals that submitted by both Operating Authorities indicate that the manuals contain the aforementioned requirements as stated in the MDWL including but not limited to; contingency plans, procedures to deal with emergencies and procedures for dealing with complaints associated with the drinking water system.			

Question ID	DWMR1061000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 27 (1); SDWA O. Reg. 128/04 27 (2); SDWA O. Reg. 128/04 27 (3); SDWA O. Reg. 128/04 27 (4); SDWA O. Reg. 128/04 27 (5); SDWA O. Reg. 128/04 27 (6); SDWA O. Reg. 128/04 27 (7);			
Question: Are logbooks properly maintained and contain the required information?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Logbooks were properly maintained and contained the required information.			

Question ID	DWMR1062000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 7-5;			
Question: Do records or other record keeping mechanisms confirm that operational testing not performed by continuous monitoring equipment is being done by a certified operator, water quality analyst,			

or person who meets the requirements of O. Reg. 170/03 7-5?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Question ID	DWMR1071000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Has the owner provided security measures to protect components of the drinking water system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner had provided security measures to protect components of the drinking water system. The Elgin Middlesex Pumping Station is equipped with door alarms and motion detectors which are transmitted through SCADA to the Elgin Area Primary Water Supply which is monitored 24 hours a day by the Ontario Clean Water Agency (OCWA). The Elgin Middlesex Pumping Station is also enclosed with security fencing and visited regularly by operators from OCWA. The East Chamber is located on the property of the Elgin Middlesex Pumping Station and therefore also enclosed by security fencing. The West Chamber, Southwold Meter Chamber and the Ford Meter Chamber are all kept locked and are equipped with intrusion alarms.			

Question ID	DWMR1073000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 23 (1);			
Question: Has the overall responsible operator been designated for all subsystems which comprise the drinking water system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The overall responsible operator had been designated for each subsystem.			

Question ID	DWMR1074000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 25 (1);			
Question: Have operators-in-charge been designated for all subsystems which comprise the drinking water system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Operators-in-charge had been designated for all subsystems which comprise the drinking water			

system.

Question ID	DWMR1075000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 22;			
Question: Do all operators possess the required certification?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All operators possessed the required certification.			

Question ID	DWMR1076000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 1-2 (2);			
Question: Do only certified operators make adjustments to the treatment equipment?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Only certified operators made adjustments to the treatment equipment.			

Question ID	DWMR1117000	Question Type	Information
Legislative Requirement(s): Not Applicable			
Question: Are there any other DWS related items that should be recognized in this report?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The following items are noted as being relevant to the Drinking Water System: At the time of the site inspection the Ford Water Tower was leaking potable water from the storage facility into the natural environment. The leak is allowing chlorinated water to constantly flow out of the overflow pipe and into a watercourse. The owner/operating authority is currently dechlorinating the discharge of potable water and should continue to do so until the discharge is stopped. The owner is in the process of obtaining recommendations from two consulting firms to review the repair, removal or replacement of the water tower.			



Stakeholder References

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

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

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater



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

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

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment. Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le ministère au 1-866-793-2588, ou encore à waterforms@ontario.ca 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

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Renseignements sur le profil du réseau d'eau potable	012-2149F
Avis de demande de services de laboratoire	012-2148F
Avis de résultats d'analyse insatisfaisants et de règlement des problèmes	012-4444F
Prendre soin de votre eau potable - Un guide destiné aux membres des conseils municipaux	Site Web
Marche à suivre pour désinfecter l'eau potable en Ontario	Site Web
Stratégies pour minimiser les trihalométhanes et les acides haloacétiques de sous-produits de désinfection	Site Web
Filtration Processes Technical Bulletin (en anglais seulement)	Site Web
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	Site Web
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable	Site Web
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	Site Web
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802F
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	Site Web
Liste des personnes-ressources du réseau d'eau potable	Site Web
L'eau potable en Ontario - Norme de gestion de la qualité - Guide de poche	Site Web
Procédure de désinfection des conduites principales	Site Web
Laboratoires autorisés	Site Web



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

Inspection Rating Record and Inspection Risk Methodology

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

Determining Potential to Compromise the Delivery of Safe Water

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.

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

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

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

(of the consequence)

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

TABLE 1:

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

TABLE 2:

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

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

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

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

The Question Risk Rating quantifies the risk of non-compliance of each question relative to the others. Questions with higher values are those with a potentially more significant impact on drinking water safety and a higher likelihood of occurrence. The highest possible value would be 32 (4×8) and the lowest would be 0 (0×1).

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

TABLE 3:							
Does the Operator in Charge ensure that the equipment and processes are monitored, inspected and evaluated?							
Risk = Likelihood × Consequence							
C=1	C=2	C=3	C=4	C=5	C=6	C=7	C=8
Medium Administrative Consequence	Major Administrative Consequence	Minor Environmental Consequence	Minor Health Consequence	Medium Environmental Consequence	Major Environmental Consequence	Medium Health Consequence	Major Health Consequence
L=4 (Almost Certain)	L=1 (Unlikely)	L=2 (Possible)	L=3 (Likely)	L=3 (Likely)	L=1 (Unlikely)	L=3 (Likely)	L=2 (Possible)
R=4	R=2	R=6	R=12	R=15	R=6	R=21	R=16

Application of the Methodology to Inspection Results

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

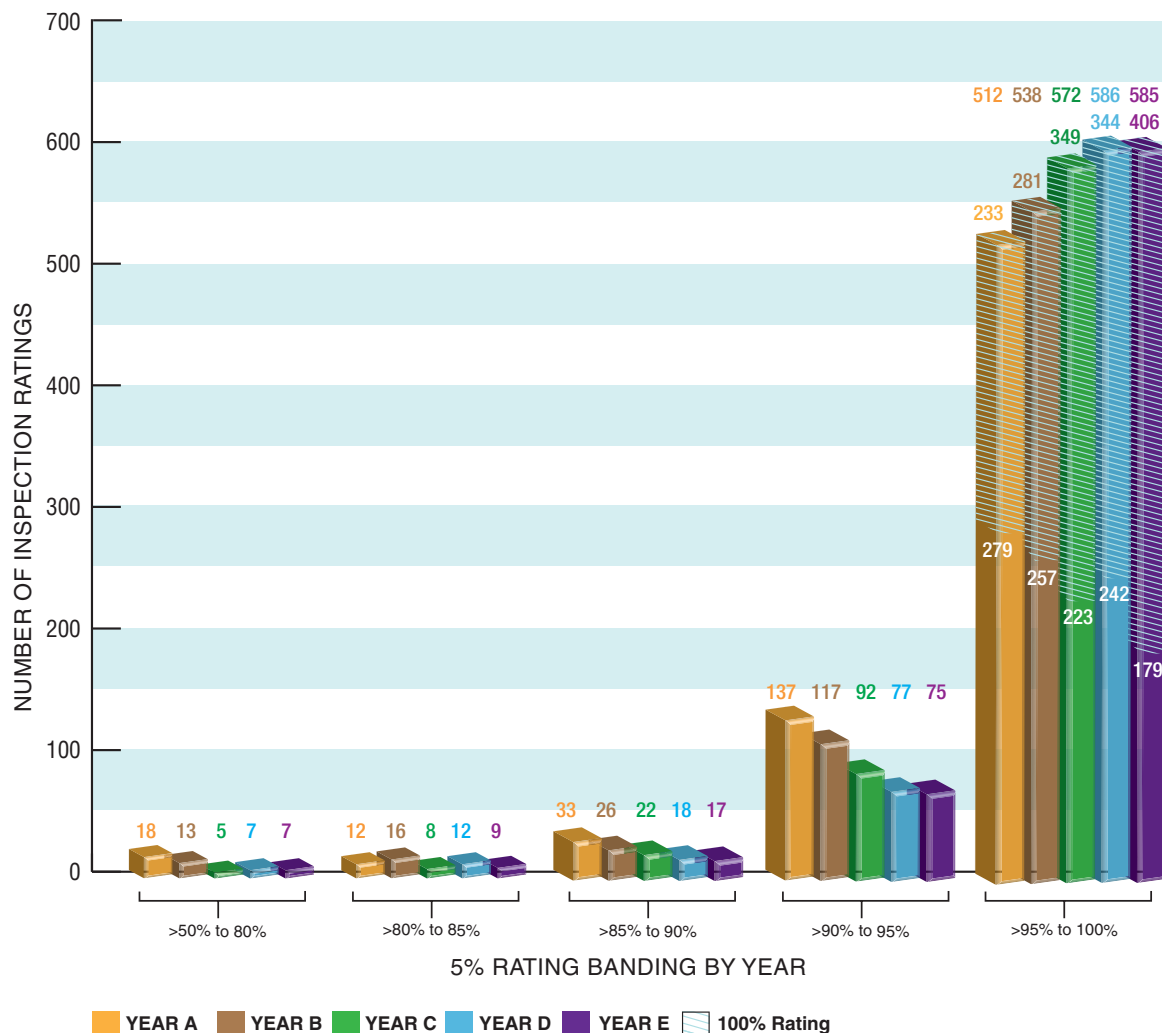
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

Application of the Methodology for Public Reporting

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

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

Figure 1: Year Over Year Distribution of MRDWS Ratings



Reporting Results to MRDWS Owners/Operators

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

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

- | | | | |
|-------------------------|------------------------|---------------------------------------|--|
| 1. Source | 5. Process Wastewater | 9. Contingency and 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

DWS Name: ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM
DWS Number: 260078897
DWS Owner: CORPORATION OF THE CITY OF ST THOMAS
Municipal Location: ST. THOMAS

Regulation: O.REG. 170/03
DWS Category: DW Municipal Residential
Type of Inspection: Focused
Inspection Date: Nov-23-2023
Ministry Office: London District Office

Maximum Risk Rating: 273

Inspection Module	Non Compliance Risk (X out of Y)
Certification and Training	0/42
Logbooks	0/18
Operations Manuals	0/28
Reporting & Corrective Actions	0/53
Treatment Processes	0/81
Water Quality Monitoring	0/51
Overall - Calculated	0/273

Inspection Risk Rating: 0.00%

Final Inspection Rating: 100.00%

DWS Name: ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM
DWS Number: 260078897
DWS Owner Name: CORPORATION OF THE CITY OF ST THOMAS
Municipal Location: ST. THOMAS

Regulation: O.REG. 170/03
DWS Category: DW Municipal Residential
Type of Inspection: Focused
Inspection Date: Nov-23-2023
Ministry Office: London District Office

All legislative requirements were met. No detailed rating scores.

