

***The Township of Southwold Water Distribution System***

***DRINKING WATER QUALITY  
MANAGEMENT SYSTEM  
OPERATIONAL PLAN***

***Revision 15***

***March 16, 2016***

***Prepared by:***

***Operating Authority***

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

***Owner:***

***Township of Southwold***

<b>The Township of Southwold Water Distribution System</b>
<b>(Lynhurst Area)</b>
<b>Drinking Water Quality Management System Operational Plan</b>
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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 Township of Southwold Water Distribution System (TSWDS) in the Lynhurst Area. The contents of this Operational Plan are based upon the requirements of the Drinking Water Quality Management Standard:

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

### **Abbreviations**

- DWQMS – Drinking Water Quality Management System
- TSWDS – Township of Southwold Water Distribution System – Lynhurst Area
- 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 Township of Southwold Water Distribution System – Lynhurst Area
- Owner – The Township of Southwold
- CCP – Critical Control Point
- SOP – Standard Operating Procedure

### **Ownership and Operation**

The Township of Southwold is the Owner and provides governance for the Township of Southwold Water Distribution System.

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The Township of Southwold currently utilizes the services of the City of St. Thomas Environmental Services Department as the Operating Authority, which operates and maintains the Township of Southwold Water Distribution System in the Lynhurst Area. Other areas in the Township of Southwold are operated under the Township of Southwold Operational Plan. Under the DWQMS, the Operating Authority is responsible for implementing and maintaining the DWQMS in partnership with the Township of Southwold.

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

The Quality Management System Policy is posted at the main entrance of the Environmental Services Department at St. Thomas 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 Township of Southwold Water Distribution System – Lynhurst Area 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 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.


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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.

  
 \_\_\_\_\_  
 Kim Grogan, Owner Representative,  
 Treasurer, Township of Southwold

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

Top Management (referred to henceforth as Senior 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.

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

The Quality Management System (QMS) Representative is typically the Manager of Development and Compliance of the Environmental Services Department for the City of St. Thomas. 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 Township of Southwold Water Distribution System (TSWDS), Lynhurst Area.
- Promote the awareness of the Quality Management System throughout the Operating Authority, and
- Report to Senior Management: Owner Representative on the performance of the Drinking Water Quality Management System (DWQMS) and any need for improvement.

The Director, Environmental Services and City Engineer of the City of St. Thomas appoints and authorizes the QMS Representative.

#### **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 of Documents and Records Procedure CD-ADMIN-101 can be found in **Appendix**

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**B.** The Record Control Procedure CD-ADMIN 200 can be found in the **Appendix C.**

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

### ***Description of the Township of Southwold Water Distribution System – Lynhurst Area***

The Township of Southwold receives a portion of its water from the City of St. Thomas Water Distribution System supplied through a control valve.

The water distribution system, consisting of approximately 0.883 km of piping, is arranged predominantly in a looped, grid based system with all efforts being made to minimize dead ends. The main is mainly comprised of 150mm cast iron piping where some areas of the main are comprised of asbestos cement. The Township of Southwold Water Distribution System – Lynhurst Area map can be found in **Appendix D.**

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

Treated water for the City of St. Thomas is mainly 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.

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.

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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 dramatic 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, back-flow preventers and proper construction minimize the potential for accidental back-flow or other contaminants, which may impact the water quality.

***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 City's pipes, as well as 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.*



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## **System Overview Schematic**

System Overview Schematics (Process Flow Charts) depicting the overall distribution 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 distribution system. Control measures where they exist are defined. Procedures for critical control points (CCP's), including measures to monitor, respond to limit exceedences and to document exceedences.

Control measures may include but are not limited to:

- Monitoring (electronic & visual)
- 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 to deviation, report deviation, 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**.

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## **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: Mayor and Councilors of the Township of Southwold  
 Owner Representative: Treasurer of the Township of Southwold  
 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.

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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 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 found in **Appendix L**.

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## **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.

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 response 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 'City of St. Thomas Water Distribution Contingency Plans' (DCP-A to DCP-H) can be found in **Appendix N**, which includes the Township of Southwold and Central Elgin who receive water from the City of St. Thomas Water Distribution System.

## **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

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considers results, identifies deficiencies, records and forwards results to the Owner and to other key personnel.

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

## **22. Continual Improvement**

The Operating Authority and the Owner of the Township of the Southwold Distribution System – Lynhurst Area 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
November 30, 2009	Change of staff at Southwold
June 1, 2010	Added DWQMS job titles to Item #9, added City of St. Thomas to signee
May 20, 2011	Added addresses for City Hall and PWSC under QMS Policy, corrected the Owner and Owner Representative positions, changed the Owner Representative from the CAO to the Treasurer for the Township of Southwold
July 15, 2011	Added 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
January 2, 2014	Change in the Treasurer position for the Township of Southwold
June 12, 2014	Formatting of procedure, added new procedure to Appendix B, Intranet Filing of Documents and Records Procedure and changed the number of kms for the Township of Southwold
June 29, 2015	Change in Top Management, Water/Wastewater Supervisor has temporarily assumed the role of 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