MUNICIPALITY OF BAYHAM

Bayham Water Distribution System And Richmond Community Drinking Water System Quality Management System Operational Plan

PREPARED BY: MUNICIPALITY OF BAYHAM
QUALITY MANAGEMENT SYSTEM TEAM

Revision 1.1 June 19, 2024

OPERATIONAL PLAN REVISION HISTORY

Date	Revision #	Description of Revision
April 10, 2024	Revision 1.0	Combination of Bayham Water Drinking System DWQMS OPS Plan & The Richmond Community Water Supply System DWQMS OPS Plan as suggested by Intertek SAI Global and Approved by the MECP
June 19, 2024	Revision 1.1	Addition of Council Endorsement and Top Management Endorsement

MUNICIPALITY OF BAYHAM
QUALITY MANAGEMENT SYSTEM
OPERATIONAL PLAN

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1. QUALITY MANAGEMENT SYSTEM

This document will be the Quality Management System Operational Plan for the Bayham Water Distribution System (DWS#260004748) and the Richmond Community Drinking Water System (DWS # 260074854). The Municipality of Bayham is the owner and operating authority of the said systems.

The Quality Management System for Bayham covers the transmission and distribution of potable drinking water to consumers within the Municipality of Bayham. Treated potable drinking water is purchased from the producer, Elgin Area Water Treatment Plant. The water enters the Bayham distribution system from the Port Burwell Secondary Water Supply System. The Bayham Water Distribution System transmits and distributes potable drinking water to the communities of Port Burwell and Vienna.

The Quality Management System for Richmond covers the wells, treatment and distribution of potable drinking water to consumers within the village of Richmond.

2. QUALITY MANAGEMENT SYSTEM POLICY

The Municipality of Bayham and the Bayham Water Distribution System along with the Richmond Community Water Supply System is committed to comply with applicable regulations set forth by the Safe Drinking Water Act (SWDA) 2002 – Ontario Regulation 170/03 Drinking Water Systems Regulation and Ontario Regulation 169/03 Ontario Drinking Water Quality Standards and other requirements. The Municipality of Bayham will supply clean safe drinking water to meet consumer requirements and is committed to the maintenance and continual improvement of the Quality Management System.
(April 2024)

This Quality Policy is applicable to all water department employees and is displayed in public areas of the municipal administrative offices located at 56169 Heritage Line, Straffordville, the Port Burwell Wastewater Treatment plant at 1 Chatham Street, Port Burwell, the Richmond Pump house at 9190 Richmond Road, Richmond, and on the municipal website (www.bayham.on.ca).

The Quality Management System Policy statement is to be reviewed during the annual management review.

3. COMMITMENT AND ENDORSEMENT

The owner (Mayor and Council) has passed a motion to endorse the operational plan of the DWQMS and the plan be reviewed annually with revisions made as necessary to maintain and continually improve the quality management system.

Upon major changes to the system, change in top management and/or council, the operational plan requires re-endorsement by the Owner and Top Management.

Re-endorsement is required by the Owner when there is a change in Mayor or Council members during the term of Council and Top Management when there is a major change in the Operational Plan or when there is change in personnel.

See Appendix A

Through water publications, association memberships, ministry newsletters and on-going training requirements, these resources of regulatory requirements help to maintain and improve the quality management system. Any actions undertaken to completion are tracked through the Municipality of Bayham Continual Improvement Tracking Spreadsheet.

4. QUALITY MANAGEMENT SYSTEM REPRESENTATIVE

The Manager of Water/Wastewater Operations will be the QMS representative or in his absence, a Certified Operator.

The QMS representative will develop, implement, maintain and report the effectiveness, including the need for improvement of the QMS to the owner and ensure that the current versions of the documents required by the QMS are in use at all times. The representative will promote the QMS throughout the water department and see that personnel are aware of all current legislation and regulatory requirements that are relevant to the operation.

5. DOCUMENT AND RECORDS CONTROL

All records required by the Ministry of the Environment, Conservation and Parks O Reg. 128/04 and O. Reg. 170/03 to demonstrate compliance and or conformance shall be maintained per the regulations. In summary, the following documents and records are retained;
2 years - Operational and Maintenance Checks Records, Microbiological Sampling and Testing Results and Corrective Action Reports for Microbiological (AWQI)
5 years – Logbooks
6 years – THM, HAA, Nitrate/Nitrite and Lead Parameter Sample Results and Annual Summary Reports
15 years – Sodium, Fluoride, Inorganic, Organic and Radiological Parameter Sample Results, Corrective Action Reports for Chemical, Radiological, Pesticides and Sodium (AWQI) and Engineering Reports if applicable

The operational plans that were the subject of an audit, as required by Section 4.0.1 of the Director's Directions Minimum Requirements for Operational Plans (July 2007), will be retained for 10 years.

The municipality complies with Provincial Records Management through By-Law 2014-091 Records Retention.

See Procedure A

6. DRINKING WATER SYSTEMS

Bayham Distribution

The Municipality of Bayham is the owner and operating authority of the Bayham Distribution System (DWS#260004748). As shown on the organizational structure, the Mayor and Council are the head of the Municipality, and the operating responsibility is delegated to the staff. See **Appendix B** for the organizational structure. The Bayham Water Distribution System transmits and distributes potable drinking water to the communities of Port Burwell and Vienna.

A system description can be found in the Bayham Water Distribution System Operations/Management Manual Section 1 – Distribution System Operations and Management.

All customers within the Bayham Water Distribution System are metered and the meters are read on a bi-monthly basis. There is no discount within our system for larger users. All bills are calculated on a cubic metre rate.

Treated potable drinking water is purchased from the producer, Elgin Area Water Treatment Plant. The most recent annual and quarterly water quality reports can be found on the Lake Huron & Elgin Area Primary Water Supply Systems website

https://huronelginwater.ca/consumer-resources/water-quality/

https://huronelginwater.ca/consumer-resources/consumer-reports/

The water enters the Bayham distribution system from the Port Burwell Area Secondary Water Supply System. The Port Burwell Area Secondary System runs along Nova Scotia Line to the Port Burwell Tower and Lakeview Re-chlorination Facility. Both of these facilities maintain secondary disinfection using sodium hypochlorite complete with continuous on-line analyzers, data loggers and alarms. On Nova Scotia Line, the services and hydrants are the responsibility of the municipality (Bayham and Malahide) in which they are located. Water volumes entering the Bayham Water Distribution System are metered at the Port Burwell and Vienna water meter chambers.

Event driven fluctuations are originated from the Elgin Area Water Treatment Plant (i.e. Taste and odour) and along the Port Burwell Area Secondary System (i.e. pressure changes related to water tower levels). The Bayham Water Distribution System has no control over these event driven fluctuation. Bayham is the end user of the Elgin Area Water Treatment Plant/Port Burwell Area Secondary System and rely on the safe delivery of the water to our distribution system.

The system is operated in conformance with the approved Municipal Drinking Water Licence Number 061-101 Issue Number 4 and Drinking Water Works Permit Number 061-201 Issue Number 4.

See APPENDIX C-1

Richmond System

The Municipality of Bayham is the owner and operating authority of the Richmond Community Drinking Water System (DWS # 260074854). As shown on the organizational structure, the Mayor and Council are the head of the Municipality and the operating responsibility is delegated to the staff. See **Appendix B** for the organizational structure. The Richmond Community Drinking Water System supplies, treats and distributes potable drinking water to the village of Richmond. The Richmond Community Drinking Water System consists of a Class II Water Treatment subsystem and a Class I Water Distribution subsystem.

A system description can be found in the Richmond Community Drinking Water System Operations/Management Manual Section 1 Subsection 3 – Richmond Community Water Supply System Operations and Management Manual.

All customers within the Richmond Community Drinking Water System are metered and the meters are read on a bi-monthly basis. There is no discount within our system for larger users. All bills are calculated on a cubic metre rate.

Process Diagram and Distribution Map can be found in the Richmond Community Drinking Water System Operations/Management Manual Section 3 – Process Diagram and Distribution Map.

All customers within the Richmond Community Drinking Water System pay a rate which is determined on an annual basis.

The system is operated in conformance with the approved Municipal Drinking Water Licence Number 061-102 Issue Number 3 and Drinking Water Works Permit Number 061-201 Issue Number 4.

See Appendix C-2

7. & 8. RISK ASSESSMENT AND OUTCOMES

See Procedure B

9. OPERATIONAL STRUCTURE, ROLES, RESPONSIBLITIES AND AUTHORITIES

The Manager of Water/Wastewater Operations shall keep the operational structure, organizational structure, respective roles, responsibilities and authorities current, and shall communicate this information to the owner and personnel. (See Municipality of Bayham Essential Supplies, Services and Emergency Contact List in both the Bayham Water Distribution Operation/Management Manual Section 5 and the Richmond Community Drinking Water System Operation/Management Manual Section 6 – Contact List regarding names of persons having top management responsibilities.)

