

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

**JOINT BOARD OF MANAGEMENT**

**Thursday, June 23, 2016 at 3:30 p.m.**

**Room 309, City Hall**

**AGENDA**

**DISCLOSURES OF INTEREST**

Minutes

Review and approval of the minutes of March 24, 2016

Reports

1. Report SWB03-16, DWQMS Secondary OP 2016 endorsement
2. Report SWB04-16 – Management Review Update

Unfinished Business

New Business

1. Verbal update on EMPS pump replacement

**CLOSED SESSION**

A resolution to close the meeting will be present to deal with a proposed or pending acquisition of land and a matter protected under the Municipal Freedom of Information and Protection of Privacy Act.

Adjournment



Corporation of the  
**City of St. Thomas**

**Report No.**

SWB 03-16

**File No.**

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

**Meeting Date: June 23, 2016**

Date Authored: May 19, 2016

**Department:** Environmental Services

**Attachments**

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

#1 – Elgin Middlesex Pumping Station (St. Thomas Component) Drinking Water Quality Management Operational Plan  
#2- DWQMS Policy for St. Thomas Area Secondary Water Supply System (transmission main)

**Subject:** **Drinking Water Quality Management System Plan and Policy Endorsements for the Elgin Middlesex Pumping Station and the Transmission Main for the Secondary System**

**Recommendations:**

THAT: Report SWB 03-16, Drinking Water Quality Management Plan and Policy Endorsements for the Elgin Middlesex Pumping Station and the Transmission Main for the Secondary System, be received for information; and

THAT: The Joint Board of Management approve the Drinking Water Quality Management Operational Plans and Policies.

**Origin:**

Ontario has established a strong regulatory framework for drinking water systems in the province. This framework under the *Safe Drinking Water Act, 2002* and related regulations focuses on compliance-based results which are verified through the Ministry of Environments' compliance and abatement programs. The regulations stipulate the detailed requirements for drinking water systems, testing services, quality standards, certification of drinking water system operators and drinking water quality analysts, as well as compliance and enforcement.

The Ontario Clean Water Agency (OCWA), the Operating Authority for the Elgin Middlesex Pumping Station (EMPS), has developed Drinking Water Quality Management Standards (DWQMS) to integrate quality management through a proactive and preventative approach to assuring drinking water quality. The SDWA requires each Owner of a municipal drinking water system to obtain a Drinking Water Licence for the operation of their waterworks. A prerequisite of the new municipal licensing program is to have the municipal drinking water system operated by an accredited Operating Authority. OCWA has maintained accreditation through SAI-Global, one of the external auditors retained by the Ministry of the Environment to carry out audits for the DWQMS program.

The City of St. Thomas, the Operating Authority for the Transmission Main for the Secondary System, has developed Drinking Water Quality Management Standards (DWQMS) to integrate quality management through a proactive and preventative approach to assuring drinking water quality. The SDWA requires each Owner of a municipal drinking water system to obtain a Drinking Water Licence for the operation of their waterworks. A prerequisite of the new municipal licensing program is to have the municipal drinking water system operated by an accredited Operating Authority. The City of St. Thomas has obtained accreditation through SAI-Global, one of the external auditors retained by the Ministry of the Environment to carry out audits for the DWQMS program.

Through the accreditation process, it was noted that the Joint Board of Management reaffirm their commitment to the Drinking Water Quality Management Plans for the EMPS developed by OCWA and the Transmission Main developed by the City of St. Thomas.

**Analysis:**

The Joint Board of Management is the owner and provides governance for the St. Thomas Area Secondary Water Supply System.

OCWA is the operating authority that operates and maintains the EMPS, and the City of St. Thomas is the operating authority for the transmission main for the Secondary System.

OCWA and the City of St. Thomas have developed DWQMS Operational Plans for the Secondary System consisting of the EMPS and the transmission main. The plan commits the Joint of Management and both operating authorities to:

- The maintenance and continual improvement of the Quality Management System.
- Supplying safe drinking water to its customers
- Complying with applicable legislation and regulations

In addition, the Policy developed by the City of St. Thomas requires all suppliers and contractors to meet the required obligations and to promote conservation.

The Operational Plans are based on a number of guiding elements:

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

Element 3 of the Operational Plans requires a written endorsement of its contents by the organization's top management and owner representative. A copy of the Drinking Water Quality Management Policy is provided (*Attachment #1*).

#### ***Role and Responsibility of the Joint Board of Management***

The owner of a public water system is responsible for meeting all of the public responsibilities that apply to the water supply. An owner is a person, municipal council, or board of commissioners who owns a public water system. The owner may designate a manager, operator, or operators to conduct the day-to-day operations of a water supply, but the owner is ultimately responsible for providing safe drinking water and meeting regulatory requirements.

Section 19 of the *Safe Drinking Water Act, 2002* sets out the legal responsibilities and duties of persons who oversee municipal drinking water systems. This section requires that those who are in a position of oversight of municipal drinking water systems apply a statutory standard of care to their oversight activities. Anyone to whom the standard of care applies is expected to exercise the level of care, diligence and skill in respect of a municipal drinking water system that a reasonably prudent person would be expected to exercise in a similar situation.

The SDWA expressly extends regulatory responsibility to people with decision making authority over the drinking water system. Depending on specific circumstances and individual responsibilities, this responsibility may extend to individual board members and other municipal officials and employees.

To assure that their responsibilities have been carried out diligently, the Joint Board of Management must:

- understand their obligations under the *Safe Drinking Water Act, 2002* and associated regulations;
- be aware of the conditions outlined in the system's Drinking Water Works Permit;
- assign competent and certified management and operators;
- allocate sufficient financial resources for the operation and maintenance of the system;
- require and review periodic and annual reports from senior management on the operation of the municipal drinking water system;
- be satisfied that appropriate steps are taken to address any issues.

Therefore, it is recommended that the Joint Board of Management reaffirm their commitment to the obligations under the *Safe Drinking Water Act, 2002* through approval of the Drinking Water Quality Management Plans and Policies.

Respectfully Submitted,



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

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Reviewed By: \_\_\_\_\_  
Treasury       Env Services      Planning      City Clerk      HR      Other

Quality Management System (QMS)  
Operational Plan  
Elgin-Middlesex Pumping Station  
(St. Thomas Portion)

**St. Thomas Area Secondary  
Water Supply System Joint  
Board of Management**  
(Owner)

**Ontario Clean Water Agency**  
(Operating Authority)

Revision 5, 2015-11-06



**DISCLAIMER STATEMENT**

This Operational Plan is designed for the exclusive use of St. Thomas Area Secondary Water Supply System Joint Board of Management.

This Operational Plan has been developed with OCWA's operating practices in mind and utilizing OCWA personnel to implement it.

Any use which a third party makes of this Operational Plan, or any part thereof, or any reliance on or decisions made based on information within it, is the responsibility of such third parties. The St. Thomas Area Secondary Water Supply System Joint Board of Management, The Corporation of the City of St. Thomas as the administrative authority on behalf of the before mentioned Board, and OCWA accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this Operational Plan or any part thereof.



# OPERATIONAL PLAN

## Elgin-Middlesex Pumping Station St. Thomas Portion

Owned by the St. Thomas Area Secondary Water System Joint Board of Management  
Operated by the Ontario Clean Water Agency

This Operational Plan defines and documents the Quality Management System (QMS) for the Elgin-Middlesex Pumping Station (St. Thomas Portion) operated by the Ontario Clean Water Agency (OCWA). It sets out policies and procedures with respect to quality management in accordance with the requirements of the Province of Ontario's Drinking Water Quality Management Standard (DWQMS) legislated under the Safe Drinking Water Act.

The Table of Contents on page 5 lists the page reference for each of the 21 Elements described within the Drinking Water Quality Management Standard (DWQMS). As appendices to the Operational Plan, procedures have been provided to address the needs of specific Elements.



## OPERATIONAL PLAN REVISION HISTORY

<b>Date</b>	<b>Revision</b>	<b>Description of Revision</b>
2012-10-20	0	New Operational Plan issued by new Operating Authority
2013-04-30	1	Revisions due to transitional audit and owner comments
2013-11-29	2	Minor clerical revisions, External and Internal Audit revisions.
2014-12-05	3	Minor clerical revisions, Internal & External Audits.
2014-12-09	4	Updated re-endorsement wording and added legislative and regulatory requirement wording under Element 3
2015-11-06	5	Minor clerical revisions, External and Internal Audit revisions.