Maximum Question Rating: 273

Inspection Risk Rating: 0.00%

FINAL INSPECTION RATING: 100.00%

**Ministry of the Environment,
Conservation and Parks**Drinking Water and Environmental
Compliance DivisionSouthwest Region
733 Exeter Road
London, ON N6E 1L3
Phone: 519-873-5000**Ministère de l'Environnement, de la
Protection de la nature et des Parcs**Division de la conformité en matière d'eau
potable et d'environnementRégion Sud-Ouest
733 rue Exeter
London, ON N6E 1L3
Tél: 519-873-5000

January 2, 2024

The Corporation of the City of St Thomas
545 Talbot Street
St Thomas, ON N5P 3V7Attention: Kevin De Leebeeck, Director of Environmental Services/City Engineer
Re: City of St Thomas Distribution System Final Inspection Report (#260002187)

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. **Please note that due to a change in IT systems, the Inspection Rating Report (IRR) cannot be generated at the same time as the inspection report. The IRR will be sent separately and prior to any public release (typically within 1-2 month of the completion of the inspection).** If you have any questions regarding the report, please feel free to call me at (226) 926-1785.

Sincerely,

Meghan Morgan
Provincial Officer, Water Inspector
London District Office
Meghan.Morgan@ontario.cacc. Southwestern Public Health Unit
Kettle Creek Conservation Authority



CITY OF ST. THOMAS DISTRIBUTION SYSTEM
490 SOUTH EDGEWARE RD, ST. THOMAS, ON,
INSPECTION REPORT

System Number: 260002187

Entity: CORPORATION OF THE CITY OF
ST THOMAS

Inspection Start Date: September 28, 2023

Inspection End Date: December 18, 2023

Inspected By: Meghan Morgan

Badge #: 1315

Inspected By: Adam Grant

Badge #: 1099



(signature)

NON-COMPLIANCE

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

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

RECOMMENDATIONS

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

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

INSPECTION DETAILS

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

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

Question ID	DWMR1001000	Question Type	Information
Legislative Requirement(s): Not Applicable			
Question: What was the scope of this inspection?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices. This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O. Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA. This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements. A site visit was performed on October 25, 2023 by Water Inspector Meghan Morgan. Several documents were reviewed as part of the inspection, these documents include but are not limited to: 1. Operations and Procedures Manual most recently updated January 2022. 2. Drinking Water Works Permit #057-201 – Issue #3 dated June 30, 2021. 3. Municipal Drinking Water Licence #057-101 – Issue #3 dated June 30, 2021. 4. Certificates of analysis and operational documents maintained by the owner/operator for the inspection period. It should be noted that this inspection covers the period from December 1, 2022 to September 30, 2023.			

Question ID	DWMR1000000	Question Type	Information
Legislative Requirement(s): Not Applicable			
Question: Does this drinking water system provide primary disinfection?			

Compliance Response(s)/Corrective Action(s)/Observation(s):

This drinking water system provides for only secondary disinfection and distribution of water. Primary disinfection is undertaken by another regulated drinking water system which provides treated water to this drinking water system.

The water for this system is drawn from an intake at Lake Erie and treated at the Elgin Water Treatment Facility near Port Stanley. The City of St. Thomas WDS is supplied treated water from the Elgin Area Primary Water Supply System (EAPWSS) directly and indirectly through the St. Thomas Area Secondary Water Supply System (STASWSS).

Question ID	DWMR1018000	Question Type	Legislative
Legislative Requirement(s):			
SDWA 31 (1);			
Question:			
Has the owner ensured that all equipment is installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit?			
Compliance Response(s)/Corrective Action(s)/Observation(s):			
The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.			

Question ID	DWMR1020000	Question Type	Legislative
Legislative Requirement(s):			
SDWA 31 (1);			
Question:			
Is the owner/operating authority able to demonstrate that, when required during the inspection period, Form 1 documents were prepared in accordance with their Drinking Water Works Permit?			
Compliance Response(s)/Corrective Action(s)/Observation(s):			
The owner/operating authority was in compliance with the requirement to prepare Form 1 documents as required by their Drinking Water Works Permit during the inspection period.			
The owner completed five (5) "Form 1 – Record of Watermains Authorized as a Future Alteration" documents for proposed new watermains or replacement of existing watermains.			

Question ID	DWMR1114000	Question Type	Legislative
Legislative Requirement(s):			
SDWA 31 (1);			
Question:			
Does the owner have evidence that, when required, all legal owners associated with the DWS were notified of the requirements of the Licence & Permit?			

Compliance Response(s)/Corrective Action(s)/Observation(s):

The owner had evidence that required notifications to all legal owners associated with the Drinking Water System had been made during the inspection period.

The owner/operating authority has procedures in place that require DWQMS sign-off from new developments, this includes a sign-off that the developers have reviewed the MDWL and DWWP.

Question ID	DWMR1028000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Are up-to-date plans for the drinking water system kept in 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 in accordance with the DWWP and MDWL issued under Part V of the SDWA?			
Compliance Response(s)/Corrective Action(s)/Observation(s): 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 DWWP and MDWL issued under Part V of the SDWA.			

Question ID	DWMR1025000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Were all parts of the drinking water system that came in contact with drinking water (added, modified, replaced or extended) disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All parts of the drinking water system were disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit.			

Question ID	DWMR1027000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Does the owner have evidence indicating that all chemicals and materials which come in contact with water within the drinking water system have met all applicable AWWA and ANSI standards			

in accordance with the DWWP and MDWL issued under Part V of the SDWA?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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.

Question ID	DWMR1033000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 7-2 (3); SDWA O. Reg. 170/03 7-2 (4);			
Question: Is the secondary disinfectant residual measured as required for the large municipal residential distribution system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The secondary disinfectant residual was measured as required for the large municipal residential distribution system. Ontario Regulation 170/03, Schedule 7-2 (3) requires the owner/operating authority of a large municipal residential system that provides secondary disinfection to ensure that at least seven distribution samples are taken each week and tested immediately for free chlorine residual. At least four of the samples must be taken on one day of the week, and at least three samples must be taken on a second day of the week, at least 48 hours after the samples taken on the first day. Grab samples are collected during different days of the week and tested for free chlorine from different locations within the distribution system. The system also uses process chlorine analyzers located at the Albert Roberts Booster Station, the Southdale meter chamber panel and the Wellington Rd PRV panel to continuously monitor the free chlorine residual within the distribution system. These continuous chlorine analyzers have alarm set points to ensure the free chlorine residual is maintained above 0.05mg/L. Records were reviewed of the grab samples taken in the distribution system by operators who collect manual samples.			

Question ID	DWMR1049000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Do records confirm that disinfectant residuals are routinely checked at the extremities and dead ends of the distribution system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Records confirmed that disinfectant residuals were routinely checked at the extremities and dead ends of the distribution system.			

Question ID	DWMR1036000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 6-7 (1);			
Question: Where continuous monitoring equipment is not used for chlorine residual analysis, are samples tested using an acceptable portable device?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Samples for chlorine residual analysis were tested using an acceptable portable device.			

Question ID	DWMR1099000	Question Type	Information
Legislative Requirement(s): Not Applicable			
Question: Do records show that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O. Reg. 169/03)?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O. Reg. 169/03).			

Question ID	DWMR1081000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 10-2 (1); SDWA O. Reg. 170/03 10-2 (2); SDWA O. Reg. 170/03 10-2 (3);			
Question: For LMR systems, are all microbiological water quality monitoring requirements for distribution samples being met?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All microbiological water quality monitoring requirements prescribed by legislation for distribution samples in a large municipal residential system were being met. Ontario Regulation 170/03 - Schedule 10-2 stipulates that distribution water samples are required to be collected for testing every week within the frequency prescribed by the Regulation. Based on the service population the Owner/Operating Authority is required to take a minimum of 50 distribution samples every month. Every distribution system sample must be analyzed for: E.coli; total coliforms; and 25% of the required samples must be tested for general bacteria population expressed as colony counts on a heterotrophic plate count. A review of the records for the inspection period indicate the number of microbiological samples collected ranged from 52-65 per month.			