See Appendix B

See Appendix D

10. COMPETENCIES

The following table illustrates the competencies required by personnel whose duties directly affect water quality

Function	Required Competencies	Desired Competencies
Manager of Water/Wastewater Operations	• Minimum 10 years Class I operation	• Development of all capital and operational budgets • WHMIS • First Aid (including CPR) • Leadership Training • Confined Space Training • Minimum Class I Water Distribution Subsystem certification
Water/Wastewater Operations Supervisor	• Class II Water Treatment and Class I Water Distribution Subsystem certification • Minimum 3 to 5 years operating experience	• Strong knowledge and understanding of all capital and operational budgets • WHMIS • First Aid (including CPR) • Leadership training – supervisory skills • Confined Space Training • Strong knowledge of provincial legislation and policies regarding operations of municipal water
Operators	• Operator in Training to Class II Water Treatment and Class I Water Distribution Subsystem certification	• Internal auditor training • WHMIS • Confined Space Training • First Aid (including CPR) • New operator operational plan reviews

The Municipality of Bayham Water Department provides for training in their annual budget process. At a minimum the training budget includes funding for legislated and required training to maintain operator certification in accordance with O. Reg. 128/04.

Training and knowledge gained may take the form of on or off-site training sessions and seminars, on-the-job, distance learning or courses of study. Where appropriate, proof of participation or proficiency will be required as proof of competency.

Through internal audits, risk assessments of the operational plan, QMS changes/updates through staff meetings (communications), annual training (On-The-Job and/or Director Approved), personnel are aware of the relevance of their duties and how they affect safe drinking water quality.

11. PERSONNEL COVERAGE

The water department is staffed from Monday to Friday 8:00 AM to 4:30 PM five days per week. The Manager of Water/Wastewater Operations oversees the operations of the Bayham Distribution system and Richmond Community Drinking Water System. The overall responsible operator (ORO) is designated by the Manager of Water/Wastewater Operations, as approved by council, on a weekly basis and is tracked through the water system logbook and timesheets.

See Procedure C

An on-call operator is assigned by the Manager of Water/Wastewater Operations on a weekly basis to respond to after-hour and weekend emergencies. When on-call the operator is required to remain within one hour driving time of the municipal water system.

The Richmond Community Drinking Water System operation is ultimately controlled based upon the demand in the village via pressure discharge measurements. The Municipality's SCADA system indicates to the WTP's PLC when treated water is required to be pumped into the distribution system. A series of treatment and process alarms in the alarms system on the SCADA system as described in the Richmond Community Drinking Water System Operations/Management Manual Section 1 Subsection 8 – Unit Operations and Section 4 Design Brief and Control Narrative send out alarms to an on-call operator via alarm dialer. The alarm dialer bumps numbers until either the manager or one of the operators is contacted.

The 24/7 personnel coverage procedure (general public alarms) shows how after hours emergencies are handled. Spectrum Communications bumps numbers until either the manager or one of the operators is contacted

The Municipality of Bayham is a member of OnWARN (Ontario Water/Wastewater Agency Response Network). OnWARN is a network of utilities helping other utilities to respond to and recover from emergencies. The OnWARN contact list can be found in the Richmond Community Drinking Water System Operations/Management Manual Section 6 – Contact List and Forms. If the municipality requires assistance in recovering from and responding to emergencies, the CAO and Treasurer have access to the OnWARN list and the authority to request for external Operator assistance.

The municipality is committed to ensuring that adequate staff meet the required competencies are available for duties that affect drinking water quality.

Recent amendments to Ontario Regulation 128/04 Certification of Drinking Water System Operators and Water Quality Analysts are intended to provide systems with temporary staffing options (e.g. use of knowledgeable non-certified persons) during an emergency that could adversely affect the operation of a system resulting in a drinking water hazard. The new provisions are available if there is reasonable grounds for believing that there is an existing or impending critical shortage of certified operators and the use of non-certified persons is necessary to ensure the safe and efficient operation of the subsystem and continued provision of safe drinking water. The use of temporary measures is also subject to applicable labour laws and collective agreements.

Regulatory relief as a result of COVID-19 can be applied for. The ministry (MECP) will evaluate requests on a case by case basis through an application for relief. All relief is issued with an expiry date.

12. COMMUNICATION

The QMS representative shall ensure the owner (Mayor and Council) is provided with a current copy of the Operational Plan. The QMS representative shall keep the owner informed of any changes to the QMS, the adequacy of infrastructure requirements, the outcome of management reviews and other issues related to the QMS on an annual basis.

Personnel will be informed of the QMS and of any changes or updates through staff meetings with the QMS representative. A current version of the Operational Plan is available for review by staff at the water department office and at the municipal office.

Essential suppliers shall receive information regarding the QMS from the purchaser if and when necessary. Water works suppliers will be advised of Municipal Standards via e-mails to ensure material standards.

Consumers may be informed of the QMS and any significant changes by newsletters and flyers or handouts.

The QMS policy will be posted at the water department office and at the municipal office. It can be also viewed on the municipal website.

13. ESSENTIAL SUPPLIERS AND SERVICES

Where applicable, supplies must meet or be equal to AWWA, NSF or ANSI specifications. Supplies are verified against the order requisition when received.

Laboratory analysis services provided require accreditation through CALA (Canadian Association For Laboratory Accreditation Inc.). Accreditation certificate copies and a list of licensed laboratories available from the Ministry of the Environment, Conservation and Parks can be found in the Bayham Distribution Operations/Management Manual Section 4 and Richmond Community Water Supply System Operations/Management Manual Section 7 – Sampling Practices and Lab Accreditation.

Verification/Calibration of measurement and recording equipment (i.e. portable chlorine analyzers) services provided, a copy of the Statement of Qualifications/Accreditations is located in the Bayham Distribution Operations/Manual Section 4 - Calibration Reports and Richmond Community Water Supply System Operations/Management Manual Section 7 – Calibration Reports.

A list of suppliers and contractors has been developed and can be found in the Bayham Distribution Operations/Management Manual Section 5 and the Richmond Community Drinking Water System Operations/Management Manual Section 6 – Contact List and Forms (Municipality of Bayham Water Department Essential Supplies, Service and Emergency Contact List) in the water department office. This list is reviewed annually by the Water/Wastewater Operations Manager to ensure that it is current and up-to-date.

The Municipality of Bayham is a member of OnWARN (Ontario Water/Wastewater Agency Response Network). OnWARN is a network of utilities helping other utilities to respond to and recover from emergencies. The OnWARN contact list can be found in the Richmond Community Water System Operations/Management Manual Section 6 – Contact List and Forms.

Only authorized municipal employees can purchase or engage service providers as listed as set out in By-Law 2012-122 Procurement Policy.

14. REVIEW AND PROVISION OF INFRASTRUCTURE

The Municipality of Bayham will review infrastructure used for the operation and maintenance of the Bayham Distribution system and the Richmond Community Drinking Water System on an annual basis. The Water/Wastewater Operations Manager completes the review with input from staff as needed.

The adequacy of the infrastructure to operate and maintain the distribution system may be assessed based on performance measures (water quality trends), engineering consultant reports if applicable , Ministry of Environment, Conservation and Parks (MECP) reports and orders if applicable, risk assessment outcomes and input from operators/public (water department staff suggestions and consumer complaints.

Upon the completion of the infrastructure review, the Water/Wastewater Operations Manager will prepare a budget report that summarizes findings based on the review and outlines the infrastructure needs. These needs are to be organized into two categories: operations/maintenance and capital. This report is presented for council`s consideration during annual budget deliberations. The Review and Provision of Infrastructure Checklist Form (found within the Master Document List) will be utilized during the review process.

15. INFRASTRUCTURE MAINTENANCE, REHABILITATION AND RENEWAL

Water/Wastewater staff of the Richmond Community Drinking Water System carries out the infrastructure maintenance, rehabilitation and renewal programs for the distribution system. These programs are influenced by the following;

- Manufacturer guidelines
- Equipment manuals
- Operations/ maintenance manual
- Incoming customer service calls
- Operator input based on daily rounds and
- Yearly budgets and reports

The Water/Wastewater department is responsible for administering capital programs related to the Bayham Distribution System and the Richmond Community Drinking Water System infrastructure. This includes collaborating with the Water/Wastewater Operations Manager to plan and prepare for maintenance, rehabilitation and renewal activities and corresponding budgets.

The following routine planned maintenance is conducted on the Bayham Distribution System: annual valve inspection/exercising, annual hydrant flushing, annual hydrant inspection, annual pressure testing, leak detection as required, annual inspection of water main chambers, as well as the activities required for maintaining the Vienna Booster station as listed in the preventative maintenance binder at the water department office

The following routine planned maintenance is conducted on the Richmond Community Drinking Water System: annual valve inspection/exercising, annual blow-off flushing, annual blow-off inspection, annual pressure testing, leak detection as required, as well as

the activities required for maintaining the pump house as listed in the preventative maintenance binder at the water department office.