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## LIST OF APPENDICES

- Appendix A – EMPS (STP)-01 Document and Records Control (Element 5)
- Appendix B – EMPS (STP)-02 Risk Assessment and Risk Assessment Outcomes (Elements 7 & 8)
- Appendix C – QMS Organizational Structure for the Elgin-Middlesex Pumping Station (St. Thomas Portion) (Element 09)
- Appendix D – EMPS (STP)-03 Personnel Coverage (Element 11)
- Appendix E – EMPS (STP)-04 Communications (Element 12)
- Appendix F – EMPS (STP)-05 Essential Supplies and Services (Element 13)
- Appendix G – EMPS (STP)-06 Review and Provision of Infrastructure (Element 14)
- Appendix H – EMPS (STP)-07 Sampling, Testing and Monitoring (Element 16)
- Appendix I – EMPS (STP)-08 Measurement and Recording Equipment Calibration and Maintenance (Element 17)
- Appendix J – EMPS (STP)-09 Emergency Management (Element 18)
- Appendix K – EMPS (STP)-10 Internal QMS Audits (Element 19)
- Appendix L – EMPS (STP)-11 Management Review (Element 20)
- Appendix M – MOE's Director's Directions *Minimum Requirements for Operational Plans* – Schedule "C"





## **1 Quality Management System (QMS)**

OCWA, as the contracted Operating Authority for the Elgin-Middlesex Pumping Station which includes the St. Thomas Area Secondary Water Supply System, has prepared this Operational Plan to document the Quality Management System in place at this facility that meets the requirements of the Drinking Water Quality Management Standard with the purpose of:

1. Establishing policy and objectives with respect to the effective management and operation of the facility;
2. Understanding and controlling the risks associated with the facility's activities and processes;
3. Achieving continual improvement of the QMS.

The administrative body for the St. Thomas Area Secondary Water Supply System Joint Board of Management (water facility owner) is the Corporation of the City of St. Thomas.



## 2 Quality Management System (QMS) Policy

*The Ontario Clean Water Agency, as the contracted Operating Authority for the Elgin-Middlesex Pumping Station (St. Thomas Portion), is committed to*

- *the maintenance and continual improvement of the Quality Management System (QMS)*
- *supplying safe drinking water to its consumers,*
- *complying with applicable legislation and regulations.*

*This policy shall serve as a foundation for our QMS.*

This QMS Policy has been reviewed with all OCWA personnel who operate this facility. The Owner has reviewed this Policy and the Policy is in a format that can be readily communicated to the public and available upon request. The Policy is currently posted at the facility and documented within this Operational Plan.



### 3 Commitment & Endorsement of the QMS & Operational Plan

This Operational Plan supports the overall goal of OCWA and the St. Thomas Area Secondary Water Supply System Joint Board of Management to provide safe, cost-effective drinking water. OCWA will be responsible for developing, implementing, maintaining and continually improving the QMS with respect to the operation and maintenance of the Elgin-Middlesex Pumping Station (St. Thomas Portion) and will do so in a manner that not only ensures compliance with applicable legislation and regulations but also informs and obtains approval from the administrative municipality (who is acting on behalf of the facility owner) about any proposed changes to the QMS.

OCWA is aware of all applicable Ontario Safe Drinking Water Legislation and regulatory requirements through OCWA's Corporate Compliance division and Legal division. Updates are then provided corporately to the Compliance Manager and the Senior Operations Manager.

Re-endorsement of the Operational Plan shall be obtained:

- By the Owner a minimum of every 4 years,
- If Top Management changes, or
- Change of Operating Authority

Through the following endorsement, the St. Thomas Area Secondary Water Supply System Joint Board of Management and OCWA approves and commits to the QMS as documented in this Operational Plan.

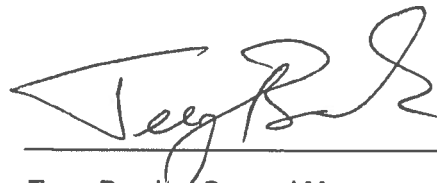


Justin Lawrence, Director of Environmental Services and City Engineer

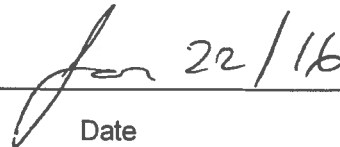
Owner Representative

Dec 23, 2015

Date



Terry Bender, General Manager  
Ontario Clean Water Agency  
(Operating Authority)



Date



## **4 Quality Management System Representative**

The QMS representative role for this facility is jointly administered (to ensure continuity of service) by the Compliance Manager Huron Elgin Hub and the Operations and Compliance Team Lead, Elgin, Ontario Clean Water Agency. As the QMS Representatives, they share the responsibility and authority to:

1. Administer the QMS by ensuring that processes and procedures needed for the QMS are established and maintained,
2. Ensure that current versions of documents required by the QMS are being used at all times,
3. Ensure that all personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the Elgin-Middlesex Pumping Station,
4. Promote awareness of the QMS throughout the Operating Authority, and
5. Report to Top Management on the performance of the QMS and any need for improvement.

Top management appoints and authorizes the QMS Representatives.

## **5 Document and Records Control**

Refer to Appendix A for QMS Procedure EMPS (STP)-01 Document and Records Control (Element 05).



## 6 Drinking Water System

The Elgin-Middlesex Pumping Station is located at 490 South Edgeware Road, northeast of the City of St. Thomas in the Municipality of Central Elgin. It supplies water to the St. Thomas Area Secondary Water Supply System (STASWSS), the City of London distribution system, and the Aylmer Area Secondary Water Supply System (AASWSS). Specific pumps located within the Elgin-Middlesex Pumping Station are owned by the STASWSS Joint Board of Management and supply water to the St. Thomas Area Secondary Water Supply System which in turn supplies water to the City of St. Thomas, the Municipality of Central Elgin, Township of Southwold and the Municipality of Dutton-Dunwich. The Operating Authority for the Elgin-Middlesex Pumping Station (St. Thomas Portion) is the Ontario Clean Water Agency (OCWA).

### Owners and Operating Authorities for Distribution Systems Supplied by the EMPS

Distribution System	Owner	Operating Authority
Aylmer Area Secondary Water Supply System	Aylmer Area Secondary Water Supply System Joint Board of Management	OCWA
City of London Water System	City of London	City of London
St. Thomas Secondary Water Supply System, the Municipality of Central Elgin, Township of Southwold and the Municipality of Dutton-Dunwich	St. Thomas Area Secondary Water Supply System Joint Board of Management	City of St. Thomas

### General Information

The portion of the Elgin-Middlesex Pumping Station owned by the STASWSS Joint Board of Management and designated as the Elgin-Middlesex Pumping Station (St. Thomas Portion) consists of the following:

- Piping specific to the St. Thomas pumps is from the suction inlet valve to the East Chamber.
- three fixed speed centrifugal pumps
- one 600 kW emergency diesel generator (shared with Aylmer Area Secondary Water Supply System)
- one rechlorination system using chlorine gas (shared with Aylmer Area Secondary Water Supply System)
- piping, electrical, mechanical, instrumentation, and SCADA controls with alarms

The Elgin-Middlesex Pumping Station is operated and monitored by the OCWA operators stationed at the Elgin Area Primary Water Supply System (EAPWSS) Water Treatment Plant.

## Description of Water Source

The water feeding into the STASWSS originates from Lake Erie and is treated and pumped to the Elgin-Middlesex Pumping Station from the EAPWSS Water Treatment Plant, which provides safe potable water that meets all regulatory requirements. The EAPWSS Water Treatment Plant is situated near the village of Port Stanley on the north shore of Lake Erie. It is a surface water treatment facility with a treatment capacity of 91 million litres per day.

### *General Characteristics Raw Water entering the Elgin Area Primary Water Supply System*

Characteristic		2011	2012	2013	2014
Temperature (°C)	Min.	0	0	0	0.6
	Max.	23.7	24	22	26
	Avg.	8.47	10	9.2	9.2
Colour (TCU)	Min.	0	0	0	0
	Max.	475	>900	359	482
	Avg.	36	30	36.9	41.9
Conductivity (uohms/m)	Min.	239	244	106	201.8
	Max.	289	299	305.6	300.1
	Avg.	277	276	276.8	276.6
pH	Min.	7.21	7.36	6.88	6.98
	Max.	8.80	8.80	8.58	8.48
	Avg.	8.18	8.12	8.07	8.07
Turbidity (NTU)	Min.	0.11	0.12	0.43	0.44
	Max.	1380	739	998	881
	Avg.	43.0	42.4	41.0	30.6

Lake Erie raw water is consistently positive for microbiological content. However, the water can be treated effectively using conventional processes to produce water meeting Ontario Drinking-Water Quality Standards.

Great Lakes water is considered to pose lower risk for the formation of disinfection by-products (DBP's). The EAPWSS water treatment plant analyzes the treated water directed to the EMPS, in accordance with applicable legislation and includes Dissolved Organic Carbon, an indicator for DBPs and distribution water for Trihalomethane (THM), the most common DBP.

### Common Event-Driven Fluctuations

SCADA Communications from the EMPS to the EAPWSS WTP are prone to dropping out during extreme weather events. During such communication failures, the system automatically switches to operate on system pressures rather than tower levels. During extended communication failures, Operations staff follows the SCADA Communications Failure Contingency (EMPS-SOP-04).