Question ID	DWMR1096000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 6-3 (1);			
Question: Do records confirm that chlorine residual tests are being conducted at the same time and at the same location that microbiological samples are obtained?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.			

Question ID	DWMR1086000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 13-6.1 (1); SDWA O. Reg. 170/03 13-6.1 (2); SDWA O. Reg. 170/03 13-6.1 (3); SDWA O. Reg. 170/03 13-6.1 (4); SDWA O. Reg. 170/03 13-6.1 (5); SDWA O. Reg. 170/03 13-6.1 (6);			
Question: Are all haloacetic acid water quality monitoring requirements prescribed by legislation conducted within the required frequency and at the required location?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All haloacetic acid water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location. Haloacetic Acid samples are required to be collected and tested each calendar quarter from the distribution system in accordance with Schedule 13-6.1 of O.Reg. 170/03 with the frequency stipulated in Schedule 6-1.1(4), and shall be taken from a point in the drinking water system's distribution system that is likely to have an elevated potential for the formation of haloacetic acids. Records reviewed indicate the following samples were taken for the City of St. Thomas Distribution System: 1) December 29, 2022 = <5.3 ug/L 2) February 21, 2023 = <5.3 ug/L 3) April 24, 2022 = <5.3 ug/L 4) July 4, 2023 = <5.3 ug/L 5) October 2, 2023 = <5.3 ug/L All sample results were within the required standard.			

Question ID	DWMR1087000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 13-6 (1); SDWA O. Reg. 170/03 13-6 (2); SDWA O. Reg. 170/03 13-6 (3); SDWA O. Reg. 170/03 13-6 (4); SDWA O. Reg. 170/03 13-6 (5); SDWA O.			

Reg. 170/03 | 13-6 | (6);

Question:

Have all trihalomethane water quality monitoring requirements prescribed by legislation been conducted within the required frequency and at the required location?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Trihalomethane samples are required to be collected and tested each calendar quarter from the distribution system in accordance with Schedule 13-6 of O.Reg. 170/03 with the frequency stipulated in Schedule 6-1.1(4), and shall be taken from a point in the drinking water system's distribution system that is likely to have an elevated potential for the formation of trihalomethanes. Records reviewed indicate the following samples were taken from the City of St. Thomas Distribution System:

- 1) December 29, 2022 = 17 ug/L
- 2) February 21, 2023 = 13 ug/L
- 3) April 24, 2022 = 20 ug/L
- 4) July 4, 2023 = 24 ug/L
- 5) October 2, 2023 = 28 ug/L

All sample results were within the required standard.

Question ID	DWMR1092000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 6-2;			
Question: Has the owner ensured that water samples are taken at the prescribed location?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner ensured that water samples were taken at the prescribed location.			

Question ID	DWMR1094000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Are all water quality monitoring requirements imposed by the MDWL and DWWP being met?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met.			

Question ID	DWMR1098000	Question Type	Legislative
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Legislative Requirement(s):

SDWA | O. Reg. 170/03 | 13 | (1); SDWA | O. Reg. 170/03 | 13 | (2); SDWA | O. Reg. 170/03 | 13 | (3);

Question:

Has the owner indicated that the required records are kept and will be kept for the required time period?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Question ID	DWMR1101000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 17-1; SDWA O. Reg. 170/03 17-10 (1); SDWA O. Reg. 170/03 17-11; SDWA O. Reg. 170/03 17-12; SDWA O. Reg. 170/03 17-13; SDWA O. Reg. 170/03 17-14; SDWA O. Reg. 170/03 17-2; SDWA O. Reg. 170/03 17-3; SDWA O. Reg. 170/03 17-4; SDWA O. Reg. 170/03 17-5; SDWA O. Reg. 170/03 17-6; SDWA O. Reg. 170/03 17-9;			
Question: For LMR Systems, have corrective actions (as per Schedule 17 of O. Reg. 170/03) been taken to address adverse conditions, including any other steps as directed by the Medical Officer of Health?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Corrective actions (as per Schedule 17), including any other steps that were directed by the Medical Officer of Health, had been taken to address adverse conditions.			

Question ID	DWMR1104000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 16-6 (1); SDWA O. Reg. 170/03 16-6 (2); SDWA O. Reg. 170/03 16-6 (3); SDWA O. Reg. 170/03 16-6 (3.1); SDWA O. Reg. 170/03 16-6 (3.2); SDWA O. Reg. 170/03 16-6 (4); SDWA O. Reg. 170/03 16-6 (5); SDWA O. Reg. 170/03 16-6 (6);			
Question: Were all required verbal notifications of adverse water quality incidents immediately provided as per O. Reg. 170/03 16-6?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.			

Question ID	DWMR1105000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 16-7 (1); SDWA O. Reg. 170/03 16-7 (2); SDWA O. Reg. 170/03 16-7 (3); SDWA O. Reg. 170/03 16-7 (4); SDWA O. Reg. 170/03 16-7 (5);			
Question: Were all required written notices of adverse water quality incidents provided as per O. Reg. 170/03 16-7?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All required written notices of adverse water quality incidents were provided as per O. Reg. 170/03 16-7.			

Question ID	DWMR1106000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 16-9 (1); SDWA O. Reg. 170/03 16-9 (2);			
Question: Were all required written notices of issue resolution provided as per O. Reg. 170/03 16-9?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All required written notices of issue resolution were provided as per O. Reg. 170/03 16-9.			

Question ID	DWMR1110000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 11 (6);			
Question: Was an Annual Report containing the required information prepared by February 28 of the following year?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The Annual Report containing the required information was prepared by February 28th of the following year.			

Question ID	DWMR1057000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 11 (2.1);			
Question: Has the owner of this system provided an Annual Report to the owner(s) of all standalone distribution systems connected to this system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The donor had provided an Annual Report to the receiver stand alone distribution system(s)			

connected to this system.

Question ID	DWMR1056000	Question Type	Information
Legislative Requirement(s): Not Applicable			
Question: Has the donor provided an Annual Report to the owner of this receiver drinking water system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The donor provided an Annual Report to the owner of this receiver drinking water system.			

Question ID	DWMR1111000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 22-2 (1); SDWA O. Reg. 170/03 22-2 (2); SDWA O. Reg. 170/03 22-2 (3); SDWA O. Reg. 170/03 22-2 (4);			
Question: Have Summary Reports for municipal council been completed on time, include the required content, and distributed in accordance with the regulatory requirements?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.			

Question ID	DWMR1113000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 170/03 10.1 (3);			
Question: Have all changes to the system registration information been provided to the Ministry within ten (10) days of the change?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All changes to the system registration information were provided within ten (10) days of the change.			

Question ID	DWMR1045000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Has the owner updated the document describing the distribution components within 12 months			

of completion of alterations to the system?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Question ID	DWMR1046000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Is there a backflow prevention program, policy and/or bylaw in place that addresses cross connections and connections to high hazard facilities?			
Compliance Response(s)/Corrective Action(s)/Observation(s): There was a backflow prevention program, policy and/or bylaw in place.			

Question ID	DWMR1053000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Is the Owner able to maintain proper pressures in the distribution system and is pressure 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?			
Compliance Response(s)/Corrective Action(s)/Observation(s): 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. Pressure is monitored on the SCADA system and operators respond to alarm conditions.			

Question ID	DWMR1048000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Has the owner implemented a program for the flushing of watermain as per industry standards?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner had implemented a program for the flushing of watermain as per industry standards. The owner has a program which requires that hydrants or blow-offs be flushed annually in order to: 1) Remove accumulated sediments or other impurities which have been deposited in the pipe, improve the flow of water, and reduce chlorine demand. 2) Refresh water and maintain			

free chlorine in low demand areas such as dead-end mains. 3) Address aesthetic water quality complaints.

Question ID	DWMR1050000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Is there a program in place for inspecting and exercising valves?			
Compliance Response(s)/Corrective Action(s)/Observation(s): There was a program in place for inspecting and exercising valves.			

Question ID	DWMR1051000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Is there a program in place for inspecting and operating hydrants?			
Compliance Response(s)/Corrective Action(s)/Observation(s): There was a program in place for inspecting and operating hydrants.			

Question ID	DWMR1052000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Is there a by-law or policy in place limiting access to hydrants?			
Compliance Response(s)/Corrective Action(s)/Observation(s): There was a by-law or policy in place limiting access to hydrants. By-law 44-2000 provides regulation of the water supply in City of St. Thomas.			

Question ID	DWMR1058000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 28;			
Question: Do operators and maintenance personnel have ready access to operations and maintenance manuals?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Operators and maintenance personnel had ready access to operations and maintenance			

manuals.

They have access to electronic copies as well as hard copies when needed.

Question ID	DWMR1059000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 28;			
Question: Do the operations and maintenance manuals contain plans, drawings and process descriptions sufficient for the safe and efficient operation of the system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system. A review of the City of St Thomas Water Distribution System Operations and Maintenance manual found that it contains relevant, adequate and up-to date descriptions of processes employed in the system as well as plans/drawings to meet the requirements of O. Reg. 128.			

Question ID	DWMR1060000	Question Type	Legislative
Legislative Requirement(s): SDWA 31 (1);			
Question: Do the operations and maintenance manuals meet the requirements of the DWWP and MDWL issued under Part V of the SDWA?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.			