Currently The Bayham Distribution and Richmond has a work order system on Laserfiche which issues work orders on a weekly, monthly, quarterly or annual basis depending on manufacture recommendations or schedules. Once work orders are completed, they are achieved in Laserfiche and may be reviewed through the secure Laserfiche Weblink. All hard copy records are maintained at the water department office in the appropriate binders using the forms maintained in the back of the binder. All records are retained at the water department office.

Infrastructure maintenance, rehabilitation and renewal programs used for the operation of the Bayham distribution System and the Richmond Community Drinking Water System are reviewed periodically to determine the effectiveness.

Water main or other equipment replacement is conducted on an as-needed basis.

Long term forecast of major infrastructure maintenance, rehabilitation and renewal activities as well as consideration of the system risk outcomes are tabulated within the 10 year capital budget process for council`s consideration on an annual basis.

The 10 year capital budget process is developed by utilizing trends from past maintenance (planned and unplanned) as well as infrastructure life cycling as set out in the Bayham Asset Management Plan.

16. SAMPLING, TESTING AND MONITORING

All sampling, monitoring and testing is conducted at a minimum in accordance with SDWA O. Reg. 170/03. Adverse water quality incidents are responded to and reported as stated in the Operations Manual.

Samples are submitted to an accredited and licensed laboratory according to the facility's sampling schedule as stated in the Bayham Distribution Operations/Management Manual Section 4 And the Richmond Community Drinking Water System Operations/Management Manual Section 7 – Sampling Practices and Lab Accreditation.

All analytical results from laboratory reports are kept and maintained as per Document and Record Control. Sampling, testing and monitoring results are readily accessible to the owner. As a minimum, owners are provided with an annual summary of sampling, testing and monitoring results through SDWA O.Reg. 170/03 sections 11, schedule 22 and through the Management Review process.

Sampling schedule and monitoring and control can be found in the Bayham Distribution System Operations/Management Manual Section 1 and the Richmond Community Drinking Water System Operations/Management Manual Section 8 – Richmond Community Drinking Water System Operations and Management Manual.

17. MEASUREMENT AND RECORDING EQUIPMENT CALIBRATION AND MAINTENANCE

A contractor will perform a verification/calibration test on the portable hand–held chlorine, and turbidity analyzers annually. Verification/calibration records are located in the Bayham Distribution System Operations/Management Manual Section 4 and in the Richmond Community Drinking Water System Forms and Reports Section 7 – Calibration Reports.

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The continuous on-line chlorine and turbidity analyzers are recommended to be checked regularly to ensure accuracy. This is accomplished through the comparison with the portable hand-held and calibrated units. The continuous on-line analyzers are calibrated following manufacturer's manuals and recommendations.

A contractor will perform calibration on the raw well and treated flow meters on an annual basis. The records of calibration are maintained and kept as per Documents and Records Control.

18. EMERGENCY MANAGEMENT

The contamination of the treated water supply and a major or prolonged loss of water supply are deemed to be emergency situations. The Risk Assessment chart contained in the QMS Operational Plan **(PROCEDURE B)** can be referenced, for emergency procedures and contingency plans.

The Municipality of Bayham has created an Emergency Response Plan as established under By-law 2006-113. The custodian of this plan shall be the Corporation of the Municipality of Bayham Community Emergency Management Coordinator and Community Emergency Management Program Committee, who are responsible for the annual review, revisions and testing of the plan. A specific water supply emergency plan **(PROCEDURE D)** forms part of the said Municipal Emergency Response Plan along with contingency plans and Procedural Guideline of Providing Water within Bayham Distribution and the Richmond Community Drinking Water System during a Prolonged Outage (Bayham Water Distribution system Operations/Management Manual Section 3) and (Richmond Community Drinking Water System Operations/Management Manual Section 5). A list of emergency contacts and essential suppliers and services along with OnWARN (Ontario Water/Wastewater Agency Response Network) member contact list are found in the Bayham Operations/Management Manual Section 5 Richmond Community Drinking Water System Operations/Management Manual Section 6 – Contact List and Forms (Municipality of Bayham Water Department Essential Supplies, Service and Emergency Contact List) in the water department office.

The QMS Representative will keep the emergency contacts and essential suppliers and services list current.

The responsibilities of all affected positions within the municipality during an emergency are listed in the municipal emergency plan as is in the emergency protocol.

All water department staff is required to review the emergency plans to coincide with the risk assessment every 3 years through informal or formal review and/or training. Desktop simulations may be planned and documented during review of emergency plans to keep all water personnel up to date on the emergency procedures.

19. INTERNAL AUDIT

See PROCEDURE E

20. MANAGEMENT REVIEW

A management review will be completed annually with the QMS Representative and the Chief Administrating Officer (Top Management) evaluating the adequacy and effectiveness of the QMS.

See PROCEDURE F

21. CONTINUAL IMPROVEMENT

The Municipality of Bayham shall strive to continually improve the effectiveness of its Quality Management System through the use of corrective actions from the annual audits and management review.

Any Corrective Actions, identified during internal or third-party auditors, are documented using the Municipality of Bayham Corrective Action Report, which investigates cause(s) and documenting and reviewing the action(s) taken to correcting and preventing the re-occurrence of the identified non-conformity. This is tracked through the use of the Municipality of Bayham Continual Improvement Tracking Spreadsheet.

Preventative Actions through document change/implementation, OFI's (internal or third party audits), management review outcomes, emergency response testing outcomes, Element 7 & 8 Risk Assessment outcomes, best management practices review outcomes and/or staff suggestions are documented and tracked through the use of the Municipality of Bayham Continual Improvement Tracking Spreadsheet.

At least once every 36 months, the QMS team will review and consider applicable best management practices pertaining to municipal water distribution. This is documented using the Municipality of Bayham Element 21 Continual Improvement – Best Management Practices Review Form.

Appendix A

COUNCIL ENDORSEMENT

From: Thomas Thayer <cao@bayham.on.ca>
Date: April 19, 2024 at 10:40:48 AM EDT
To: Ed Roloson <ERoloson@bayham.on.ca>
Cc: Meagan Elliott <MElliott@bayham.on.ca>
Subject: RE: Council endorsement resolution

Ed, here is the resolution from the Draft Minutes:

Moved by: Deputy Mayor Weisler
Seconded by: Councillor Chilcott

THAT Staff Report PS-06/24 re Drinking Water Quality Management Standards be received for information;

AND THAT the Council of The Corporation of the Municipality of Bayham endorse the combined Bayham Water Distribution System and the Richmond Community Water Supply System Operational Plan;

AND THAT the Operational Plan be reviewed annually by staff and revisions made as necessary to maintain and improve the quality management system.

Thomas Thayer, MSc, CMO, AOMC
Chief Administrative Officer
Bayham

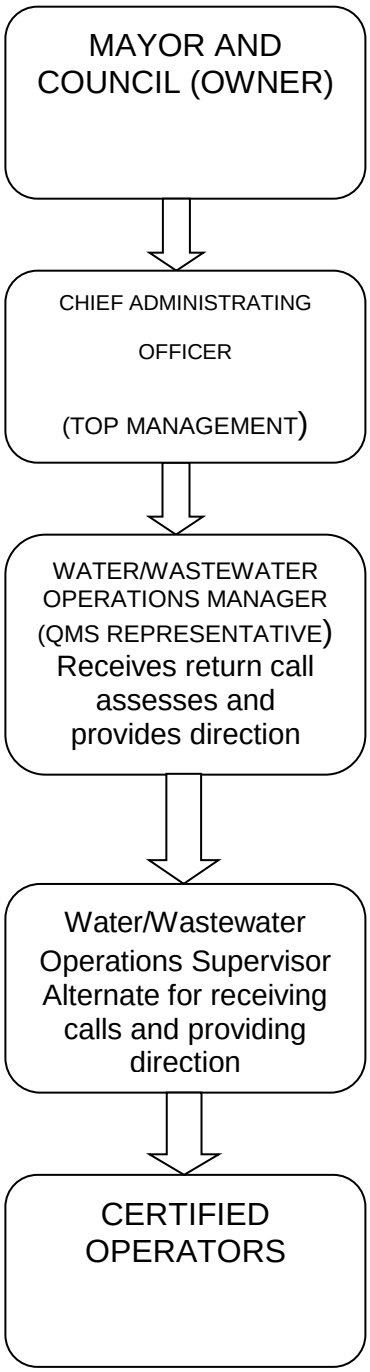
TOP MANAGEMENT ENDORSEMENT

Top Management (CAO) hereby endorses the Municipality of Bayham Operational Plan for the Bayham Water distribution System and the Richmond Community Water Supply System and that revisions to the plan be reviewed annually to maintain and continually improve the quality management system.

Thomas Thayer, CAO June 18, 2024.