### Critical Upstream and Downstream Processes

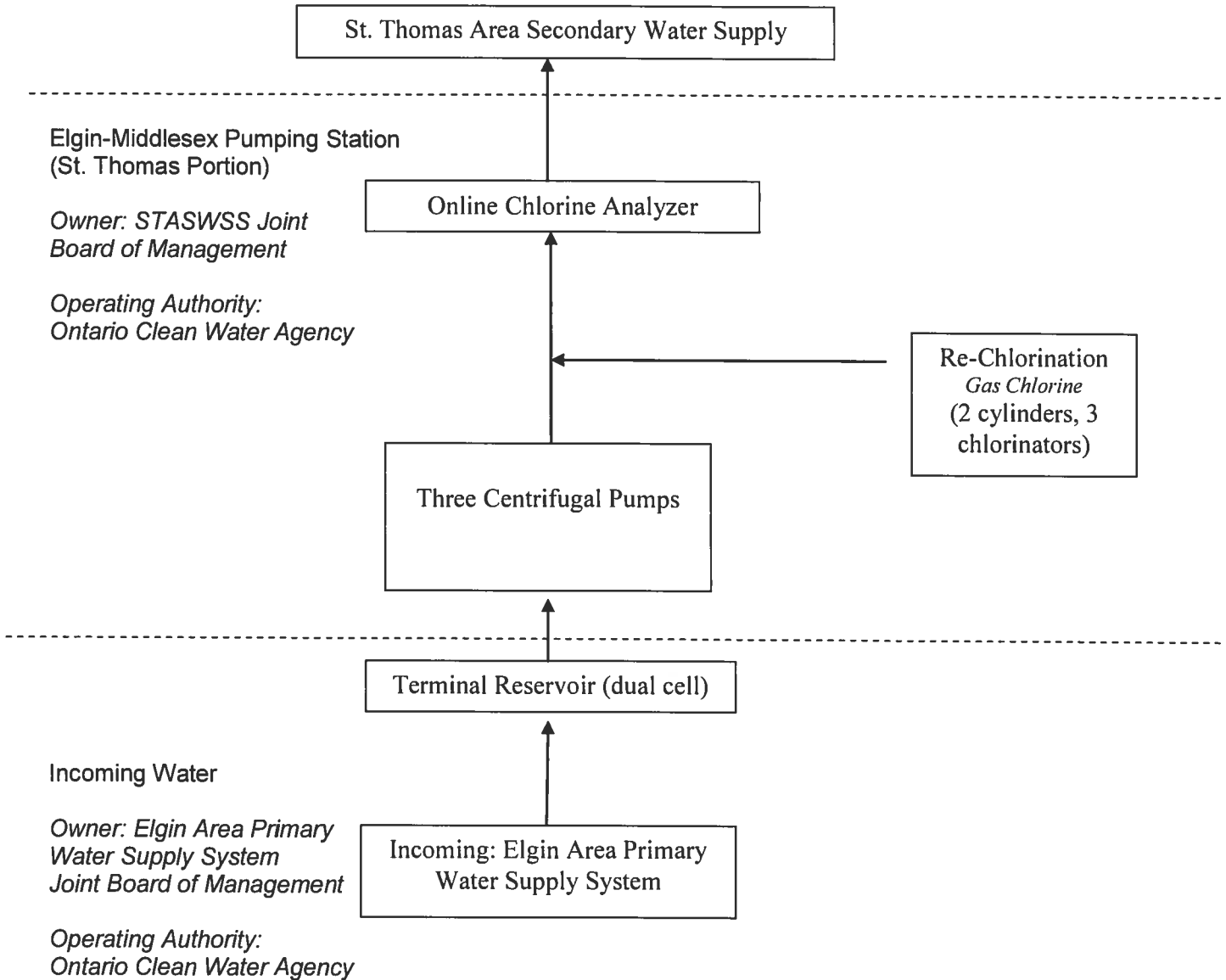
The EMPS - St.Thomas Portion relies on the Elgin Area Primary Water Supply System Water Treatment Plant to provide the necessary critical upstream treatment processes, sampling, and

monitoring to ensure that safe drinking water is supplied to the EMPS – St. Thomas Portion. There are no critical downstream processes relied upon by this drinking water system to provide safe potable water.

**Process Flow Chart**

**Distribution**

*Owner:* St. Thomas Area Secondary Water Supply System Joint Board of Management  
*Operator:* City of St. Thomas



Refer to Appendix M for a completed copy of the Subject System Description Form (MOE's Director's Directions *Minimum Requirements for Operational Plans* Schedule "C").



## 7 Risk Assessment

Refer to Appendix B for QMS Procedure EMPS (STP)-02 Risk Assessment and Risk Assessment Outcomes (Element 7).

## 8 Risk Assessment Outcomes

Refer to Appendix B for QMS Procedure EMPS (STP)-02 Risk Assessment and Risk Assessment Outcomes (Element 8).

## 9 Organizational Structure, Roles, Responsibilities and Authorities

### Organizational Structure and Top Management

OCWA provides operation, maintenance and management services for hundreds of water and wastewater facilities throughout the Province of Ontario. Direct operational activities are primarily delivered through the Agency's Operations Division.

To best meet the needs of each facility and its owner, OCWA's Operations Division is structured as follows:

- *Hub* – Facilities are grouped together geographically to form hubs. The General Manager has oversight responsibility for all of the facilities contained within a particular hub. The Senior Operations Manager has oversight responsibility for their facility.
- *Regional* – Hubs are further grouped together to form regions, each headed by a Regional Manager. Regional Managers play a critical role within OCWA's Quality Management System in that they act as a key link between corporate and facility level management.
- *Provincial* – Regions are under the direction of two VP's of Operations.

The Organizational Structure chart (Appendix C) reflects the lines of responsibility and authority for the Quality Management System at both the facility and corporate level.

### Quality Management System Roles, Responsibilities and Authorities

OCWA management defines the roles, responsibilities and authorities under its Quality Management System for all employees whose work could have a significant impact on drinking water quality. These are communicated to all personnel to ensure that individual roles and responsibilities and how they relate to those of the rest of the organization are understood.

Specific Quality Management System related roles, responsibilities and authorities of Operations personnel for the facility are summarized in the table below. Additional duties of employees are described in their job specifications.



Position	Quality Management System Roles, Responsibilities and Authorities
Owner (STASWSS JBoM)	<ul style="list-style-type: none"> <li>• Prescribe requirements and monitor the operation of the EMPS as per the Contractual Agreement between the Owner and the Operating Authority</li> <li>• Represent the EMPS (STP) on behalf of the consumer</li> </ul>
Owner's Representative (City of St. Thomas through the Director of Environmental Services & City Engineer))	<ul style="list-style-type: none"> <li>• Maintain regular communications between Top Management of the Operating Authority and the Owner (act as liaison)</li> <li>• Facilitate the acquisition of resources for making changes in the QMS through communications with the Owner</li> <li>• Oversee status and progress of the QMS</li> <li>• Make reports and recommendations to the Owner based on review of QMS items, contractual reports, and government reports prepared by the Operating Authority</li> <li>• Oversee capital projects</li> </ul>
All Operations Personnel	<ul style="list-style-type: none"> <li>• Work in accordance with OCWA policies, procedures and plans</li> <li>• Document all activities</li> <li>• Participate in Quality Management System training</li> <li>• Be aware of all the environmental and public health risks at the facility</li> <li>• Consider risks and ramifications of all actions</li> <li>• Participate in testing and development of SOPs and contingency plans</li> <li>• Implement action plans to rectify deficiencies identified in audits and inspections of the facility</li> <li>• Take all appropriate training to ensure competence in their job</li> <li>• Identify and bring forward to the Operations Manager opportunities for improving the facility's Quality Management System</li> <li>• Perform duties in compliance with applicable legislation and regulations</li> </ul>
General Manager (Hub Level Top Management)	<ul style="list-style-type: none"> <li>• Ensure appropriate facility resources to maintain and continually improve the Quality Management System</li> <li>• Review major issues/deficiencies (including those from audit and inspection reports) and provide further direction to address/resolve</li> <li>• Ensure that all facilities have a site-specific emergency plan</li> <li>• Participate in/respond to regular facility Management Reviews, as appropriate</li> <li>• Report to corporate level Top Management on the status of the Quality Management System implemented at the facility</li> <li>• Liaise with the owner/owner representative on relevant components of the Quality Management System including OCWA's roles, responsibilities and authorities for the facility, as appropriate</li> </ul>



<p><b>Senior Operations Manager</b> (Facility Level Top Management)</p>	<ul style="list-style-type: none"> <li>• Under the direction of the General Manager delegate responsibilities, deploy resources and supervise sound operation and maintenance of the facility and of the QMS</li> <li>• Under the direction of the General Manager ensures internal audits (compliance and QMS) are conducted</li> <li>• Develop action plans to respond to the findings of the internal audits and MOE inspections and verify action plan completion</li> <li>• Establish, test and update a site-specific emergency plan for each facility</li> <li>• Report to the General Manager on the performance and effectiveness of the Quality Management System implemented at the facility</li> <li>• Liaise with the owner on relevant components of the Quality Management System including OCWA's roles, responsibilities and authorities for the facility</li> <li>• Establish a training plan for staff to address regulatory requirements and the Quality Management System as part of the PPR process</li> <li>• Participate in regular facility Management Reviews</li> <li>• Oversee the Computerized Maintenance Management System (CMMS)</li> </ul>
<p><b>Compliance Manager</b> (Facility Level Top Management and QMS Representative)</p>	<ul style="list-style-type: none"> <li>• Deploy resources and supervise maintenance of the Quality Management System</li> <li>• Participate in the completion of annual internal audits</li> <li>• Assist in the development and implementation of action plans to respond to audit and MOE inspection findings</li> <li>• Assist in the establishment, testing and updating of a site-specific emergency plans</li> <li>• Report to the Senior Operations Manager on Quality Management System implementation and identify the need for additional processes and procedures</li> <li>• Liaise with the owner on relevant components of the Quality Management System</li> <li>• Assist to develop/implement training plans for staff to address regulatory requirements and the Quality Management System</li> <li>• Act for the Senior Operations Manager in his/her absence</li> <li>• Lead regular facility Management Reviews</li> <li>• Fulfill defined duties of the Quality Management System Representative</li> </ul>
<p><b>Operations &amp; Compliance Team Lead</b> (QMS Representative)</p>	<ul style="list-style-type: none"> <li>• Fulfill duties assigned by the Senior Operations Manager</li> <li>• Participate in the completion of annual internal audits and develop/monitor/implement action plans to respond to the findings</li> <li>• Participate in MOE inspections and assist in the response to required actions or recommendations</li> <li>• Actively participate in the development and maintenance of facility emergency plans</li> <li>• Supervise and direct operational staff and activities in order to meet all relevant legislation, regulations and legal instruments</li> <li>• Assist management in providing recommendation for annual capital forecasts and gathering information for operational reports as required</li> </ul>