Question ID	DWMR1061000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 27 (1); SDWA O. Reg. 128/04 27 (2); SDWA O. Reg. 128/04 27 (3); SDWA O. Reg. 128/04 27 (4); SDWA O. Reg. 128/04 27 (5); SDWA O. Reg. 128/04 27 (6); SDWA O. Reg. 128/04 27 (7);			
Question: Are logbooks properly maintained and contain the required information?			
Compliance Response(s)/Corrective Action(s)/Observation(s): Logbooks were properly maintained and contained the required information.			

Question ID	DWMR1062000	Question Type	Legislative
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Legislative Requirement(s):

SDWA | O. Reg. 170/03 | 7-5;

Question:

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

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Question ID	DWMR1063000	Question Type	Legislative
Legislative Requirement(s):			
SDWA O. Reg. 170/03 6-10 (1);			
Question:			
For every required operational test and for every required sample, is a record made of the date, time, location, name of the person conducting the test and result of the test?			
Compliance Response(s)/Corrective Action(s)/Observation(s):			
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.			

Question ID	DWMR1064000	Question Type	Legislative
Legislative Requirement(s):			
SDWA O. Reg. 128/04 26 (2);			
Question:			
Did the operator-in-charge ensure that records were maintained of all adjustments made to the processes within his or her responsibility?			
Compliance Response(s)/Corrective Action(s)/Observation(s):			
The operator-in-charge ensured that records were maintained of all adjustments made to the processes within his or her responsibility.			

Question ID	DWMR1065000	Question Type	Legislative
Legislative Requirement(s):			
SDWA O. Reg. 128/04 27 (6);			
Question:			
Are logs and other record keeping mechanisms available for at least five (5) years?			
Compliance Response(s)/Corrective Action(s)/Observation(s):			

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

Question ID	DWMR1071000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Has the owner provided security measures to protect components of the drinking water system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner had provided security measures to protect components of the drinking water system. The Albert Roberts Booster Pumping Station is kept locked and has an entry alarm. Each chamber panel is kept locked with entry alarms.			

Question ID	DWMR1072000	Question Type	BMP
Legislative Requirement(s): Not Applicable			
Question: Has the owner and/or operating authority undertaken efforts to promote water conservation and reduce water losses in their system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The owner and/or operating authority undertook efforts to promote water conservation and reduce water losses in their system. The website for the City of St. Thomas has a page dedicated to water conservation which includes water saving tips for around the house/garden for local residents.			

Question ID	DWMR1073000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 23 (1);			
Question: Has the overall responsible operator been designated for all subsystems which comprise the drinking water system?			
Compliance Response(s)/Corrective Action(s)/Observation(s): The overall responsible operator had been designated for each subsystem.			

Question ID	DWMR1074000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 25 (1);			

Question:

Have operators-in-charge been designated for all subsystems which comprise the drinking water system?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Question ID	DWMR1075000	Question Type	Legislative
Legislative Requirement(s): SDWA O. Reg. 128/04 22;			
Question: Do all operators possess the required certification?			
Compliance Response(s)/Corrective Action(s)/Observation(s): All operators possessed the required certification.			



Stakeholder References

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

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

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater



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

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

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment. Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le ministère au 1-866-793-2588, ou encore à waterforms@ontario.ca 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

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Renseignements sur le profil du réseau d'eau potable	012-2149F
Avis de demande de services de laboratoire	012-2148F
Avis de résultats d'analyse insatisfaisants et de règlement des problèmes	012-4444F
Prendre soin de votre eau potable - Un guide destiné aux membres des conseils municipaux	Site Web
Marche à suivre pour désinfecter l'eau potable en Ontario	Site Web
Stratégies pour minimiser les trihalométhanes et les acides haloacétiques de sous-produits de désinfection	Site Web
Filtration Processes Technical Bulletin (en anglais seulement)	Site Web
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	Site Web
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable	Site Web
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	Site Web
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802F
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	Site Web
Liste des personnes-ressources du réseau d'eau potable	Site Web
L'eau potable en Ontario - Norme de gestion de la qualité - Guide de poche	Site Web
Procédure de désinfection des conduites principales	Site Web
Laboratoires autorisés	Site Web



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

Inspection Rating Record and Inspection Risk Methodology

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

Determining Potential to Compromise the Delivery of Safe Water

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.

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

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

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

(of the consequence)

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

TABLE 1:

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

TABLE 2:

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

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

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

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

The Question Risk Rating quantifies the risk of non-compliance of each question relative to the others. Questions with higher values are those with a potentially more significant impact on drinking water safety and a higher likelihood of occurrence. The highest possible value would be 32 (4×8) and the lowest would be 0 (0×1).

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

TABLE 3:							
Does the Operator in Charge ensure that the equipment and processes are monitored, inspected and evaluated?							
Risk = Likelihood × Consequence							
C=1	C=2	C=3	C=4	C=5	C=6	C=7	C=8
Medium Administrative Consequence	Major Administrative Consequence	Minor Environmental Consequence	Minor Health Consequence	Medium Environmental Consequence	Major Environmental Consequence	Medium Health Consequence	Major Health Consequence
L=4 (Almost Certain)	L=1 (Unlikely)	L=2 (Possible)	L=3 (Likely)	L=3 (Likely)	L=1 (Unlikely)	L=3 (Likely)	L=2 (Possible)
R=4	R=2	R=6	R=12	R=15	R=6	R=21	R=16

Application of the Methodology to Inspection Results

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

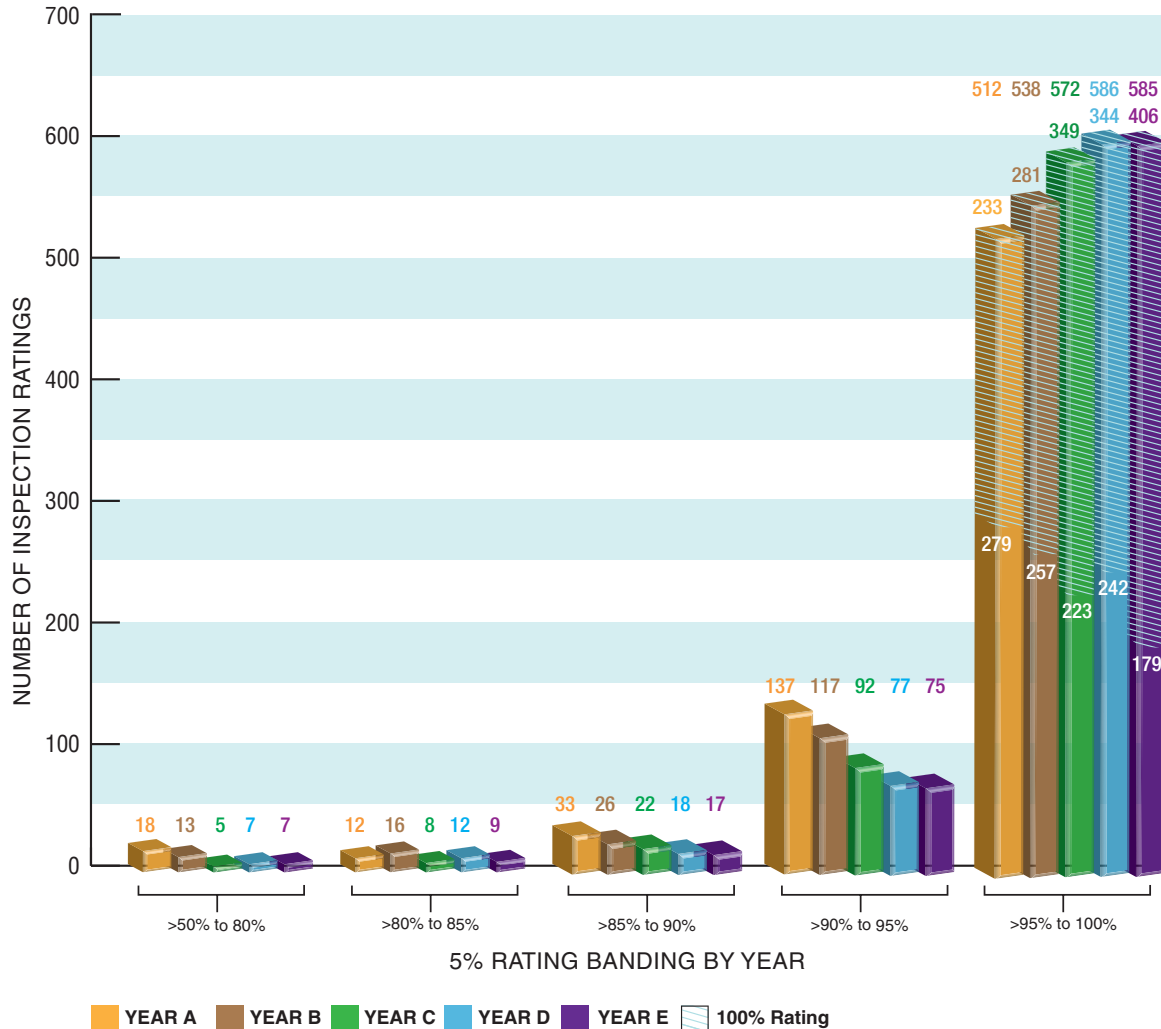
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