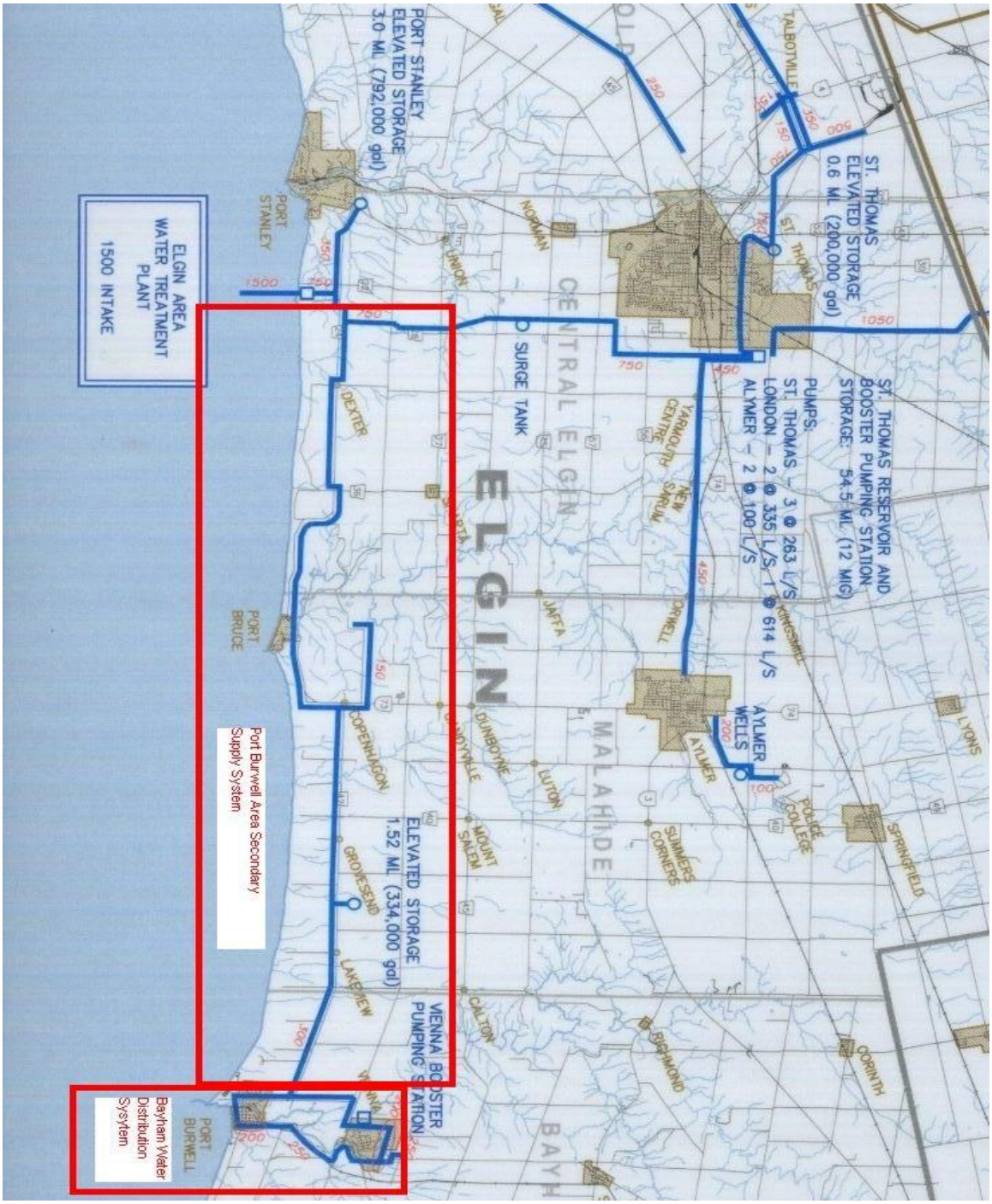
APPENDIX B

ORGANIZATIONAL AND OPERATIONAL STRUCTURE



APPENDIX C-1

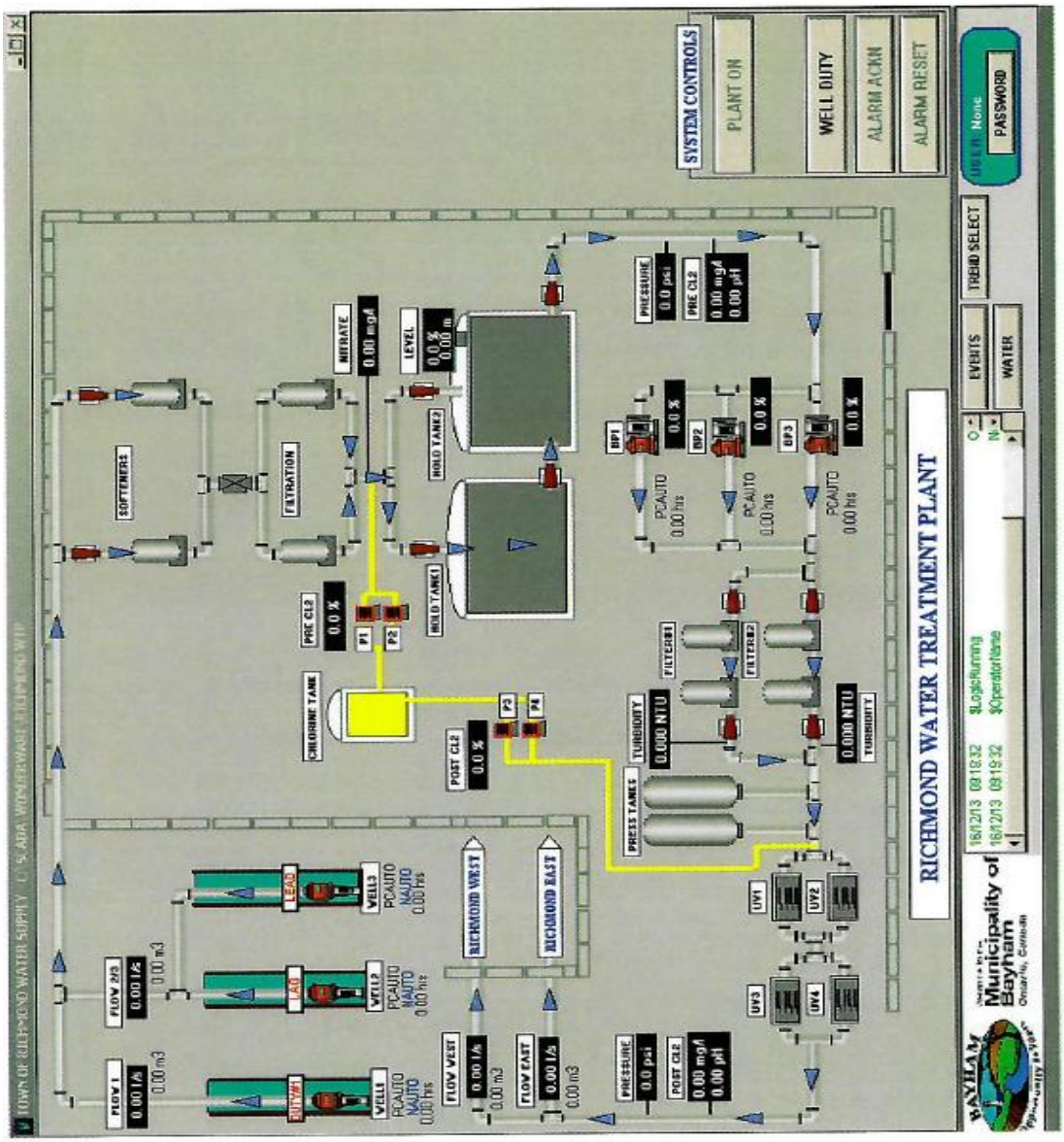
PROCESS FLOW CHART



APPENDIX C-2

Richmond

PROCESS FLOW CHART



Richmond Community Drinking Water Distribution System

APPENDIX D

OPERATIONAL RESPONSIBILITES AND AUTHORITIES

Mayor/Council (Owner)

Responsibilities	Authorities
- Complete oversight of the entire treatment and distribution system and the QMS - Ultimate responsibility for the provision of safe drinking water - Ensure compliance with applicable legislation and regulations	- Financial, administrative authority related to the treatment and distribution of safe drinking water

Chief Administrating Officer (Top Management)

Responsibilities	Authorities
- Complete oversight of the entire treatment and distribution system - Endorse and lead the development and implementation and maintenance of the QMS - Provide and/or obtain resources for the QMS and necessary infrastructure and resources to operate and maintain the drinking water system safely and effectively - Ensure the system is operated in accordance with all applicable legislation and regulations - Lead for Management Reviews - Communication with Mayor and Council about QMS and the water distribution system - Communications lead during emergencies	- Financial, administrative and technical authority related to the treatment and distribution of safe drinking water