	<ul style="list-style-type: none"> <li>• Assist in the preparation of facility manuals and documenting operating processes and procedures for staff</li> <li>• Participate in regular facility Management Reviews</li> <li>• Report to the Senior Operations Manager on Quality Management System implementation and identify the need for additional processes and procedures</li> <li>• Liaise with the owner on relevant components of the Quality Management System</li> <li>• Deliver/participate in training on regulatory requirements and the Quality Management System</li> <li>• Implement, monitor and support corporate Quality Management System programs</li> <li>• Support Senior Operations Manager on all aspects of the Quality Management System and fulfill assigned duties of the QMS Representative</li> <li>• Act for management during vacations or periodic absences</li> <li>• May act as Operator-in-Charge (OIC) and/or Overall Responsible Operator (ORO) when required.</li> <li>• Perform duties of Operator/Mechanic as required</li> </ul>
<p>Distribution &amp; Maintenance Team Lead</p>	<ul style="list-style-type: none"> <li>• Fulfill duties assigned by the Senior Operations Manager</li> <li>• Participate as a technical advisor to staff and management and provide specialized training on technical or other issues.</li> <li>• Prepare and/or coordinate staff work assignments and follow up to ensure completion</li> <li>• Assist management in providing recommendation for annual capital forecasts and gathering information for operational reports as required</li> <li>• Assist in the preparation of facility manuals and documenting operating processes and procedures for staff</li> <li>• Actively participate in the development and maintenance of facility emergency plans and assist with emergencies as required.</li> <li>• Act for management during vacations or periodic absences.</li> <li>• Perform duties of Operator/Mechanic as required</li> <li>• May act as Operator-in-Charge (OIC) and/or Overall Responsible Operator (ORO) when required.</li> <li>• Supervise and direct maintenance staff and activities in order to meet all relevant legislation, regulations and legal instruments</li> <li>• Assist management in developing annual O&amp;M budgets and provide recommendations relating to potential O&amp;M expenditures</li> </ul>
<p>Operator/Mechanic</p>	<ul style="list-style-type: none"> <li>• Fulfill duties assigned by the Senior Operations Manager/Operations and Compliance Team Lead</li> <li>• Monitor facility processes through visual inspection, the SCADA system or by taking readings from the process control equipment</li> <li>• Operate and adjust equipment/processes to maintain compliance with applicable regulations, permits, certificates and established operating procedures</li> <li>• Collect samples and perform laboratory tests and equipment calibrations as required</li> <li>• Regularly inspect operating equipment, perform routine preventive maintenance and repairs and prepare and complete work orders as assigned.</li> </ul>



	<ul style="list-style-type: none"> <li>• Participate in facility inspections and audits</li> <li>• Train and direct new staff on the facility processes, equipment and procedures.</li> <li>• Maintain the facility log book according to regulatory requirements</li> <li>• May act as Operator-in-Charge (OIC) and/or Overall Responsible Operator (ORO) when required.</li> </ul>
<p>Utility Plant Instrument Technician?Operator</p>	<ul style="list-style-type: none"> <li>• Provide advice and technical expertise on the services required for process control and automation systems</li> <li>• Formulate technical plans and proposals for deployment and delivery of process control and automation systems in support of operational activities</li> <li>• Coordinate, maintain and provide technical services in regards to process control and automation systems including preventive maintenance procedures</li> <li>• Discuss and advise on detailed system and programming requirements, modify existing and new software in response to plant requests, train plant operations and maintenance staff, analyze and resolve problems/error conditions, document changes/modifications and configure, install and support related software, hardware and network for such systems</li> <li>• Conduct inspections of the process control and automation systems to validate that all is operating within established parameters</li> <li>• Install and commission new electrical/electronic equipment and automation systems</li> <li>• Perform duties of UPIT/Operator as required</li> </ul>
<p>Maintenance Mechanic/Operator</p>	<ul style="list-style-type: none"> <li>• Fulfill duties assigned by the Senior Operations Manager/Distribution and Maintenance Team Lead</li> <li>• Schedule and perform maintenance on equipment and processes in accordance with established procedures and record the maintenance data in CMMS</li> <li>• Regularly inspect operating equipment, perform routine preventive maintenance and repairs</li> <li>• Prepare work orders according to established procedures and create detailed reports</li> <li>• Perform duties of Mechanic/Operator as required.</li> </ul>
<p>Maintenance Electrician/Operator</p>	<ul style="list-style-type: none"> <li>• Perform repairs and/or scheduled maintenance on electrical systems, equipment, components and devices in accordance with established procedures and record the maintenance data</li> <li>• Regularly inspect operating equipment, perform routine preventive maintenance and repairs</li> <li>• Monitor facility processes through visual inspection, the SCADA system or by taking readings from the process control equipment</li> <li>• Operate and adjust equipment/processes to maintain compliance with applicable regulations, permits, certificates and established operating procedures</li> <li>• Perform duties of Electrician/Operator as required</li> </ul>

## 10 Competencies

The following table presents the competencies required by OCWA personnel whose duties directly affect drinking water quality.

Position	Required Competencies
General Manager	<ul style="list-style-type: none"> <li>• Operator certification in good standing; minimum Class III Distribution &amp; Supply required to act as ORO</li> <li>• Comprehensive general knowledge of and experience in managing water treatment operations, maintenance as well as facility financial planning and administration</li> <li>• Outstanding team leadership, managerial and co-coordinating skills</li> <li>• Sound knowledge of relevant legislation, regulations, codes, policies, guidelines and procedures</li> <li>• Knowledge and awareness of the DWQMS</li> <li>• Strong initiative, analytical, evaluating and problem-solving skills to assess administrative and technical needs and capabilities</li> <li>• Well-developed priority-setting and time management skills</li> <li>• Superior interpersonal skills</li> <li>• Excellent oral and written communication skills</li> <li>• Proficiency in office and operational computerized systems</li> <li>• Valid Class G Driver's License</li> </ul>
Senior Operations Manager	<ul style="list-style-type: none"> <li>• Experience in water treatment operations, maintenance as well as facility financial planning and administration</li> <li>• Advanced knowledge of relevant legislation, regulations, codes, policies, guidelines and procedures</li> <li>• Knowledge and awareness of the DWQMS</li> <li>• Advanced technical knowledge of principles, practices, technologies and methodologies for water treatment</li> <li>• Familiarity with complex mechanical equipment and electronic controls</li> <li>• Analytical, evaluating and problem-solving skills</li> <li>• Project management, work planning and scheduling skills</li> <li>• Good oral and written communication skills</li> <li>• Proficiency in office and operational computerized systems</li> <li>• Management/supervisory experience</li> <li>• Valid Class G Driver's License</li> </ul>
Compliance Manager	<ul style="list-style-type: none"> <li>• Operator certification in good standing; minimum OIT</li> <li>• Good knowledge of water treatment processes to operate the facility</li> <li>• Experience and knowledge of the maintenance and repair of a variety of equipment and structures</li> <li>• Excellent working knowledge of legislation, regulations, codes, policies, guidelines and procedures related to operations and maintenance</li> <li>• Excellent Knowledge and awareness of the DWQMS</li> <li>• Basic mathematics and chemistry</li> <li>• Familiarity with computers, monitoring and operating systems</li> <li>• Knowledge to use and understand operating and maintenance manuals, blueprints and other technical specifications</li> <li>• Planning, scheduling and problem-solving skills to regularly inspect and monitor the facility, processes and equipment</li> <li>• Good oral and written communication skills</li> </ul>