Application of the Methodology for Public Reporting

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

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

Figure 1: Year Over Year Distribution of MRDWS Ratings



Reporting Results to MRDWS Owners/Operators

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

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

- | | | | |
|-------------------------|------------------------|---------------------------------------|--|
| 1. Source | 5. Process Wastewater | 9. Contingency and 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

DWS Name: CITY OF ST. THOMAS DISTRIBUTION SYSTEM
DWS Number: 260002187
DWS Owner: CORPORATION OF THE CITY OF ST THOMAS
Municipal Location: ST. THOMAS

Regulation: O.REG. 170/03
DWS Category: DW Municipal Residential
Type of Inspection: Detailed
Inspection Date: Sep-28-2023
Ministry Office: London District Office

Maximum Risk Rating: 322

Inspection Module	Non Compliance Risk (X out of Y)
Certification and Training	0/28
Distribution System	0/8
Logbooks	0/30
Operations Manuals	0/42
Reporting & Corrective Actions	0/71
Treatment Processes	0/80
Water Quality Monitoring	0/63
Overall - Calculated	0/322

Inspection Risk Rating: 0.00%

Final Inspection Rating: 100.00%

DWS Name: CITY OF ST. THOMAS DISTRIBUTION SYSTEM
DWS Number: 260002187
DWS Owner Name: CORPORATION OF THE CITY OF ST THOMAS
Municipal Location: ST. THOMAS

Regulation: O.REG. 170/03
DWS Category: DW Municipal Residential
Type of Inspection: Detailed
Inspection Date: Sep-28-2023
Ministry Office: London District Office

All legislative requirements were met. No detailed rating scores.

Maximum Question Rating: 322

Inspection Risk Rating: 0.00%

FINAL INSPECTION RATING: 100.00%

DRINKING WATER QUALITY MANAGEMENT SYSTEM INTERNAL AUDIT REPORT

Audit Date(s): October 19, 2023

Audit Objective:

The objective of the internal audit was to verify and evaluate the degree of conformance of the City of St. Thomas' Quality Management System (QMS), utilized in the operation and maintenance of the St. Thomas Secondary, St. Thomas Distribution, Southwold (Lynhurst Area) and Central Elgin (St. Thomas Suburban Area) Drinking Water Systems, to Ontario's Drinking Water Quality Management Standard, Version 2.0. The internal audit will provide an opportunity to identify process variations within the QMS by auditing elements 7, 8, 17 and 20. By identifying these sources of variation and by eliminating them through the application of effective corrective action, the operating authority can begin to focus on preventative action and continual improvement.

Audit Scope:

The internal audit was conducted on October 19, 2023. A physical inspection of the Albert Roberts Pump Station was undertaken as part of this audit. The internal audit was conducted as outlined in DW- ADMIN-1200, Rev. 2.8 of the QMS manual. The internal audit was carried out through a review of a sampling of documents and records, interviews and observations by the auditors to demonstrate conformance with the standard by auditing all elements. The review and audit should not be construed as a complete and comprehensive review of all aspects, documents and records.

Internal Auditor(s):

- LEAD: Karel Kamerman, Compliance Coordinator

Auditor Qualifications can be found in Appendix A to this report.

Audit Criteria:

Elements 7, 8, 17 and 20 of Ontario's Drinking Water Quality Standard – Version 2.0 as released in February 2017.

Definitions:

- A non-conformance (NC) is a non-fulfillment of the QMS Operational Plan.
- An opportunity for improvement (OFI) describes a requirement that can be more effectively addressed.

Audit Findings:

The following is a summary of the audit findings, including non-conformances and opportunities for improvement. The detailed checklist can be found in Appendix B of this report.

DRINKING WATER QUALITY MANAGEMENT SYSTEM INTERNAL AUDIT REPORT

Non-Conformances:

NC#1 Essential Supplies and Services

2023 Flow meter calibrations were conducted by a service provider not listed in the Essential Supplies and Services listing. Further, no DWQMS Sign-Off form (DWF-ADMIN-801) could be provided for the service provider.

NC#2 Measurement and Recording Equipment Calibration and Maintenance

Flow meter calibration records provided identified equipment in the field as being different than that listed in the Equipment Listing (DWF-ADMIN-1100) (Promag 50 vs. Badger).

NC#3 Measurement and Recording Equipment Calibration and Maintenance

8 Pocket Calorimeters are listed in the Equipment Listing (DWF-ADMIN-1100). Procedure DW-ADMIN-1100 requires that internal verification checks be conducted monthly. Records provided indicate 7 units verified in July and September, and only 3 in August.

Opportunities for Improvement

OFI#1: Risk Assessment

An opportunity for improvement exists to review the procedure references within the hazard analysis spreadsheets. At least one reference to the Disinfection CCP is listed with the incorrect procedure code.

OFI#2: Risk Assessment Outcomes

An opportunity for improvement exists to review the critical control and emergency response procedures surrounding disinfection control and ensure that the Critical Control Limit of 0.20 mg/l is reflected and provide a refresher to staff on the limit and actions to be taken if readings are not within identified limits.

DRINKING WATER QUALITY MANAGEMENT SYSTEM INTERNAL AUDIT REPORT

Audit Date(s): April 10 & 11, 2024

(Closing Meeting Held April 29, 2024)

Audit Objective:

The objective of the internal audit was to verify and evaluate the degree of conformance of the City of St. Thomas' Quality Management System (QMS), utilized in the operation and maintenance of the St. Thomas Secondary, St. Thomas Distribution, Southwold (Lynhurst Area) and Central Elgin (St. Thomas Suburban Area) Drinking Water Systems, to Ontario's Drinking Water Quality Management Standard, Version 2.0. The internal audit will provide an opportunity to identify process variations within the QMS by auditing all elements. By identifying these sources of variation and by eliminating them through the application of effective corrective action, the operating authority can begin to focus on preventative action and continual improvement.

Audit Scope:

The internal audit was conducted on April 10 and 11th, 2024. A physical inspection of the Albert Roberts Pump Station was undertaken as part of this audit. The internal audit was conducted as outlined in DW- ADMIN-1200, Rev. 2.7 of the QMS manual. The internal audit was carried out through a review of a sampling of documents and records, interviews and observations by the auditors to demonstrate conformance with the standard by auditing all elements. The review and audit should not be construed as a complete and comprehensive review of all aspects, documents and records.

Internal Auditor(s):

- LEAD: Karel Kamerman, Compliance Coordinator
- Michelle Shannon, Waste Management Coordinator

Auditor Qualifications can be found in Appendix A to this report.

Audit Criteria:

Ontario's Drinking Water Quality Standard – Version 2.0 as released in February 2017.

Definitions:

- A non-conformance (NC) is a non-fulfillment of the QMS Operational Plan.
- An opportunity for improvement (OFI) describes a requirement that can be more effectively addressed.

Audit Findings:

The following is a summary of the audit findings, including non-conformances and opportunities for improvement. The detailed checklist can be found in Appendix B of this report.

DRINKING WATER QUALITY MANAGEMENT SYSTEM INTERNAL AUDIT REPORT

Non-Conformances:

NC#1: Document and Records Control

Several records provided over the course of the audit were not the most recent version (ie. Training Tracker, Calibration Records).

NC#2 Document and Records Control

Several records could not be found in the locations identified in the Records Control Procedure (DW-ADMIN-200).

NC#3 Risk Assessment Outcomes

Deviations from Critical Control Points are not being captured on Corrective Action Forms as described in the CCP procedures.

NC#4 Competencies

Training records could not be provided for operator-to-operator training events as listed in the Training Tracking Spreadsheet as described within the Competency and Training Procedure (DW-ADMIN-500).

NC#5 Competencies

No completed Competency Form (DWF-ADMIN-500) could be produced for the most recent hire, as required by the Competency and Training Procedure (DW-ADMIN-500).

NC#6 Competencies

Training records do not demonstrate conformance with the training needs as listed in the Training Matrix (DWF-ADMIN-502 Rev. 2.9).

Opportunities for Improvement

OFI#1: Document and Record Control

Several entries in the logbook at ARBS were made by an operator that could not be unambiguously identified, as required by O. Reg. 128/04.

OFI #2: Document and Record Control

DWF-ADMIN-600 Rev. 2.0 is posted on the union news board. If necessary to be posted, it should be updated as new documents are released.

OFI#3: Drinking Water System

Consider describing flushing stations and their locations in the Operational Plan as a description of how the disinfection residuals are maintained.

OFI#4: Drinking Water System

Review OP system descriptions and ensure Owner/OA of subsystems are adequately identified and that water supply avenues are clearly reflected (ie. Southwold receiver).

OFI#5: Drinking Water System

Consider updating the mapping of the St. T. Distribution System. The current map from 2020, and considerable growth has been occurring.

DRINKING WATER QUALITY MANAGEMENT SYSTEM INTERNAL AUDIT REPORT

OFI#6: Risk Assessment Outcomes

DW-CCP-2000 (Discolouration Prevention and Control) references DW-SOP-550, which should be DW-SOP-510.

OFI#7: Competencies

Consider referencing new training plan in the competencies procedure and expanding on it to include the training included in the training needs matrix (DWF-ADMIN-502).

OFI#8: Measurement and Recording Equipment Calibration and Maintenance

On multiple occasions with multiple operators, FCR analyzer verifications being recorded in the logbook at ARBS are not being recorded consistently.