Manager of Water/Wastewater Operations

Responsibilities	Authorities
- Complete oversight of the entire treatment and distribution system - Quality Management System representative - Provide and/or obtain resources for the QMS and necessary infrastructure and resources to operate and maintain the drinking water system safely and effectively - Ensure the system is operated in accordance with all applicable legislation and regulations - Lead for management reviews - Communication with mayor and council about the QMS and the water distribution system - Preparation of budget and planning materials - Recommendation of system improvements - Develops procedures and processes for assuring water quality - Emergency response planning, training - ORO for Bayham Distribution	- Financial, administrative and technical authority related to the treatment and distribution of safe drinking water to the Municipality of Bayham - Staffing-within the guidelines of the Municipality and any in-force collective agreements - Activity/program scheduling within the department - Oversee adverse water quality incidences and responses - Identify and oversee staff training needs - Make changes to the QMS - Delegate ORO to certified operator

Water/Wastewater Operations Supervisor

Responsibilities	Authorities
- Complete oversight of the entire treatment and distribution system - Overall Responsible Operator (alternate) performs duties of designated ORO - Acts as the Quality Management System representative set out in DWQMS as well as all municipal operational plans - Provide and/or obtain resources for the QMS and necessary infrastructure and resources to operate and maintain the drinking water system safely and effectively - Ensure the system is operated in accordance with all applicable legislation and regulations - Assists lead for management reviews - Communication with mayor and council about the QMS and the water distribution system as required - Helps with preparation of budget and planning materials - Recommendation of system improvements - Aids in the development of procedures and processes for assuring water quality - Supports in emergency response planning, training - Supervises the operation and repair of all equipment in the water treatment and distribution systems - Conducts regular routine inspections and preventative maintenance on related infrastructure and equipment -Performs additional duties and responsibilities as assigned by Manager of Water/Wastewater Operations	- Assists in financial, administrative and technical authority related to the treatment and distribution of safe drinking water to the Municipality of Bayham - Supports in staffing-within the guidelines of the Municipality and any in-force collective agreements - Activity/program scheduling within the department - Oversee adverse water quality incidences and responses - Helps in identifying and overseeing staff training needs - Make changes to the QMS as required - Provides leadership, direction and ongoing performance supervision to employees Liaises with government ministries, agencies, consultants, contractors, members of the public, fire department and municipal staff to co-ordinate activities as required

Water/Wastewater Operators

Responsibilities	Authorities
- Chlorine residual testing - Weekly pump-house checks (2-3 times per week) - Reviewing and sign-off of daily summary sheets - Weekly sample collection of water system - Regular maintenance - Report any incidents of non-compliance - Respond to repairs directed from manager and accounting clerk - Water shut-offs as directed by accounting clerk - Perform ORO duties as delegated by manager (assigned operator)	- Monitor process and equipment - Respond to public complaints as relayed from superintendent, or accounting clerk - Recommend changes to the QMS

PROCEDURE A

DOCUMENT AND RECORD CONTROL

QMS Document Control

This procedure is applicable to the following QMS documents:

- Operational Plan
- Procedures
- Audit Checklists
- Forms
- Equipment Manuals
- As Built Drawings

Creating New or Updating Existing Documents

- The need for document changes or for new documents or procedures may be identified through audits or management reviews. The Manager of Water/Wastewater Operations will delegate the task of creating the new document

- Any employee of the Water Department may request a change to an existing QMS. The request must be made in writing, dated and submitted to the Manager of Water/Wastewater Operations. The request must include the following information:

    1. Reason for new or changed document - must belong in one or more of these categories:
        - Required by the DWQMS
        - Enhances process control
        - Reduces risk
        - Supports regulatory requirements
        - May improve operational efficiency

    2. Outline of document change or new document content
        - Narrative format is acceptable

- The requester shall develop the new/changed document and submit it to the Manager of Water/Wastewater Operations for approval.
- Document changes or the need for new documents or procedures may be identified through audits or management reviews.
- The Municipality of Bayham Continual Improvement Tracking Spreadsheet will track the process for verifying documents and document changes for verifying effectiveness of the action taken to avoid re-occurrence or the occurrence of non-conformances.

- Electronic versions of the new/changed documents will be created by the QMS Team Members and approved by the Manager of Water/Wastewater Operations.

Approving Documents

- All QMS related documents shall be approved by the Manager of Water/Wastewater Operations.
- The Manager of Water/Wastewater Operations shall be responsible for ensuring that copies of the new or changed document show the revision number and date modified and are distributed. Obsolete documents (due to changes) shall be collected and destroyed.

Reviewing Documents

- The Operational Plan and procedures shall be reviewed annually for applicability and relevance.

Document Identification, Storage, Availability and Control

- Documents are identified in the Master Document List by the title and revision number/date of the document.
- Hard copy of the Master Documents will be kept at the water department office in a file cabinet.
- Electronic copy of the Master Documents can be accessed through the laptop computer at the water department by accessing the appropriate server.
- Backup copy of the electronic file of the Master Documents will be saved on the master server at the municipal office. There is a secondary back-up server at the municipal office and four times a day everything is backed to an offsite DATTO Cloud.
- All procedures, instructions, forms and checklists are retained in the QMS binders at the water department office.
- Original sets of equipment manuals and specifications are kept at the water department office.
- As appropriate, copies are kept at the Richmond Pump House.
- Electronic copies of completed Master Document forms, checklists and/or QMS documentation shall not be stored on the desktop file of the laptop computer at the water department.
- The Municipality of Bayham is currently running the Water/Wastewater Laserfiche Procedure Pilot concurrently with the existing paper (hardcopy) and electronic file system until such time as the MECP approves the functionality of the Laserfiche Platform through the audit and inspection process. As of June 25, 2020, the logbook procedure for Laserfiche has been adapted.
- A list of Laserfiche Master Documents is currently being updated.

- Currently updating document identification, storage, availability and control through the Laserfiche platform
- Laserfiche document forms and completed forms can be accessed through the Municipality of Bayham's Laserfiche Weblink. Anyone wishing to view completed forms (i.e. MECP), will be given "View" privileges so there is no risk of modification of any documents, through the Laserfiche Portal.
- The operational plans that were the subject of an audit, as required by Section 4.0.1 of the Director's Directions Minimum Requirements for Operational Plans (July 2007), will be retained for 10 years.
- All hard copy, electronic or Laserfiche documents and records received is reviewed, acted upon if needed, filed in appropriate locations and retained for five years. The municipality complies with Provincial Records Management through By-Law 2014-091 Records Retention.

QMS Record Control

This procedure is applicable to all records that demonstrate conformance to DWQMS requirements. Ontario Regulations 170/03 and 128/04 cover all records that demonstrate compliance.

Manual Records

- The record title shall be clearly visible and legible
- Manual records shall be legible. Pencil or any other erasable marker shall not be used to record process or product information or data.
- QMS records shall be filed by type by date
- QMS related water distribution records will be available at the water department office.
- QMS records shall be stored in such a manner as to prevent deterioration.
- All manual records shall show the name or initials of the recorder and the date (and time if appropriate) the record was generated.

Laserfiche Records

- Electronic Laserfiche records can be accessed through the Laserfiche portal and sign-in utilizing specific credentials, under *Environmental Services.* Through this the logbook and document relationships can be view. This allows authorized individuals to see other forms or work orders completed on the system. All linked documents for each day on the system can be seen.

PROCEDURE B

RISK ASSESSMENT AND OUTCOMES

The QMS team consists of the Water/Wastewater Operations Manager and certified operators. The QMS team will identify the potential hazards and hazardous events, as identified in the Ministry of the Environment, Conservation and Parks document titled "Potential Hazardous Events for Municipal Residential Drinking Water Systems", dated April 2022 which could affect the water system, the control measures to address the hazards, identify the Critical Control Points (if applicable), control limits and associated methods of monitoring critical limits and responding to deviations. Equipment reliability, accuracy, and redundancy are all reviewed on an annual basis as stated in Element 17 (pg. 9).

Hazardous events and hazards are assessed on the basis of likelihood, severity and detectability. The assessment criteria are summarized in the following tables and values were combined to give an overall level of risk as shown.

To ensure that potential drinking water health hazards are addressed and minimum treatment requirement as regulated by the Safe Drinking Water Act O. Reg. 170/03 and the *Procedure for Disinfection of Drinking Water in Ontario* are met, QMS team has established mandatory Critical Control Points (CCP's).

Every year the Water/Wastewater Operations Manager will review the risk assessment and ensure that the information and assumptions remain current and valid. Certified operations staff may take part in the annual review process. Outcomes will be considered as part of the review of infrastructure for the capital budget process.

Every 3 years the Water/Wastewater Operations Manager will assemble the QMS team to conduct a re-assessment. The review and re-assessment form for Element #7 & #8 (found in the Master Document List) shall be utilized.