	<ul style="list-style-type: none"> <li>• Ability to work in a team and take initiative when required.</li> <li>• Valid Class G Driver's License</li> </ul>
Team Leads (Operations & Compliance; Maintenance & Distribution)	<ul style="list-style-type: none"> <li>• Operator certification in good standing; minimum WT Level 1</li> <li>• Extensive knowledge and experience of water treatment processes to operate the facility</li> <li>• Experience and knowledge of the maintenance and repair of a variety of equipment and structures</li> <li>• Good working knowledge of legislation, regulations, codes, policies, guidelines and procedures related to operations and maintenance</li> <li>• Knowledge and awareness of the DWQMS</li> <li>• Basic mathematics and chemistry</li> <li>• Good knowledge of computers, monitoring and operating systems</li> <li>• Good knowledge to use and understand operating and maintenance manuals, blueprints and other technical specifications</li> <li>• Planning and organizational skills to lead projects and provide technical direction to staff</li> <li>• Demonstrated leadership and decision making skills required to direct an operational team</li> <li>• Problem solving and evaluative skills to provide technical guidance and resolve operational issues</li> <li>• Planning skills to regularly inspect and monitor the facility, processes and equipment and perform routine preventative maintenance</li> <li>• Good oral and written communication skills</li> <li>• Ability to work in a team and take initiative when required.</li> <li>• Valid Class G Driver's License</li> </ul>
Operator/Mechanic	<ul style="list-style-type: none"> <li>• Operator certification in good standing; minimum OIT</li> <li>• Experience and knowledge of the maintenance and repair of a variety of equipment and structures</li> <li>• Good knowledge of water treatment processes to operate the facility</li> <li>• Good working knowledge of legislation, regulations, codes, policies, guidelines and procedures related to operations and maintenance</li> <li>• Knowledge and awareness of the DWQMS</li> <li>• Basic mathematics and chemistry</li> <li>• Familiarity with computers, monitoring and operating systems</li> <li>• Knowledge to use and understand operating and maintenance manuals, blueprints and other technical specifications</li> <li>• Planning, scheduling and problem-solving skills to perform a variety of maintenance and repair tasks</li> <li>• Good oral and written communication skills</li> <li>• Ability to work with a team and take initiative when required.</li> <li>• Valid Class G Driver's License</li> </ul>
Utility Plant Instrumentation Technician?Operator	<ul style="list-style-type: none"> <li>• Operator certification in good standing; minimum OIT</li> <li>• Theoretical and practical knowledge/experience/training in water/wastewater treatment operation processes, design, instrumentation, process control and automation systems</li> <li>• Knowledge and awareness of the DWQMS</li> <li>• Technical evaluation and design skills necessary for process control and automation optimization and deployment</li> <li>• Experience in delivering technical guidance for hardware/software selection</li> <li>• Thorough understanding of network and telecommunications</li> </ul>



	<p>environment, standards and operating systems, computer language, ladder logic and relational and document based database management systems</p> <ul style="list-style-type: none"> <li>• Ability to monitor, review and troubleshoot network, hardware, software and instrumentation performance</li> <li>• Analytical and evaluative problem-solving skills to assess client, process and control requirements</li> <li>• Well-developed organizational, time and project management skills</li> <li>• Superior interpersonal skills</li> <li>• Good oral and written communication skills</li> <li>• Valid Class G Driver's License</li> </ul>
<p>Maintenance Mechanic/Operator</p>	<ul style="list-style-type: none"> <li>• Operator certification in good standing; minimum OIT</li> <li>• Good knowledge of water treatment processes</li> <li>• Experience and knowledge of the maintenance and repair of a variety of equipment and structures</li> <li>• Good working knowledge of legislation, regulations, codes, policies, guidelines and procedures related to operations and maintenance</li> <li>• Knowledge and awareness of the DWQMS</li> <li>• Good working knowledge of tools and test equipment</li> <li>• Familiarity with computers, monitoring and operating systems</li> <li>• Knowledge to use and understand operating and maintenance manuals, blueprints and other technical specifications</li> <li>• Planning, scheduling and problem-solving skills to regularly inspect and monitor the facility, processes and equipment</li> <li>• Good oral and written communication skills</li> <li>• Ability to work in a team and take initiative when required.</li> <li>• Valid Class G Driver's License</li> </ul>
<p>Maintenance Electrician/Operator</p>	<ul style="list-style-type: none"> <li>• Completion of any electrical or electronic training program certified by the Ministry of Colleges and Universities</li> <li>• Operator certification in good standing; minimum OIT</li> <li>• Experience in performing maintenance and repair of electrical and electronic equipment</li> <li>• Good working knowledge of legislation, regulations, codes, policies, guidelines and procedures related to operations and maintenance</li> <li>• Good working knowledge of tools and test equipment</li> <li>• Familiarity with computers, monitoring and operating systems</li> <li>• Knowledge to use and understand operating and maintenance manuals, blueprints and other technical specifications</li> <li>• Familiarity with computers, monitoring and operating systems</li> <li>• Good oral and written communication skills</li> <li>• Ability to work from plans and schematic diagrams</li> <li>• Knowledge and awareness of the DWQMS</li> <li>• Ability to work in a team and take initiative when required</li> <li>• Valid Class G Driver's License</li> </ul>

OCWA's recruiting and hiring practices follow those of the Ontario Public Service (OPS). As part of the OPS, competencies, which include education, skills, knowledge and experience requirements, are established when designing the job description for a particular position. As part of the recruitment process, competencies are then evaluated against the job description. Based on this evaluation, the hiring manager selects and assigns personnel for specific duties.



Certified operators are responsible for completing the annual number of required training hours for the highest type and class of subsystem where the operator works and completing mandatory courses required by *Safe Drinking Water Act (SDWA)* O. Reg. 128/04 Certification of Drinking Water System Operators and Water Quality Analysts. The Senior Operations Manager takes reasonable steps to ensure that every operator has the opportunity to attend training to meet the annual training hour requirements.

OCWA's Operational Training Program is maintained by the Risk, Compliance & Training Division and aims to:

- Develop the skills and increase the knowledge of Operations staff and management,
- Provide Operations with information and access to resources that can assist them in performing their duties, and
- Assist OCWA operators in meeting the regulatory requirements with respect to training.

The Program consists of both continuing education and on-the-job training and is delivered using a combination of methods (e.g., traditional classroom courses and custom/program-based courses/sessions). A formal evaluation process is in place for all sessions under the Operational Training Program and is a critical part of the Program's continual improvement.

Facility personnel receive site-specific training on relevant operational and emergency response procedures to ensure effective operational control of processes and equipment which may impact the safety and quality of drinking water.

Awareness of the DWQMS is promoted through:

- The OCWA Employee Orientation Program for new employees,
- Training sessions and meetings at the EAPWSS Water Treatment Plant
- HUB/regional level training sessions and meetings and
- The Agency's Environmental Compliance course. OCWA's Environmental Compliance course is mandatory and must be completed within the first year of employment by all new staff to reinforce their roles and responsibilities under DWQMS.
- The mandatory MOE 1 day course for all operators

Other mandatory and recommended training requirements are listed as part of the Employee Orientation Program available on OCWA's intranet or through the Human Resources department.

Individual OCWA employee training records are maintained and tracked using a computerized system, the Training Summary database, which is also administrated by the Risk, Compliance & Training Division. Training records maintained at the facility are controlled as per Procedure EMPS (STP)-01 Document and Records Control.

As part of OCWA's annual Performance Planning and Review (PPR) process, employee performance is evaluated against their job expectations. Professional development opportunities and training needs (which could include formalized courses as well as site-specific on-the-job training or job shadowing/mentoring) are identified by the facility's management team as part of this process (and on an ongoing basis).. In addition to this process, OCWA employees may at any time request training by both internal and external providers by submitting an email to the Senior Operations Manager for approval.



## **11 Personnel Coverage**

Refer to Appendix D for QMS Procedure EMPS (STP)-03 Personnel Coverage (Element 11).

## **12 Communications**

Refer to Appendix E for QMS Procedure EMPS (STP)-04 Communications (Element 12).

## **13 Essential Supplies and Services**

Refer to Appendix F for QMS Procedure EMPS (STP)-05 Essential Supplies and Services (Element 13).

## **14 Review and Provision of Infrastructure**

Refer to Appendix G for QMS Procedure EMPS (STP)-06 Review and Provision of Infrastructure (Element 14).

## **15 Infrastructure Maintenance, Rehabilitation and Renewal**

### Planned Maintenance

OCWA, under contract with the owner representative, maintains a program of scheduled inspection and maintenance of infrastructure for which it is operationally responsible. Routine planned maintenance activities include: pump inspection, analyzer calibrations, flow meter calibrations, valve inspection, chlorine feed inspections.

Planned maintenance activities are scheduled using a Computerized Maintenance Management System (CMMS) that allows user to:

- Enter detailed asset information
- Generate and process work orders
- Access maintenance and inspection procedures
- Plan, schedule and document all asset related tasks and activities
- Access maintenance records and asset histories

Planned maintenance activities are communicated to the person responsible for completing the task through the issuance of CMMS work orders. Work orders are generated by the Senior Operations Manager/or designate on a Monthly basis and are distributed accordingly. Completed work orders are submitted to the Maintenance/Distribution Team Lead for review and entry into CMMS. Records of these activities are maintained as per QMS Procedure EMPS (STP)-01 Document and Records Control.



The Senior Operations Manager or designate maintains the inventory of equipment in CMMS and ensures that appropriate maintenance plans are in place. Maintenance plans are developed according to the manufacturer's instructions, regulatory requirements, industry standards, and/or client service requirements. Equipment Operation and Maintenance (O&M) manuals are accessible to staff at the locations specified in QMS Procedure EMPS (STP)-01 Document and Records Control.