OFI#9: Internal Audits

Section 7 of DW-ADMIN-1202 (Internal Audit Checklist) references Potential Hazardous Events for Municipal Drinking Water System, 2017, which was updated in 2022.



NSF International Strategic Registrations Audit Report

City of St. Thomas Environmental & Infrastructure Services (STWDS)

545 Talbot Street P.O. Box 520
St. Thomas, Ontario N5P 3V7 CAN

C0811332

Audit Type

Re-certification Audit

Auditor

Rose Johnson

Standard

Ontario's Drinking Water Quality Management Standard Version 2
(Exp Date: 18-AUG-2024)

Audit Date(s):

07/15/2024 - 07/15/2024

Recommendation

Ontario's Drinking Water Quality Management Standard Version 2 : Recertification Pending
Closure of Minor NCR(s)



Executive Summary

Ontario's Drinking Water Quality Management Standard Version 2

This was an on-site reaccreditation audit for the City of St. Thomas Water Distribution System (STDWS). System strengths observed during the audit include overall management system documentation, as well as continual improvement processes.

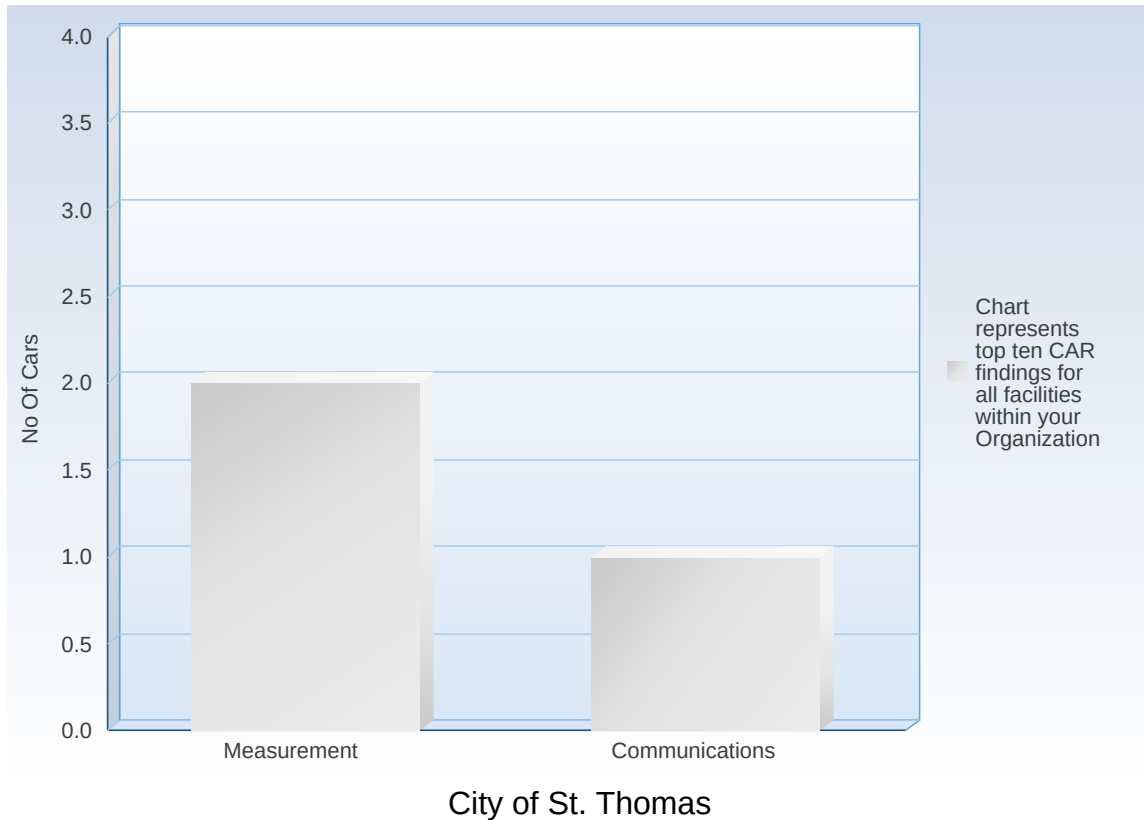
The audit results are summarized as follows:

Zero major non-conformities (NCs)
Three minor non-conformities
Five Opportunities for Improvement (OFIs)

Please respond to the minor NCs via NSF-Connect as soon as possible, due to the pending expiration of the current DWQMS accreditation certificate. Note: OFIs do not require a formal response, but are included in this report for consideration by the DWQMS team.

The support and cooperation of all involved in the audit is acknowledged and appreciated. Thank you for choosing NSF for your DWQMS accreditation.

Top 10 Non Compliant Standard Clauses
CAR Chart Displays Current and Previous Years Data



Standard Clause Description

Measurement & Recording Equipment, Calibration & Maintenance
Communications

Opportunities

Ontario's Drinking Water Quality Management Standard Version 2

See below



Corrective Action Request Summary By Type

Car Type	Car Count
MINOR	3

Corrective Action Request Summary By Standard Clause

Standard Clause	Car Count
Communications	1
Measurement & Recording Equipment, Calibration & Maintenance	2

Corrective Action Requests

CAR No	T00015467497-1	Type	MINOR
Standard & Clause	DWQMSV2, Measurement & Recording Equipment, Calibration & Maintenance	Discussed with	Karel Kamerman
Auditor Name	Rose Johnson		
Statement of Requirement	PLAN – The Operational Plan shall document a procedure for the calibration and maintenance of measurement and recording equipment. DO – The Operating Authority shall implement and conform to the procedure. Reference also Procedure DW-ADMIN-1100 Equipment Calibration, Rev. 2.9, June 1, 2024		
Statement of Nonconformity	Processes to calibrate measurement and recording equipment are not fully effective.		
Objective Evidence	BIDS Technical Services Chlorine Analyzer Calibration report - March 28, 2024 Calibration standards used expired February 2024.		
Location of Finding	BIDS Technical Services Chlorine Analyzer Calibration report - March 28, 2024		

CAR No	T00015467497-2	Type	MINOR
Standard & Clause	DWQMSV2, Measurement & Recording Equipment, Calibration & Maintenance	Discussed with	Karel Kamerman
Auditor Name	Rose Johnson		
Statement of Requirement	PLAN – The Operational Plan shall document a procedure for the calibration and maintenance of measurement and recording equipment. DO – The Operating Authority shall implement and conform to the procedure. Reference also Procedure DW-ADMIN-1100 Equipment Calibration, Rev. 2.9, June 1, 2024		
Statement of Nonconformity	Processes to verify measurement and recording equipment are not fully effective.		
Objective Evidence	Management interviews revealed that expected practice is to routinely adjust online analyzers when reading variance with handheld Colorimeter exceeds 0.05 mg / l (≤ 1.0 mg / l concentration) and proportionately higher >1.0 mg / l concentration Audit interviews and records revealed that operator practice is to adjust online analyzers when reading variance with handheld Colorimeter exceeds 0.1 mg / l E.g. Albert Roberts Booster Station – June 26, 2024 (readings 1.27 / 1.17 – variance 0.1 – no adjustment made); June 27, 2024 (readings 0.87 / 0.97 – variance 0.1 – no adjustment made) Ford Chamber – July 16, 2024 (readings 0.90 / 0.83 – variance 0.07 – no adjustment made)		
Location of Finding	Albert Roberts Booster Station & Ford Chamber Logbook entries		

CAR No	T00015467497-3	Type	MINOR
Standard & Clause	DWQMSV2, Communications	Discussed with	Karel Kamerman
Auditor Name	Rose Johnson		



Statement of Requirement	PLAN – The Operational Plan shall document a procedure for communications that describes how the relevant aspects of the Quality Management System are communicated between Top Management and: a) the Owner, b) Operating Authority personnel, c) Suppliers that have been identified as essential under Plan (a) of Element 13 of this Standard, and d) the Public. DO – The Operating Authority shall implement and conform to the procedure Reference also Procedure DW-ADMIN-800 Essential Supplies and Services, Rev. 2.7, June 1, 2024
Statement of Nonconformity	Essential Supplier communication processes are not fully effective.
Objective Evidence	There is no evidence available to demonstrate required DWQMS communications with the following approved essential suppliers: - Elgin Pure Water - Anchem
Location of Finding	Communication records

Corrective Action Information and Instructions

See NSF-ISR Policies for Accredited Registration Services for corrective action information and instructions. (Available in the "Standards and Policies" section of [NSFOnline](#))

Also, submit all corrective actions through [NSFOnline](#). For instructions on how to use [NSFOnline](#), please click "Help" in the upper right-hand corner. If you require any assistance in accessing your [NSFOnline](#) account, please contact your Registration Specialist (Natasha Kwas email: KWAS@NSF-ISR.ORG).