<u>The Following Applies to the Richmond Community water System Only</u>

<u>As a minimum, the following must be included as CCP's :</u>

- Processes necessary to achieve the required log removal or inactivation of pathogens (ie., chemical and/or UV disinfection system, filtration process for GUDI systems)
- Processes necessary for maintaining a disinfectant residual in the distribution system

Identified the above processes as mandatory CCP's in Table 2.

Description	Likelihood of Hazardous Event Occurring	Rating
Rare	May occur in exceptional circumstances, and has not occurred in past	1
Unlikely	Could occur at some time, historically has occurred less than once every 5-10 years	2
Possible	Has occurred or may occur once or more per year	3
Likely	Has occurred or may occur on a monthly to quarterly basis	4
Very Likely	One or more occurrences on a monthly or more frequent basis	5

Description	Severity of Hazardous Event Occurring	Rating
Insignificant	Insignificant impact, little public exposure, little or no health risk	1
Minor	Limited public exposure, minor health risk	2
Moderate	Minor public exposure, minor health risk	3
Major	Large population at risk	4
Catastrophic	Major impact for large population, complete failure of systems	5

Description	Detectability of Hazardous Event	Rating
Very Detectable	Easy to detect, visual	1
Moderately Detectable	Visually detectable (i.e. Flow Rates)	2
Normally Detectable	Visually detectable but not on rounds or regular basis	3
Poorly Detectable	Visually detectable but not inspected on a regular basis	4
Undetectable	Cannot detect	5

PROCEDURE B – RISK ASSESSMENT AND OUTCOMES REVISION HISTORY

Date	Revision #	Description of Revision
April 10, 2024	1.0	Implemented revision history table for Procedure B – Risk Assessment and Outcomes indicating date, operational plan number and description of revision. New combined plan with combined procedure B put into place.

Activity or Process Step	Description of Hazard	Potential Result of Hazard	Comments	Available Monitoring & Control Measures	Emergency Procedure or Contingency Plans	Likelihood	Severity	Detectability	Total (High Risk CCP Threshold=7)	CCP?
Source Water (supply Elgin Area Water Treatment Plant	Contamination of Source Water (e.g. chemical spill)	Adverse Water Unable to supply water	No control	Notification by Elgin Area Treatment Plant – on-line monitoring Notification by operating authority of the Port Burwell Secondary System – on-line monitoring and daily chlorine residuals	Monitor residual at furthest sampling points Communication essential with Elgin Area Treatment Plant – depending on levels/demands at other reservoirs and locations Communication essential with the Port Burwell Secondary System – dependent on levels/demands at the tower On-going discussions with Elgin Area Water Treatment Plant operators; see if water quality and/or system chlorine residual has been restored Discuss water quality with Medical Officer of Health (MOH) and Elgin Area Treatment Plant operators (should have been reported Ministry of the Environment, Conservation and Parks (MECP)). Communicate boil water/drinking water advisory if issued by MOH See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plan	1	4	1	6	No-Below risk threshold for CCP

Activity or Process Step	Description of Hazard	Potential Result of Hazard	Comments	Available Monitoring & Control Measures	Emergency Procedure or Contingency Plans	Likelihood	Severity	Detectability	Total (High Risk CCP Threshold=7)	CCP?
Source Water (supply Elgin Area Water Treatment Plant	Unable to Supply Water (Water Supply Shortfall)	Adverse Water Unable to supply water	No control	Notification by Elgin Area Treatment Plant – on-line monitoring Notification by operating authority of the Port Burwell Secondary System – on-line monitoring and daily chlorine residuals	Monitor residual at furthest sampling points Communication essential with Elgin Area Treatment Plant – depending on levels/demands at other reservoirs and locations Communication essential with the Port Burwell Secondary System – dependent on levels/demands at the tower On-going discussions with Elgin Area Water Treatment Plant operators; see if water quality and/or system chlorine residual has been restored Discuss water quality with Medical Officer of Health (MOH) and Elgin Area Treatment Plant operators (should have been reported Ministry of the Environment, Conservation and Parks (MECP)). Communicate boil water/drinking water advisory if issued by MOH See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plan	1	4	1	6	No-Below risk threshold for CCP

Activity or Process Step	Description of Hazard	Potential Result of Hazard	Comments	Available Monitoring & Control Measures	Emergency Procedure or Contingency Plans	Likelihood	Severity	Detectability	Total (High Risk CCP Threshold=7)	CCP?
Vienna Booster Station	Power Loss	Adverse Water Loss of Pressure		No on-line notification, feedback by consumers complaints, visual checks daily basis	Contact secondary operating authority to maintain adequate tower level to maintain pressure in system. Reconfigure distribution system (i.e. open loop), if required See Contingency Plans (Vienna Booster – Power Loss) Section 5 of Operations/Management Manual	3	1	1	5	No Below risk threshold for CCP
	Vandalism/Terrorism	Adverse Water		Drive by visual checks every day.	Call police and contact MOH and MECP Spill Action Centre, if necessary See Contingency Plans (Vandalism/Terrorism) Section 5 of Operations/Management Manual	1	2	3	6	No No control at this point
	Failure of booster pump	Adverse Water Loss of Pressure		No on-line notification, feedback by consumers complaints, visual checks daily basis	Contact secondary operating authority to maintain adequate tower level to maintain pressure in system. Reconfigure distribution system (i.e. open loop), if required See Contingency Plans (Vienna Booster – Failure of Booster Pump) Section 5 of Operations/Management Manual	3	1	1	5	No Below risk threshold for CCP

Activity or Process Step	Description of Hazard	Potential Result of Hazard	Comments	Available Monitoring & Control Measures	Emergency Procedure or Contingency Plans	Likelihood	Severity	Detectability	Total (High Risk CCP Threshold=7)	CCP?
Distribution	Watermain Break within distribution system causing low pressure/no water	Adverse Water Low pressure / back-siphoning	Elevated distribution system storage in Port Burwell Secondary	Customer complaints; Low pressure or high flows, visual if at ground, no on-line indication/monitoring of flows from tower. V001 and E038 Flow monitoring through the checks of the flow meters and graphing through the week. May not be aware of fire/break. Looping has improved ability to isolate areas and also maintain flow in event of breaks. Mapping	Repair; watermain disinfection procedures per Operations Manual, training. Repair parts etc. Stocked. If necessary issue boil water advisory after consultation with MOH. See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plan	3	2	2	7	Yes No control of event taking place. CCP are identified with-in the AWQI Contingency Plan.
	Loss of chlorine residual (secondary disinfection from secondary water system)	Adverse Water	Legislated under O. Reg. 170/03	Daily residual testing at far end of system, weekly microbiological sampling at locations in town, values are tracked & trended on data spreadsheet	Contact secondary operating authority to maintain chlorine residual. Flush the system and resample. Corrective actions required by O. Reg. 170/03. See Contingency Plans (Low Cl2 Residual and AWQI) Section 5 of Operations/Management Manual	1	4	1	6	No Below risk threshold for CCP

Activity or Process Step	Description of Hazard	Potential Result of Hazard	Comments	Available Monitoring & Control Measures	Emergency Procedure or Contingency Plans	Likelihood	Severity	Detectability	Total (High Risk CCP Threshold=7)	CCP?
Distribution	Commissioning of new watermain/service installation	Adverse Water		Follow procedures for disinfection of new watermains using AWWA Standard – C605-05. Check chlorine residuals and conduct microbiological testing.	Follow corrective action per O.Reg. 170/03. If necessary, communicate issuance of boil water advisory after consultation with MOH. See Contingency Plans (Contamination of Commissioning of New Watermain/Service Installation and AWQI) Section 5 of Operations/Management Manual	1	2	1	4	No Below risk threshold for CCP
	Loss of pressure – watermain break, major fire	Adverse Water Low pressure /back-siphoning		V001 and E038 Flow monitoring through the checks of the flow meters and graphing through the week. Water hammer, consumer complaints. Backflow contamination prevented by 2” double check valves on all connections of concerns. Backflow preventor required (residential & commercial) through by law	Check pressure and chlorine residual. Discussion with MOE and MOH if low. If necessary, communicate issuance of boil water advisory after consultation with MOH. Restore pressure and chlorine residual. Conduct sampling per MOH and MECP direction. See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plan	1	2	2	5	No Below risk threshold for CCP