#### Unplanned Maintenance

Unplanned maintenance is conducted as required. All unplanned maintenance activities are authorized by the Senior Operations Manager or designate. Unplanned maintenance activities are recorded on work orders and are entered into CMMS.

#### Rehabilitation and Renewal

Rehabilitation and renewal activities including capital upgrades are determined on an annual basis in consultation with the Owner (refer to EMPS (STP)-06 Review and Provision of Infrastructure). A list of required replacement or desired new equipment is compiled and prioritized by the Senior Operations Manager and is presented to the Owner for review and comment. All major expenditures require the approval of the Owner.

#### Program Monitoring and Reporting

To assist in monitoring the effectiveness of the program, the General Manager and Senior Operations Manager are provided with monthly summary reports for the facility. In addition, OCWA's Executive Management Team is provided with hub and regional summary reports on an ongoing basis.

## **16 Sampling, Testing and Monitoring**

Refer to Appendix H for QMS Procedure EMPS (STP)-07 Sampling, Testing and Monitoring (Element 16).

## **17 Measurement and Recording Equipment Calibration and Maintenance**

Refer to Appendix I for QMS Procedure EMPS (STP)-08 Measurement and Recording Equipment Calibration/Verification and Maintenance (Element 17).

## **18 Emergency Management**

Refer to Appendix J for QMS Procedure EMPS (STP)-09 Emergency Management (Element 18).

## **19 Internal QEMS Audits**

Refer to Appendix K for QMS Procedure EMPS (STP)-10 Internal QMS Audits (Element 19).

## **20 Management Review**

Refer to Appendix L for QMS Procedure EMPS (STP)-11 Management Review (Element 20).

## **21 Continual Improvement**

In conjunction with the internal QMS audit and Management Review processes documented above, OCWA uses action plans that are documented in the EMPS CAF tracking spreadsheet to continually improve its QMS. Through these processes, areas of concern as well as opportunities for improvement are identified at the drinking water systems operated and maintained by OCWA.



**St. Thomas Area Secondary Water Supply System  
(excluding the Elgin- Middlesex Pumping Station)**

**DRINKING WATER QUALITY  
MANAGEMENT SYSTEM  
OPERATIONAL PLAN**

**Revision 11**

**March 16, 2016**

**Prepared by:**

**Operating Authority**

**The City of St. Thomas  
Environmental Services Department**

**Owner:**

**Joint Board of Management for the City of St. Thomas**



THE CORPORATION OF THE CITY OF  
ST. THOMAS



**St. Thomas Area Secondary Water Supply System  
(excluding the Elgin- Middlesex Pumping Station)**

**Drinking Water Quality Management System Operational Plan**

EFFECTIVE DATE: March 16, 2016

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TO BE REVIEWED: Annually or when DWQMS Changes

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## **1. Quality Management System**

### **Preface**

This Operational Plan describes the content of the Drinking Water Quality Management System (DWQMS) in place for the St. Thomas Area Secondary Water Supply System (STASWSS). The contents of this Operational Plan are based upon the requirements of the Drinking Water Quality Management Standard:

- To facilitate the Operating Authority's ability to consistently deliver drinking water that meets applicable legislative, regulatory and Owner requirements and
- To enhance consumer protection through the effective application and continual improvement of the Quality Management System.

### **Abbreviations**

- DWQMS – Drinking Water Quality Management System
- STASWSS – St. Thomas Area Secondary Water Supply System
- EMPS – Elgin-Middlesex Pumping Station
- QC – Quality Coordinator, also known as the Manager Sewer & Water or designate
- QMS Representative – Quality Management System Representative
- OA – Operating Authority, the current authority operating the System
- Owner – The Joint Board of Management
- CCP – Critical Control Point



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- **SOP – Standard Operating Procedure  
Ownership and Operation**

The Joint Board of Management is the Owner and provides governance for the St. Thomas Area Secondary Water Supply System. Benefiting member municipalities currently receiving water from the STASWSS include the City of St. Thomas, Municipality of Central Elgin and the Township of Southwold.

The Joint Board of Management utilizes the services of the City of St. Thomas Environmental Services Department, as it is the Operating Authority, which operates and maintains the St. Thomas Area Secondary Water Supply System on behalf of the Board. Under the DWQMS, the Operating Authority is responsible for implementing and maintaining the DWQMS in partnership with the Board.

## **2. Quality Management System Policy**

The Quality Management System Policy is posted at the main entrance of the Environmental Services Department, City Hall (545 Talbot Street) and at the entrance to the Public Works Service Centre (100 Burwell Road).

A copy of the Quality Management System Policy can be found in **Appendix A**.

### **The City of St. Thomas is committed to:**

- **Managing and operating the St. Thomas Area Secondary Water Supply System in a responsible manner in accordance with documented quality management policies and procedures and providing the customer with clean, safe drinking water**
- **Being a quality leader in the business sector in which we participate**
- **Promoting owner and consumer confidence in the safety of the drinking water supply by ensuring that the drinking water meets all**



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**MOECC regulations, verified by the water analysis and reporting the results to the Public via the City's website and public notices**

- **At a minimum, meeting all relevant legislative and other requirements and requiring our suppliers and contractors to similarly meet these obligations**
- **Promoting resource stewardship, including conservation**

The City of St. Thomas will periodically undertake appropriate reviews, evaluations and performance measurements of its operations to ensure compliance with the Quality Management System Policy.

As the City of St. Thomas, we strive to accomplish our goals through the dedication, support and participation of all employees and continual improvement of our Drinking Water Quality Management System.

**3. Commitment and Endorsement**

This Operational Plan has been reviewed and approved by the Operating Authority and the Owner. The signatories below further commit to ensuring that the Quality Management System is regularly assessed to confirm its ongoing applicability and relevance.

Justin Lawrence, P. Eng.  
Owner Representative,  
Director, Environmental Services  
& City Engineer, City of St. Thomas

Nathan Bokma, P. Eng.  
Operating Authority,  
Quality Management System  
Representative,  
Environmental Services  
Department, City of St. Thomas





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Top Management ensures the Operating Authority is aware of all applicable legislative and regulatory requirements.

Senior Management ensures that the Drinking Water Quality Management System (DWQMS) is communicated according to procedure, by following the Communication Procedure attached in Appendix I. The Internal Audit Procedure and the Management Review Procedure describe how proper communication is monitored.

Senior Management determines, obtains and provides the resources needed to maintain and improve the DWQMS, as demonstrated through records created under the DWQMS, and through the Management Review Process. The Infrastructure Maintenance, Rehabilitation and Renewal Procedure describe how a need for resources may be identified, documented and followed through.

#### **4. Quality Management System Representative**

The Quality Management System (QMS) Representative is typically the Manager of Development and Compliance of the Environmental Services Department. As the QMS Representative, this person has both the responsibility and authority to:

- Administer the DWQMS by ensuring that the processes and procedures needed for the DWQMS are established and maintained
- Ensure that the current versions of documents required by the Quality Management System are being used at all times
- Ensure that all personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operations of the St. Thomas Area Secondary Water Supply System (STASWSS)
- Promote the awareness of the Quality Management System throughout the Operating Authority
- Report to Senior Management: Owner Representative on the performance of the Drinking Water Quality Management System (DWQMS) and any need for improvement

Senior Management: Owner Representative appoints and authorizes this QMS Representative.



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## **5. Document and Records Control**

Procedures are in place for Document Control and Record Control describing how documents and records are controlled.

The Document Control Procedure describes the activities required to ensure that all documents are identifiable, kept current, legible, retrievable, stored, protected, retained and disposed of. Documents that are required by the DWQMS are in the scope of this procedure.

The Record Control Procedure has been established and maintained to identify the controls needed for the identification, legible, retrievable, storage, protection, retention time and disposition of records. Records that are required by the DWQMS are in the scope of this procedure.

The Document Control Procedure CD-ADMIN-100 and the Intranet Filing For Documents and Records CD-ADMIN-101 can be found in **Appendix B**. The Record Control Procedure CD-ADMIN 200 can be found in the **Appendix C**.

## **6. Drinking- Water System**

### ***Description of the St. Thomas Area Secondary Water Supply System***

The St. Thomas Area Secondary Water Supply System receives water from the Elgin Area Water Treatment Plant which is sent to the Elgin-Middlesex Pumping Station (EMPS) and then enters the transmission main of the St. Thomas Area Secondary System.

The transmission main is of concrete pressure pipe (CCP) construction, approximately 11.2 km long and consists of a 9.2 km segment of 750 mm diameter water main and a 2.0 km segment of 500 mm diameter water main, arranged predominantly in a looped, grid based system with all efforts being made to minimize dead ends.



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The 763 m<sup>3</sup> capacity elevated storage tank, referred to as the “Ford Tower” is located on Water Tower Line and is of steel construction and a steel pedestal. The water level is monitored at the EMPS, which is regulated and controlled through operations of the St. Thomas pumps.

Except for re-chlorination, the EMPS and all facilities and components of the St. Thomas Area Secondary Supply System are strictly for the transmission of treated water provided by the Elgin Area Primary Water Supply.

After water leaves the EMPS along the transmission main, there is a take-off to supply the City of St. Thomas through the East Chamber, regulated through valves and monitored through the SCADA system.