Site Information

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

Industry Codes

N/A

Scope of Registration

Ontario's Drinking Water Quality Management Standard Version 2 : The City of St.Thomas Water Distribution System, 057-OA1, Entire Full Scope Accreditation



Opportunities for Improvements

Ontario's Drinking Water Quality Management Standard Version 2

Opportunity	Observations / Auditor Notes
Opportunities for Improvements (DWQMS)-01	Location of OFI Risk Assessment records; Discussed With Karel Kamerman; Description Although generally found to be conforming with the Standard, an opportunity exists to review identified CCPs to confirm that they can truly be controlled (vs. triggering a response);
Opportunities for Improvements (DWQMS)-02	Location of OFI DW-ADMIN-1400 Continual Improvement & Corrective Action ; Discussed With Karel Kamerman; Description Although generally found to be conforming with the Standard, an opportunity exists to clarify the requirement to complete the Corrective / Preventive Action Form ('Reporting Observations' section of DW-ADMIN-1400 procedure);
Opportunities for Improvements (DWQMS)-03	Location of OFI Albert Roberts Booster Station; Discussed With Karel Kamerman; Description Although generally found to be conforming with the Standard, an opportunity exists to standardize the format of SOPs, e.g. SOP for Connecting and Switching to Generator Power (Rev. Feb. 28, 2013) – posted at Albert Roberts Booster Station (does not follow standard format);
Opportunities for Improvements (DWQMS)-04	Location of OFI Third-party Calibration records; Discussed With Karel Kamerman; Description In addition to the NCs relating to monitoring / measuring equipment, consideration could be given to: - reviewing third-party calibration records to ensure accuracy, e.g. model #s, serial numbers - clarifying the process for follow-up actions when instrument reliability is questioned, e.g. Hanna Colorimeter Serial #04420005101 – calibration date October 30, 2023 ;
Opportunities for Improvements (DWQMS)-05	Location of OFI Operational Plans / Procedures; Discussed With Karel Kamerman; Description In addition to the NC relating to supplier communications, an opportunity exists to review procedures to: - clarify specific procedural responsibilities for taking action - clarify associated documents / records, e.g. Training Schedule (not referenced in DW-ADMIN-500);

General Information

Operating Authority: Legal Name & Address	City of St. Thomas
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	Environmental & Infrastructure Services 545 Talbot Street, PO Box 520, St. Thomas, ON N4P 3V7
Language Preference: Correspondence	English
Language Preference: Audit	English
Owner: Legal Name and Address	Corporation of the City of St. Thomas, 545 Talbot Street, PO Box 520, St. Thomas, ON N4P 3V7
Owner Language Preference: Correspondence	English
Owner Language Preference: Audit	English
Applicant Representative Information; Include Name, Title, Phone, Fax, Email & Website	Karel Kamerman, Compliance Coordinator Tel: 519-631-1680 x4224 ; kkamerman@stthomas.ca www.stthomas.ca
Accreditation Option	Full Scope - Entire DWQMS
Date of Previous Systems Audit:	N/A - previous accreditation body
Date of Previous On-Site Verification Audit:	N/A - previous accreditation body

Processes



Summary of Findings	
Requirement	Finding
1. Quality Management System	C
2. Quality Management System Policy	C
3. Commitment and Endorsement	C
4. Quality Management System Representative	C
5. Document and Record Control	OFI
6. Drinking-Water System	C
7. Risk Assessment	C
8. Risk Assessment Outcomes	OFI
9. Organizational Structure, Roles, Responsibilities, and Authorities	OFI
10. Competencies	C
11. Personnel Coverage	C
12. Communications	Mn
13. Essential Supplies and Services	C
14. Review and Provision of Infrastructure	C
15. Infrastructure Maintenance, Rehabilitation & Renewal	C
16. Sampling, Testing & Monitoring	C
17. Measurement & Recording Equipment, Calibration & Maintenance	Mn
18. Emergency Management	C
19. Internal Audits	C
20. Management Review	C
21. Continual Improvement	OFI
Mj	Major Non-Conformity. The auditor has determined one of the following: (a) a required element of the DWQMS has not been incorporated into a QMS; (b) a systemic problem with a QMS is evidenced by two or more minor conformities; or (c) a minor non-conformity identified in a corrective action request has not been remedied.
Mn	Minor Non-Conformity. In the opinion of the auditor, part of a required element of the DWQMS has not been incorporated satisfactorily into a QMS.
OFI	Opportunity for Improvement. Conforms to requirement, but there is opportunity for improvement.
C	Conforms to requirement.
	Not Applicable to this audit
*	Additional Comment added by auditor in the body of the report.





Report No.
SWB 07-24

File No.

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

Meeting Date:
October 17, 2024

Department: Environmental Services

Attachment

Prepared By: Shayne Reitsma P.Eng
Manager of Development and Compliance

Subject: Ford Water Tower

Recommendations:

- THAT: Report SWB 07-24 Ford Water Tower be received for information, and further;
- THAT: The Secondary Board of Management selects Option 1 – Tower Replacement with similar storage volume.

Background:

The Ford Elevated Water Tower serves as a storage vessel and provides the St. Thomas Area Secondary Water Supply System (STASWSS) with protection from hydraulic transient pressures from pump shutdowns, valve closures, etc.

The Ford Elevated Water Tower is nearing the end of its useful life (estimated 0-10 years of life remaining). Failure of the Ford Elevated Tower would have minimal effect under day-to-day circumstances, however, operation of the system without the Tower or other mitigating measures would leave Southwold and STASWSS systems at risk of significant impact from vacuum, in the event of a pump failure, power failure, or other transient pressure wave initiating event. This type of event could result in Boil Water Advisories on the system(s), affecting users and disrupting service for an estimated recovery time of up to one week.

Four options were reviewed and are provided for the Board’s consideration:

- 1. Replace the Tower with similar storage volume
- 2. Replace the Tower with a 1–2 day storage volume supply
- 3. Tower Removal with 8 combination air valves
- 4. Battery Back up



Analysis:

In order to mitigate the negative effects of transient pressure waves and further to report SWB 04-23, RVA was retained to review the entire system within the context of the four options described below.

Option 1 – Tower Replacement with similar storage volume

Under this scenario RVA took existing parameters of the current system and simulated a power failure event at the EMPS using a new surge tank design with the same storage capacity (776m³) as a minimum to replace the existing Ford Water Tower. Although RVA used the same storage capacity this option can utilize a smaller height than the existing 60m to allow for a more cost-effective design and construction. Option 1 provides instantaneous water to the system thus negating any vacuums or negative pressures.

Option 2 – Tower Replacement with a 1–2 day storage volume supply

This scenario uses existing system parameters with an elevated surge that has a 1-2 day storage capacity equating to 4,320m³. The larger capacity would allow the Secondary system to accommodate longer duration breaks or outages and provide for additional Fire Flows.

Option 3 - Remove the Tower

Using scenarios similar to Option 1 and 2 this model analyzed the system without a storage/surge water supply. This option requires the use of additional surge protection such as air release and combination air valves. During RVA’s analysis they noted the use of four (4) combination air valves in addition to the Dillions report of four (4) combination air valves for a total of **eight (8) combination air valves**. Combination air valves have the ability to bleed air in the watermain reducing negative pressure situations such as with transient waves. However, this system is required to work perfectly and would require frequent inspections and testing causing service interruptions. Although the valves themselves have a relatively low maintenance cost this would likely be offset from high level of operational system checks to ensure the system is ready and functioning when needed.

Option 4 – Battery Backup

RVA also completed an analysis with the use of a battery backup, or a Uninterrupted Power Supply (UPS) to assist in mitigating transient waves. The analysis showed that the UPS would assist in reducing transient waves, but would not protect the system from short-term waves, commonly known as a water hammer. In an emergency or watermain break situation the existing valves would instantly shut causing the start of a water hammer, during this time the pumps would need to completely shut down and cycle before the UPS would allow the pumps to start again. Once the pumps start the long-term transient wave would be able to be controlled, however damage could have already taken place from the short-term water hammer wave.

A summary of the four options is provided below, along with some Pro’s and Con’s of each option.

Option	Cost (2024 Dollars)	Pro’s	Con’s
1. Tower Replacement with the same storage volume (776 m³)	- \$2,500,000.00	- Can mitigate the transient pressures within the system - Acts as a surge tank for transmission system - Additional storage supply in the event of low-pressure conditions/events	- Medium construction cost - Medium maintenance and operation costs
2. Tower Replacement with a 1–2 day storage volume supply (4,320m³)	- \$8,700,000.00	- Can mitigate the transient pressures within the system - Acts as surge tank for the transmission system - Additional storage supply in the event of emergency such as fire and low-pressure conditions/events	- High construction cost - Medium maintenance and operation costs
3. Tower Removal with 8 Combination Air Valves	- \$2,000,000.00	- Can mitigate the transient pressures within the system under normal operations and fire flow conditions	- High risk of not working when needed - Complex coordination - No additional water supply in low pressure events - High risk to system during short term surge
4. Battery Backup	- \$1,500,000.00	- Can mitigate the transient pressures within the system - Lowest construction cost	- No additional water supply in low pressure events - High risk to system during short term surge - Requires significant system design changes - Requires additional building (cost not included) - High maintenance - High risk of failure

Although the Battery Backup Option and the Tower Removal with 8 Combination Air Valves Option do mitigate the transient pressures the results of this study indicate that fixing just the transient pressure is insufficient and that a more robust solution should be considered. Therefore, in consultation with staff from Southwold and Central Elgin, Administration are recommending the Board of Management approve Option 1 – Tower Replacement with similar storage volume be approved with detail design to be considered as part of the 2025 Capital Budget. As part of the detailed design process Administration will also work with local Fire departments regarding their communication equipment currently located on the existing Tower.

Financial Impact:

Option 1 has an estimated construction cost of \$2,500,000 (2024 dollars) and a design cost of \$250,000. Should the Board of Management support the recommendations of this Report these project costs would be reflected in the 5-year Capital Forecast.