Activity or Process Step	Description of Hazard	Potential Result of Hazard	Comments	Available Monitoring & Control Measures	Emergency Procedure or Contingency Plans	Likelihood	Severity	Detectability	Total (High Risk CCP Threshold=7)	CCP?
Distribution	Pandemic Events (e.g. COVID-19)	Loss of Personnel Coverage Supply Issues Potential for AWQI		Discussion of mutual aid with ONWARN and surrounding municipalities at staffing shortage Personal protective equipment (gown, masks, face shields, gloves, hand sanitizer) on hand for operators Stocking up on supplies contacting suppliers on availability Rescheduling of manpower Working remotely Staggered shifts. Physical distancing Individual assignments	Health and Safety Policy - Communicable Diseases (June 9, 2020) COVID-19 Workplace Safety Guidelines – October 16, 2020 Comprehensive update Amendments to O. Reg. 128/04 to provided systems with temporary staffing options during an emergency. Inform MOECC SAC as soon as you anticipate difficulties such as inability to collect samples, lack of staffing, supply issues or a break in continuity of operations.	3	2	1	6	No – Below Risk Threshold for CPP – No Control
	Cyber Attack	Loss of access to documents and forms		Backup copy of electronic file of master documents saved on master server at municipal office Mitigation is a backup strategy in place. Daily backups are done and then transferred off-site to isolated servers	Critical documents and forms ensure sufficient copies on hand to operate a minimum of 72 hours without availability of computer and printer devices	2	1	1	4	No-Below risk threshold for CCP

Activity or Process Step	Description of Hazard	Potential Result of Hazard	Comments	Available Monitoring & Control Measures	Emergency Procedure or Contingency Plans	Likelihood	Severity	Detectability	Total (High Risk CCP Threshold=7)	CCP?
Distribution	Backflow from private plumbing (Cross connection)	Adverse Water	Backflow preventors on all new connections of concern	Meters are installed throughout. Backflow preventor required (residential & commercial) through by law	Inspect homes/commercial properties in area, install backflow preventor. Isolate area: Flush the system and sample as appropriate. Notify MOH and MECP Spill Action Centre. If necessary, communicate issuance of boil water advisory after consultation with MOH. See Contingency Plans (Backflow Failure and AWQI) Section 5 of Operations/Management Manual	1	2	3	6	No Below risk threshold for CCP
	Biofilms	Adverse Water		Visual inspection of pipe breaks, reduced flow in pipes, inability to maintain chlorine residual Flushing and swabbing. Replacement of old watermains based on material, age, observations. Mapping	See Contingency Plans (Biofilm – Taste/Colour/Odour/Other Customer Complaints or Adverse Water and AWQI) Section 5 of Operations/Management Manual	2	2	1	5	No Below risk threshold for CCP

Activity or Process Step	Description of Hazard	Potential Result of Hazard	Comments	Available Monitoring & Control Measures	Emergency Procedure or Contingency Plans	Likelihood	Severity	Detectability	Total (High Risk CCP Threshold=7)	CCP?
Distribution	Long Term Impacts of Climate Change	Adverse Water Loss or reduction of source water Potential for AWQI		Schedule maintenance Activities Operational checks Public Advisory –water ban or restriction Municipality to supply an alternate source of drinking water	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plan	1	4	1	6	No – Below Risk Threshold for CPP – No Control
	Extreme Weather Events (e.g., tornado, ice storm)	Adverse Water Loss or reduction of source water Potential for AWQI		Schedule maintenance Activities Operational checks Public Advisory –water ban or restriction Municipality to supply an alternate source of drinking water	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plan	1	3	1	5	No – Below Risk Threshold for CPP – No Control

Activity or Process Step	Description of Hazard	Potential Result of Hazard	Comments	Available Monitoring & Control Measures	Emergency Procedure or Contingency Plans	Likelihood	Severity	Detectability	Total (High Risk CCP Threshold=7)	CCP?
Distribution	Sustained Extreme Temperatures (e.g., heat wave, deep freeze)	Adverse Water Loss or reduction of source water Potential for AWQI		Schedule maintenance Activities Operational checks Public Advisory –water ban or restriction Municipality to supply an alternate source of drinking water	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plan	2	3	1	6	No – Below Risk Threshold for CPP – No Control
	Sustained Pressure Loss	Adverse Water Low pressure /back-siphoning		V001 and E038 Flow monitoring through the checks of the flow meters and graphing through the week. Water hammer, consumer complaints. Backflow contamination prevented by 2” double check valves on all connections of concerns. Backflow preventor required (residential & commercial) through by law	Check pressure and chlorine residual. Discussion with MOE and MOH if low. If necessary, communicate issuance of boil water advisory after consultation with MOH. Restore pressure and chlorine residual. Conduct sampling per MOH and MECP direction. See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plan	1	4	1	6	No – Below Risk Threshold for CPP – No Control

Table 1: Risk Assessment Table for the Richmond Community Drinking Water System

Activity or Process Step	Description of Hazard	Potential Result of Hazard	Available Monitoring & Control Measures	Emergency Procedure or Contingency Plans	Likelihood	Severity	Detectability	Total (High Risk CCP Threshold>7)	CCP?
Raw Water/Well	Well Casing Collapse	Loss of Raw Water	Alternate Well Public Advisory –water ban or restriction Municipality to supply an alternate source of drinking water.	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water and AWQI) Section 5 of Operations/Management Manual	1	1	3	7	No- Below risk threshold for CCP No control
	Well Pump Failure	Loss of Raw Water	On-line monitoring with alarms (SCADA) Spare pump available on site Alternative Well Public Advisory –water ban or restriction Municipality to supply an alternate source of drinking water	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water and AWQI) Section 5 of Operations/Management Manual	2	3	1	6	No-Below risk threshold for CCP
	Contamination of Source Water/Change to Raw Water Characteristics (e.g. chemical spill)	Adverse Water	Monitor and sample Municipality to supply an alternate source of drinking water Source Water Protection Plan	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water and AWQI) Section 5 of Operations/Management Manual	1	4	1	6	No-Below risk threshold for CCP

Table 1: Risk Assessment Table for the Richmond Community Drinking Water System									
Activity or Process Step	**Description of Hazard**	**Potential Result of Hazard**	**Available Monitoring & Control Measures**	**Emergency Procedure or Contingency Plans**	**Likelihood**	**Severity**	**Detectability**	**Total (High Risk CCP Threshold>7)**	**CCP?**
	Unable To Supply Water/Wells Overdrawn (Water Supply Shortfall)	Loss or reduction of raw water	Alternate Well Public Advisory –water ban or restriction Municipality to supply an alternate source of drinking water Routine well level check Routine sampling of well	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water and AWQI) Section 5 of Operations/Management Manual	2	3	1	6	No-Below risk threshold for CCP
Primary Disinfection	Chemical feed pump failure	Loss of disinfection Low chlorine residual Inadequate inactivation of pathogens Potential for AWQI	On-line monitoring with alarms (SCADA) Back-up chemical feed pumps with auto switchover (redundancy) In-house residual testing and dosage calculation (CT) Schedule maintenance activities	See Contingency Plans (Chemical Feed Pump Failure, Low Chlorine Residual and AWQI) Section 5 of Operations/Management Manual					Yes – Mandatory CCP
	Analyzer Failure	Unknown chlorine residual levels Potential for AWQI	On-line monitoring with alarms (SCADA) In-house residual testing and dosage calculation (CT) Schedule maintenance activities	See Contingency Plans (Chlorine Analyzer Failure, Low Chlorine Residual and AWQI) Section 5 of Operations/Management Manual					

Table 1: Risk Assessment Table for the Richmond Community Drinking Water System									
Activity or Process Step	**Description of Hazard**	**Potential Result of Hazard**	**Available Monitoring & Control Measures**	**Emergency Procedure or Contingency Plans**	**Likelihood**	**Severity**	**Detectability**	**Total (High Risk CCP Threshold>7)**	**CCP?**
	Low Supply of Sodium Hypochlorite	Inadequate disinfection Potential for AWQI	On-line monitoring with alarms (SCADA) In-house residual testing and dosage calculation (CT) Chemical availability	See Contingency Plans (Low Chlorine Residual and AWQI) Section 5 of Operations/Management Manual					
	UV unit failure	Loss of treated water supply Loss of pressure Inadequate disinfection Potential for AWQI	Redundancy (4 UV Units) Operational control (automatic and manual valves) On-line monitoring with alarms (SCADA) Schedule maintenance activities	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, Loss of Pressure and AWQI) Section 5 of Operations/Management Manual					Yes – Mandatory CCP
Storage (Holding) Tanks	Low Level	Inadequate CT for primary disinfection Inadequate treated water supply	Low level alarms on-line monitoring (SCADA) Schedule maintenance activities Public Advisory –water ban or restriction	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water and AWQI) Section 5 of Operations/Management Manual					
	Level Indicator Failure (Milltronics)	Inadequate CT for primary disinfection Inadequate treated water supply	On-line monitoring with alarms (SCADA) Schedule maintenance activities Public Advisory –water ban or restriction	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water and AWQI) Section 5 of Operations/Management Manual					Yes – Mandatory CCP