The West Chamber is the second take-off point from the transmission main to provide water to the City of St. Thomas. The West Chamber is regulated and monitored through the same equipment as the East Chamber.

The St. George Chamber is the third take-off point from the transmission main to provide water to the City of St. Thomas. However, water is provided through this chamber only when pressures in the immediate vicinity fall below 55 psi or 380 kPa. The St. Thomas Area Secondary Water Supply System map can be found in **Appendix D**.

#### ***Description of Water Source***

Treated water for the City of St. Thomas is supplied from the Elgin Area Primary Water Supply System, which takes its source water from Lake Erie.

The Elgin Area Primary Water Supply System is responsible to ensure that measures are in place to provide water quality to the City of St. Thomas that meets or exceeds Ministry of Environment requirements.

Under emergency circumstances, water can be supplied from the City of London, which receives water from the Elgin Area Primary Water Supply System and the Lake Huron Primary Water Supply System.



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Lake Erie raw water can be treated effectively using conventional processes to produce water meeting Ontario Drinking-Water Quality Standards. Great Lakes water is considered to pose low risk for the formation of disinfection by-products (DBP's).

The Elgin Area Primary Water Supply System analyzes treated water for Dissolved Organic Carbon, an indicator for DBPs and distribution water for Trihalomethanes (THMs), the most common DBP.

Spikes may occur in turbidity as a result of pump start up, but do not pose any operational challenges as a result.

General Characteristics of Lake Erie Treated Water Supply can be viewed on the Elgin Area Primary Water System website at [www.watersupply.london.ca](http://www.watersupply.london.ca).

The Primary Water Supply System provides the City, as a member of the Elgin Area Primary Water System, quarterly reports on the operations of the Primary Water Supply System and water quality.

***Common Event-Driven Fluctuations:***

During winter, late spring and late fall when changes in water and soil temperatures are occurring, there is typically a higher proportion than normal of water main breaks.

***Threats to Ongoing Water Quality:***

The main threats to ongoing water quality are: cross-contamination from industry back-flow, illegal connections or back siphonage from water main breaks. Building inspections, by-laws, back-flow preventers and proper construction minimize the potential for accidental back-flow or other contaminants, which may impact the water quality.



## **St. Thomas Area Secondary Water Supply System (excluding the Elgin- Middlesex Pumping Station)**

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#### **Challenges**

##### **Examples:**

##### *Low Chlorine Residual:*

*During the summer, higher water temperatures increase microbial activity increasing chlorine demand. In addition, long, low flow pipelines and dead end sections increases the likelihood of low chlorine residual water sample, which may result in an adverse.*

##### *Discolouration:*

*Discolouration can occur due to the age of some of the Secondary system's pipe and as a result of preventative maintenance driven flushing programs and occasional water main breaks. These events cause the water in the pipeline to change direction, thus causing a disturbance in the natural flow of the pipe and stirring up any sediment, which may be residing in the pipes.*

#### **System Overview Schematic**

System Overview Schematics (Process Flow Charts) depicting the overall system can be found in **Appendix D**.

#### **7. Risk Assessment**

A risk assessment procedure has been developed and implemented. The procedure identifies and ranks potential hazards to the STASWSS. Control measures where they exist are defined. Procedures for critical control points (CCP's) include measures to: monitor, respond to document and to limit exceedances.

Control measures may include but are not limited to:

- Monitoring (electronic & visual)



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- Grab sampling & testing
- Reliability and redundancy of equipment
- Specific procedures and/or instructions

The Hazard Analysis and Critical Control Points Procedure CD-ADMIN-300 can be found in **Appendix E**.

### **8. Risk Assessment Outcomes**

The results of the Risk Assessment are documented in the Hazard Analysis spreadsheet. The spreadsheet identifies:

- General Areas or major features of the water distribution system
- Process steps or major operational activities
- Types of hazards
- Description of potential hazards
- Ranking calculations and risks
- Control Measures to address hazards
- Designated CCPs
- References to CCP Procedures (which describe procedures to monitor, respond, report and record deviation)

The Hazard Analysis Spreadsheet, and the CCP procedures, designated by a 'CD-CCP' in their title can be found in **Appendix E**.

### **9. Organizational Structure, Roles, Responsibilities and Authorities**

The organizational structure, roles, responsibilities and authorities for the Operating Authority, Senior Management: Operating Authority, Senior Management: Owner is described in the Organizational Structure, Roles, Responsibilities and Authorities Procedure. This procedure identifies the management review structure, and Senior Management responsibilities. The Management Review Procedure also describes the Management Review process and structure.

Owner: Joint Board of Management

Owner Representative: Director of Environmental Services & City Engineer



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Quality Management System Representative/Operating Authority: Manager of Development and Compliance, City of St. Thomas  
Quality Coordinator/Operating Authority: Manager Sewer & Water or designate, City of St. Thomas

The Organizational Structure, Roles, Responsibilities and Authorities Procedure, CD-ADMIN-400 can be found in **Appendix F**.

### **10. Competencies**

The Competencies Procedure describes the required and desired competencies required by the Operating Authority, whose duties directly affect drinking water quality.

The Competencies Procedure, CD-ADMIN-500 can be found in **Appendix G**.

### **11. Personnel Coverage**

The Personnel Coverage Procedure describes how sufficient personnel meeting identified competencies are available for duties that directly affect drinking water quality.

The Personnel Coverage Procedure, CD-ADMIN-600 can be found in **Appendix H**.

### **12. Communications**

The Communication Procedure describes how the DWQMS is communicated between Senior Management and the Owner, Operating Authority personnel, Suppliers, and the public.

The Communications Procedure, CD-ADMIN-700 can be found in **Appendix I**.

### **13. Essential Supplies and Services**

A list of all supplies and services deemed essential to the delivery of safe drinking water is provided in the Essential Supplies and Services Requirement





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Procedure CD-ADMIN-800. The list includes the means to ensure the procurement of critical supplies and services and that the Operating Authority ensures the quality of essential services and supplies.

The Essential Supplies and Services Requirements CD-ADMIN-800 can be found in Appendix J.

**14 – 15. Review and Provision of Infrastructure /  
Infrastructure Maintenance, Rehabilitation and Renewal**

Yearly review of the adequacy of the infrastructure is described in the Infrastructure Maintenance, Rehabilitation and Renewal Procedure and how the Operating Authority documents infrastructure maintenance, rehabilitation and renewal programs, communicates the findings to the Owner and monitors the effectiveness of the maintenance program.

These two elements of the standard are tightly intertwined in this Operational Plan and were included under one heading covering two elements.

The Infrastructure Maintenance, Rehabilitation and Renewal Procedure CD-ADMIN-900 can be found in **Appendix K**.

**16. Sampling, Testing and Monitoring**

The Sampling, Testing and Monitoring Procedure describes the sampling, testing and monitoring in place for drinking water process control based on the most challenging conditions and how results are recorded and shared between the Operating Authority and the Owner.

The Sampling, Testing and Monitoring Procedure, CD-ADMIN-1000 can be found in **Appendix L**.

**17. Measurement and Recording Equipment Calibration and Maintenance**

The calibration and maintenance of measurement and recording equipment is described in the Measurement and Recording Equipment and Maintenance Procedure.





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The Measurement and Recording Equipment and Maintenance Procedure, CD-ADMIN-1100 can be found in **Appendix M**.

#### **18. Emergency Management**

Emergency preparedness is achieved by following requirements described in the Emergency Management Plan. In the Emergency Management Plan, the table of contents lists response procedures for the potential emergency situations or service interruptions. The response procedures describe planned responses for the identified potential emergencies, including Owner and Operating Authority responsibilities. A protocol for notification of customers and adjacent municipalities supplied by the system, initiates the necessary municipal emergency planning measure described in the Emergency Management Plan. A protocol for all emergency notification is also included, along with an up to date contact list.

The Emergency Management Plan 'Distribution Contingency Plans' (DCP-A to DCP-H) can be found in **Appendix N**.

#### **19. Internal Audit**

The Internal Audit Procedure describes how conformity of the DWQMS is evaluated on an annual basis. The procedure describes how audit criteria, frequency, scope, methodology and records are identified, referencing previous internal and external audits. It also describes how corrective actions are initiated as a result of an internal audit, and provides references to the Corrective and Preventive Action Procedure

The Internal Audit Procedure, CD-ADMIN-1200 can be found in **Appendix O**.

#### **20. Management Review**

The Management Review Procedure describes the procedure for a minimum of annual management reviews, including instructions related to all of the required inputs to the meeting. The procedure also describes how Senior Management considers results, identifies deficiencies, and record and forwards results to the Owner and to other key personnel.



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The Management Review Procedure, CD-ADMIN-1300 can be found in **Appendix P**.

## **22. Continual Improvement**

The Operating Authority and Owner of the St. Thomas Area Secondary Water Supply System attempt to continually improve the Quality Management System through the use of the DWQMS Policy and procedures.

The Corrective and Preventive Action Procedure describes how DWQMS corrective and preventive actions are documented, and how steps are followed when implementing corrective and preventive actions to ensure continual improvement.

The Corrective and Preventive Action Procedure, CD-ADMIN-1400 can be found in **Appendix Q**.