Respectfully,



Shayne Reitsma P.Eng
Manager of Development and Compliance

Reviewed By:  City Engineer

 Manager of Water and Sewer



Report No.
SWB 08-24

File No.

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

Meeting Date:
October 17, 2024

Department: Environmental and Infrastructure Services

Attachment

Prepared By: Karel Kamerman, B.Sc., C.Tech.
Environmental Compliance Coordinator

2025 Draft STASWSS Operating
and Capital Budgets

Subject: STASWSS 2025 Operating Budget, Capital Forecast, and Water Rates

Recommendation:

- THAT:** Report SWB 08-24 STASWSS 2025 Operating Budget, Capital Forecast, and Water Rates be received for information, and further;
- THAT:** The St. Thomas Area Secondary Water Supply System 2025 Draft Operating Budget, as attached to this report be approved, and further;
- THAT:** The St. Thomas Area Secondary Water Supply System 2025 Draft Capital Forecast, as attached to this report, be approved and further;
- THAT:** The Secondary Rate for the St. Thomas Area Secondary Water Supply System of \$0.6909/m³, effective January 1, 2025, be approved.

Background:

The St. Thomas Area Secondary Water Supply System (STASWSS) obtains water from the Elgin Area Primary Water Supply System (EAPWSS) and provides wholesale drinking water directly to the City of St. Thomas, the Municipality of Central Elgin, the Township of Southwold and indirectly to the Municipality of Dutton-Dunwich.

The water rate charged to STASWSS benefiting municipalities for each cubic meter of wholesale drinking water includes charges for the direct cost recovery of the EAPWSS water supply expense and the Secondary Water Rate, which aims to recover the costs of maintenance and operations activities as well as to build an adequate reserve balance to help fund future rehabilitation and renewal projects to ensure the ongoing reliability of the STASWSS.

Each of the benefitting municipalities then charges each of their users a consumption rate that is set such that each municipality may recover the expenses arising from the use of the EAPWSS, STASWSS and the operation, maintenance, rehabilitation, and renewal of their own local water distribution systems.

Analysis:

2025 Operating Budget

Water supply and demand projections have been reviewed as part of the 2025 operating budget development process to further refine revenue and water purchase expenses, based on recent system performance metrics. The 2025 budgeted volumes have been established by incorporating the principles and recommendations from the approved 2021 - 2031 Rate Study along with some adjustments to reflect the current volume projections, corresponding revenues, and water supply expenses. The long-term volume projections will be reviewed during revisions of the next water rate study, proposed to be undertaken in 2025, and compared to the long-term growth projections for each municipality.

2025 Capital Forecast

Administration has prepared a 5-year Capital Forecast which identifies two (2) projects for 2025:

Ford Water Tower Design & Contract Administration

This project is to retain a design consultant to advance the detailed design of the selected option and includes construction inspection and contract administration for the selected option installation in 2026.

Secondary Transmission Main MTO Crossings

This project is a placeholder for installing spare casing as part of the MTO Highway 3 Twinning project for future use when reconstructing the secondary transmission main in this area is needed. All other secondary transmission main relocation costs as a result of the Highway 3 Twinning project are the responsibility of the MTO.

2025 Water Rate

It is recommended that the Secondary Water Rate for the St. Thomas Area Secondary Water Supply System be set at \$0.6909 per cubic meter (69.09¢ per cubic meter). This proposed 2025 rate represents a 3.0% increase from the current rate and is a 1.0% increase from the rate increase identified in the 2021 – 2031 STASWSS Water Rate Study. The increase above that recommended in the Rate Study is necessary to maintain sustainable levels of funding as a result of system renewal needs and higher inflationary pressures than were anticipated in the water rate study.

Future Rate Adjustments

As identified in the approved 2021 - 2031 Rate Study and Financial Plan, an annual increase of 2.0% is projected in the STASWSS Water Rate beyond 2025. This water rate projection may be subject to revision as the update to the Water Rate Study is completed in 2025.

Reserve Funds

The Secondary Water Reserve Fund is required to provide a stable funding source for capital programs designed to maintain, renew and/or replace existing secondary system assets. Accordingly, annual contributions to the Secondary Water Reserve Fund should be relatively consistent and align with the projected lifecycle needs of the system. On average and over the long-term, the annual Secondary Water Reserve Fund contribution should be in the order of \$880,000. When considering the potential interest earned, the 2025 operating budget approaches this target. The 2023 year ending Secondary Water Reserve Fund balance is \$4,918,107.

Financial Considerations:

In order to meet the requirements of provincial water legislation and build an adequate reserve balance to help fund future rehabilitation and renewal projects, the Secondary Water Rate is recommended to increase from \$0.6416/m³ to \$0.6609/m³, a 3.0% increase.

The proposed rate increase would result in a water bill increase for the average customer (167 m³/year) of 0.17% (\$0.97), 0.50% (\$3.22) and 0.32% (\$3.22) for customers located in St. Thomas, Southwold, and Central Elgin, respectively.

Respectfully,



Karel Kamerman, B.Sc., C.Tech
Environmental Compliance Coordinator

Approved By:



City Engineer



Mgr. Develop. &
Compliance

Manager of Water
and Sewer

2025 STASWSS Operating Budget

Program	Rev/Exp	Account	Description					2025	2025	% Change
				2023 Actuals	YTD Actuals	2023 Budget	2024 Budget	Rate Study Forecast	Proposed Budget	
412 Secondary Water Operations	Revenue		Water Billing Recovery	(3,507,429)	(2,004,886)	(3,620,000)	(3,720,000)	(3,519,389)	(3,550,000)	-4.57%
		4-40-41-412-2650	Interest Earned	(272,537)						0.00%
	Revenue Total			(3,779,967)	(2,004,886)	(3,620,000)	(3,720,000)	(3,519,389)	(3,550,000)	-4.57%
	Expense	4-40-41-412-3029	Distributed Wages	35,402	34,049	50,460	58,700	51,086	60,600	3.24%
		4-40-41-412-3999	Job Costing Labour	105,377	51,699	55,000	60,000	52,996	70,000	16.67%
		4-40-41-412-4042	Audit Fees	3,816			4,000		5,000	25.00%
		4-40-41-412-4075	Secondary Water System - Contractor	107,322	51,150	100,000	110,000	111,512	115,000	4.55%
		4-40-41-412-4141	Misc. Contracted Services	26,426		35,000	30,000	38,643	30,000	0.00%
		4-40-41-412-4152	SCADA Maintenance	40,040	23,286	15,000	15,000	11,151	20,000	33.33%
		4-40-41-412-4169	Job Costing Subcontractors	48,112	40,276	20,000	20,000	21,649	25,000	25.00%
		4-40-41-412-4172	Occupancy Fee	58,756	58,756	60,000	60,000	64,946	60,000	0.00%
		4-40-41-412-4179	Job Costing Equipment	10,450	6,900	8,500	8,500	9,385	9,400	10.59%
		4-40-41-412-4190	City Own Property Taxes	5,048	5,146	5,000	5,100	5,410	5,300	3.92%
		4-40-41-412-4212	Insurance	27,610	24,450	27,610	32,600	19,233	37,200	14.11%
		4-40-41-412-4251	CMMS Support Fee	1,387	1,977	3,300	3,300	3,257	3,400	3.03%
		4-40-41-412-4252	Communications SCADA	25,546	18,803	20,340	23,300	22,082	25,000	7.30%
		4-40-41-412-5280	Purchase of Water	2,261,077	1,580,449	2,086,750	2,360,000	2,134,808	2,300,000	-2.54%
		4-40-41-412-5410	Electricity (Hydro)	115,863	25,274	250,000	100,000	172,298	110,000	10.00%
		4-40-41-412-5438	Chemicals	2,091	9,324	15,000	10,000	5,520	10,000	0.00%
		4-40-41-412-5999	Job Costing Materials	2,884	4,442	1,100	2,000	1,656	3,000	50.00%
		4-40-41-412-7111	Transfer to Secondary Water Reserve Fund	902,760		866,940	817,500	788,345	661,100	-19.13%
	Expense Total			3,779,967	1,935,981	3,620,000	3,720,000	3,519,389	3,550,000	-4.57%

Division	Item	Capital Program	Project Type	Strategic Action	2025	2026	2027	2028	2029
Development & Compliance	Ford Water Tower Design & Contract Administration/Inspection	Secondary	Design	Pillar 1 - Priority 2.2	\$ 250,000				
Development & Compliance	Secondary Transmission Main MTO Crossings	Secondary	Construction	Pillar 1 - Priority 3.1	\$ 790,000				
Development & Compliance	Ford Water Tower Replacement	Secondary	Replacement	Pillar 1 - Priority 2.2		\$ 2,760,000			
Development & Compliance	South Edgeware Road Upgrades - (Waterworks Park to Burwell Road)	Secondary	Upgrades	Pillar 1 - Priority 3.1			\$ 22,000,000		
Development & Compliance	South Edgeware Road Upgrades - (Burwell Road to Harper Road)	Secondary	Upgrades	Pillar 1 - Priority 3.1				\$ 20,000,000	
				Secondary Reserve	\$ 1,030,000	\$ 2,760,000	\$ 6,000,000	\$ 5,000,000	\$ -