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**Table of Revisions**

<b>Date</b>	<b>Description of Revision</b>
April 1, 2009	Initial Issue of Document
July 31, 2009	Required signature of new Manager of Operations and Compliance and changed formatting
June 1, 2010	Added DWQMS job titles to Item #9
July 15, 2011	Added addresses for City Hall and PWSC under QMS Policy, corrected the Owner position, that under emergency conditions the City of St. Thomas can receive water from the City of London; under the QMS policy changed the wording from encouraging suppliers and contractors to require suppliers and contractors to meet obligations
July 15, 2012	Added the forms to the Appendices table of contents
October 10, 2012	Changed to clarify the role of the Elgin Area Primary Water System and their responsibility to ensure the quality of the water entering the St. Thomas distribution system, changed the name of the Manager of Operations and Compliance
January 28, 2013	Required signature of new Manager of Operations and Compliance
June 14, 2013	Annual review, no revisions
June 12, 2014	Formatting of procedure, added new procedure to Appendix B, Intranet Filing of Documents and Records Procedure
June 29, 2015	Change in Top Management, Water/Wastewater Supervisor has temporally assumed the role of the Quality Management System Representative
January 4, 2016	Change in QMS Representative and title Supervisor to Manager and removed reference to water/wastewater section
March 16, 2016	Added designate to QC definition



Corporation of the  
**City of St. Thomas**

**Report No.**

SWB 04-16

**File No.**

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

**Meeting Date: June 23, 2016**

Date Authored: June 10, 2016

**Department:** Environmental Services

**Attachments**

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

#1 – Minutes of Management Review for STASWSS

**Subject: STASWSS Drinking Water Quality Management System - Management Review 2016**

**Recommendations:**

THAT: Report SWB 04-16, STASWSS Drinking Water Quality Management System – Management Review 2016, be received for information.

**Origin:**

As the Operating Authority for the St. Thomas Area Secondary Water Supply System (STASWSS), the City of St. Thomas Environmental Services Department is continually striving to improve their effectiveness of the secondary system and its Drinking Water Quality Management System (DWQMS). This improvement is accomplished through internal audits and the implementation of the decisions and actions recommended in the management review.

The management review occurs once within a 12 month period by Senior Management of the DWQMS, which are the Director of Environmental Services and the Manager of Development & Compliance. The purpose of the management review is to stay informed on the DWQMS and ensure it is:

- Suitable to Operations staff
- Adequately managing quality issues
- Performing quality management effectively
- Adequate resources are provided.

As part of the management review, specific topics were discussed pertaining to the DWQMS of the secondary system, which can be seen in the attached meeting minutes (see Attachment #1). Discussion and decisions made as part of the management review was recorded and compiled in the meeting minutes, which were recorded by the Manager of Development and Compliance.

**Analysis:**

The management review meeting was held on May 10, 2016, which was attended by Justin Lawrence (Director of Environmental Services), Chris Andrew (Foreman, Water, Sewer and Drainage), and Nathan Bokma (Manager of Development & Compliance).

One of the topics of the management review was the internal audit, which is completed every 12 months by the Compliance Coordinator. Results of the internal audit were discussed as well as the process to address any minor non-conformances or opportunities for improvement (OFI's). The Manager of Development & Compliance will follow up on the results of the internal audit as per the timelines established in the DWQMS.

In summary, the management review was completed with no major issues to discuss, and the DWQMS policy and procedures in place contribute to the excellent operation of the STASWSS.

Respectfully Submitted,

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

**Reviewed By:** \_\_\_\_\_  
Treasury
 Env Services
Planning
City Clerk
HR
Other



# DWQMS Management Review Meeting

## City of St. Thomas

**May 10, 2016**  
**10:30 AM**  
**City Hall**

### Meeting Minutes

Present: Justin Lawrence – Director of Environmental Services & City Engineer, City of St. Thomas (CITY)  
Nathan Bokma – Manager of Development & Compliance, City of St. Thomas  
Chris Andrew – Water/Sewer/Drainage Foreman, City of St. Thomas.

#### Previous Minutes

- **Review 2015 minutes and approve 2016 Agenda**  
The 2016 agenda and the Minutes from the May 2015 Management Review Meeting were reviewed and approved by those present. No additional items were presented by the participants.

#### Agenda Items

- **Incidents of regulatory non-compliance**  
There were no incidents or reports of non-compliance in 2015.
- **Incidents of adverse drinking-water tests**  
There was one adverse tests in the St. Thomas distribution system. Proper procedures were taken to restore water quality at the time that the adverse test was reported.
- **Deviations from critical control point limits and response actions**  
There were no deviations from the critical control points (CCP) in 2015. Therefore, no response actions were required.
- **The efficacy of the risk assessment process**  
Participants discussed the risk assessment process, which the City refers to as the Hazard Analysis Procedure. The review of the hazard analysis spreadsheet was recently completed by City staff, with no changes made to the existing risks/hazards. No additional items had been identified.
- **Internal and third-party audit results**  
A desktop audit by SAE was carried out on December 3, 2015, with 2 non-conformances coming from the audit:
  - NCR#1 – Management Review Action Items,
  - NCR#2 – Root Cause analysis not being completed correctly.

Corrective actions were completed for both items. There were 5 OFI's that were also mentioned and dealt with through Preventative Action Forms.

Internal audit was completed on April 1, 2016 from which 4 non-conformances were observed:



**DWQMS Management Review**  
**City of St. Thomas**  
**May 10, 2016**

- NCR #1 – DWQMS Laptop updates not being done
- NCR #2 – Leak for hydro duct into ARBS
- NCR #3 – No BWV at East Chamber on the Secondary Supply System.
- NCR #4 – EM procedure/forms DCP-A2 was not being followed since old forms were being used.

Corrective actions were completed for the above mentioned items. There were 10 OFI's that were also mentioned and dealt with through Preventative Action Forms.

*Action - City will follow up on all corrective and preventative actions within the 90 day window to ensure each matter has been addressed.*

- **Results of emergency response testing**

This emergency training is scheduled to be done in May 2016. Last one was completed on May 15, 2015.

- **Operational performance**

It was noted that there are low pressure areas in the east portion of the City and the Eastwood subdivision of Central Elgin. The City is looking into establishing different pressure zones within the City to address this issue.

- **Raw water supply and drinking water quality trends**

Raw water is supplied through the Elgin Area Primary Water Supply System. No issues with the water supply.

- **Follow-up action items from previous management reviews:**

No action items have arisen from previous management review meetings, so no follow up required.

- **The status of management action items identified between reviews**

No action items have arisen between management review meetings, so no follow up required.

- **Changes that could affect the DWQMS**

Recent update to the MOECC's disinfection procedure was rolled out to the province in November 2015. The City has updated the DWQMS to reflect the changes to this procedure, and training has already been taken by City staff.

- **Consumer feedback (including any concerns, complaints, or expectations from customers)**

The City utilizes a service request manager to monitor any issues or complaints with the City's distribution system, which are followed up in a timely manner.

- **The resources needed to maintain the Quality Management System**

There are adequate resources available to City staff to maintain the DWQMS.

- **The results of the infrastructure review**

The City has various capital projects slated for 2016 construction to improve watermain



infrastructure, which have been noted in the Infrastructure Review section at the end of the minutes.

- **Operational plan currency, content and updates**

The City's secondary and distribution operational plans are up to date and do not require any immediate updates.

- **Staff suggestions**

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

- **Significant legislative changes**

As noted under "Changes that could affect DWQMS", there has been a recent update to the disinfection procedure as issued by MOECC. The City has already implemented these changes into the DWQMS.

- **Significant non-conformances, corrective and preventative actions (e.g. winning an award, incident free year)**

There were 2 non-conformances that were identified outside of the internal audit (Personnel Coverage - July 2, 2015 and Watermain disinfection - December 4, 2015).

Corrective actions were completed and followed up for the above mentioned items.

MOECC inspection happened on April 27, 2016, but no results have been made available to the City as of yet.

- **Changes or the need for changes to the policy or DWQMS elements (if any)**

No changes to the policy or the DWQMS elements were noted at this time.

- **Effectiveness of infrastructure maintenance, rehabilitation and renewal program**

The current program that the City has in place for maintenance is acceptable.

## **Infrastructure Review**

- **St. Thomas Capital Projects**

The following City capital projects are scheduled for 2016 construction.

- Water Pressure Zone for east side of City
- Pump replacement at EMPS for Secondary Supply System
- Watermain lining for Curtis Street, New Street, East Avenue, and Hepburn Avenue
- CASO Crossing street construction (new watermains)
- Edward St./Burwell Road Intersection (new watermains)
- Talbot Street Reconstruction (new watermains)
- Alexandria Avenue reconstruction (new watermain)
- Ada Street (new water services)
- City-wide water meter replacement
- Lake Margaret Trail/Southdale Line Roundabout (watermain extended to development)



**DWQMS Management Review  
City of St. Thomas  
May 10, 2016**

<b>Other Business</b>
No other business was brought forward.

These minutes were completed by Nathan Bokma. Any changes or discrepancies should be forwarded to [nbokma@stthomas.ca](mailto:nbokma@stthomas.ca).

**Next Meeting Date: May 2017 (TBD)**