Table 1: Risk Assessment Table for the Richmond Community Drinking Water System									
Activity or Process Step	**Description of Hazard**	**Potential Result of Hazard**	**Available Monitoring & Control Measures**	**Emergency Procedure or Contingency Plans**	**Likelihood**	**Severity**	**Detectability**	**Total (High Risk CCP Threshold>7)**	**CCP?**
High Lift Pumps	High lift pump failures	Loss of treated water supply Loss of pressure	Redundancy (3 HL pumps) On-line monitoring with alarms (SCADA) Schedule maintenance activities Operational control	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, Loss of Pressure) Section 5 of Operations/Management Manual	1	3	1	5	No- Below risk threshold for CCP No control
Water Treatment System	Power Loss	Loss of treated water supply Loss of pressure	On-line monitoring with alarms (SCADA). Back-up power generator on-site. Schedule maintenance Activities Operational checks, monthly, quarterly and annually.	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, Power Failure and Loss of Pressure) Section 5 of Operations/Management Manual	2	1	1	6	No- Below risk threshold for CCP No control
	Vandalism/Terrorism	Contamination of the water supply Damage to critical equipment	Locked (well site and pump house) On-line intrusion monitoring with alarms (SCADA) Regular visits by personnel	Call police and contact MOH and MECP Spill Action Centre, if necessary See Contingency Plans (Vandalism/Terrorism) Section 5 of Operations/Management Manual	1	2	3	6	No- Below risk threshold for CCP No control

Table 1: Risk Assessment Table for the Richmond Community Drinking Water System									
Activity or Process Step	**Description of Hazard**	**Potential Result of Hazard**	**Available Monitoring & Control Measures**	**Emergency Procedure or Contingency Plans**	**Likelihood**	**Severity**	**Detectability**	**Total (High Risk CCP Threshold>7)**	**CCP?**
Turbidity Analyzers	Turbidity analyzer failure	Loss of treated water supply Loss of pressure Potential for AWQI	Redundancy (2 filter trains and turbidity analyzers) Operational control On-line monitoring with alarms (SCADA) Schedule maintenance activities	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, Loss of Pressure and AWQI) Section 5 of Operations/Management Manual					Yes – Mandatory CCP
Monitoring Equipment	PLC Failure	Loss of treated water supply Loss of pressure Potential for AWQI	On-line monitoring with alarms (SCADA) Manual override of the operation of wells (Milltronics) High lift pumps operation on local control panel Chlorine chemical feed pumps operation through PID Controller Operational checks	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, Monitoring Equipment Failure, Loss of Pressure and AWQI) Section 5 of Operations/Management Manual	2	2	1	5	No-Below risk threshold for CCP

Table 1: Risk Assessment Table for the Richmond Community Drinking Water System									
Activity or Process Step	**Description of Hazard**	**Potential Result of Hazard**	**Available Monitoring & Control Measures**	**Emergency Procedure or Contingency Plans**	**Likelihood**	**Severity**	**Detectability**	**Total (High Risk CCP Threshold>7)**	**CCP?**
	Cyber Attack	Loss of system monitoring and/or data loss Loss of treated water supply Loss of access to documents and forms Potential for AWQI	On-line monitoring with alarms (SCADA) SCADA computer is a stand - alone unit separate from the municipal server only accessed through a VPN network connection	Critical documents and forms ensure sufficient copies on hand to operate a minimum of 72 hours without availability of computer and printer devices See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, Monitoring Equipment Failure, Loss of Pressure and AWQI) Section 5 of Operations/Management Manual	2	2	1	5	No-Below risk threshold for CCP
	SCADA Failure	Loss of system monitoring and/or data loss Loss of treated water supply Loss of pressure Potential for AWQI	On-line monitoring with alarms (SCADA) Manual override of the operation of wells (Milltronics) High lift pumps operation on local control panel Chlorine chemical feed pumps operation through PID Controller Operational checks	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, Monitoring Equipment Failure, Loss of Pressure and AWQI) Section 5 of Operations/Management Manual	2	2	1	5	No-Below risk threshold for CCP

Table 1: Risk Assessment Table for the Richmond Community Drinking Water System									
Activity or Process Step	**Description of Hazard**	**Potential Result of Hazard**	**Available Monitoring & Control Measures**	**Emergency Procedure or Contingency Plans**	**Likelihood**	**Severity**	**Detectability**	**Total (High Risk CCP Threshold>7)**	**CCP?**
	Alarm Dialer Failure	Loss of call-out to operator of potential alarms Loss of treated water supply Loss of pressure Potential for AWQI	On-line monitoring with alarms (SCADA) Manual override of the operation of wells (Milltronics) High lift pumps operation on local control panel Chlorine chemical feed pumps operation through PID Controller Operational checks	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, Monitoring Equipment Failure, Loss of Pressure and AWQI) Section 5 of Operations/Management Manual	2	2	1	5	No-Below risk threshold for CCP
Secondary Disinfection	Chemical feed pump failure	Loss of disinfection Low chlorine residual Inadequate inactivation of pathogens Potential for AWQI	On-line monitoring with alarms (SCADA) Back-up chemical feed pumps with auto switchover (redundancy) In-house residual testing Schedule maintenance activities	See Contingency Plans (Chemical Feed Pump Failure, Low Chlorine Residual and AWQI) Section 5 of Operations/Management Manual					Yes – Mandatory CCP
	Analyzer Failure	Unknown chlorine residual levels Potential for AWQI	On-line monitoring with alarms (SCADA) In-house residual testing Schedule maintenance activities	See Contingency Plans (Chlorine Analyzer Failure, Low Chlorine Residual and AWQI) Section 5 of Operations/Management Manual					

Table 1: Risk Assessment Table for the Richmond Community Drinking Water System									
Activity or Process Step	**Description of Hazard**	**Potential Result of Hazard**	**Available Monitoring & Control Measures**	**Emergency Procedure or Contingency Plans**	**Likelihood**	**Severity**	**Detectability**	**Total (High Risk CCP Threshold>7)**	**CCP?**
	Low Supply of Sodium Hypochlorite	Inadequate disinfection Potential for AWQI	On-line monitoring with alarms (SCADA) In-house residual testing Chemical availability	See Contingency Plans (AWQI) Section 5 of Operations/Management Manual					
Distribution	Waterman Break within distribution system causing low pressure/no water	Adverse Water Low pressure / back-siphoning	Customer complaints; Low pressure or high flows, visual if at ground On-line indication/monitoring of flows from SCADA May not be aware of break. Follow procedures for disinfection of water mains using AWWA Standard – C651-05 Mapping	Repair; water main disinfection procedures per Operations Manual, training. Repair parts etc. Stocked. If necessary issue boil water advisory after consultation with MOH. See Contingency Plans (Main Break, Low Pressure and AWQI) Section 5 of Operations/Management Manual	1	2	2	7	No-Below risk threshold for CCP
	Loss of chlorine residual in distribution system	Adverse Water	Daily residual testing at far end of system, weekly microbiological sampling at locations in town, values are tracked & trended on data spreadsheet	Flush the system and resample. Corrective actions required by O. Reg. 170/03. See Contingency Plans (Low Cl2 Residual and AWQI) Section 5 of Operations/Management Manual	1	4	1	6	No-Below risk threshold for CCP

Table 1: Risk Assessment Table for the Richmond Community Drinking Water System									
Activity or Process Step	**Description of Hazard**	**Potential Result of Hazard**	**Available Monitoring & Control Measures**	**Emergency Procedure or Contingency Plans**	**Likelihood**	**Severity**	**Detectability**	**Total (High Risk CCP Threshold>7)**	**CCP?**
	Commissioning of new water main/service installation	Adverse Water	Follow procedures for disinfection of new water mains using AWWA Standard – C605-05. Check chlorine residuals and conduct microbiological testing.	Follow corrective action per O.Reg. 170/03. If necessary, communicate issuance of boil water advisory after consultation with MOH. See Contingency Plans (Contamination of Commissioning of New Water main/Service Installation and AWQI) Section 5 of Operations/Management Manual	1	2	1	4	No-Below risk threshold for CCP
	Backflow from private plumbing (Cross connection)	Contamination	Design standards during upgrades	Isolate area: Flush the system and sample as appropriate. Notify MOH and MECP Spill Action Centre. If necessary, communicate issuance of boil water advisory after consultation with MOH. See Contingency Plans (Backflow Failure and AWQI) Section 5 of Operations/Management Manual	1	2	3	6	No-Below risk threshold for CCP

Table 1: Risk Assessment Table for the Richmond Community Drinking Water System									
Activity or Process Step	**Description of Hazard**	**Potential Result of Hazard**	**Available Monitoring & Control Measures**	**Emergency Procedure or Contingency Plans**	**Likelihood**	**Severity**	**Detectability**	**Total (High Risk CCP Threshold>7)**	**CCP?**
	Sustained Loss of Pressure	Adverse Water Low pressure /back-siphoning	Water hammer, consumer complaints. Backflow contamination prevented by 2" double check valves on all connections of concerns. Backflow preventor required (residential & commercial) through by law	Check pressure and chlorine residual. Restore pressure and chlorine residual. Conduct sampling per MOH and MECP direction. See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plan	1	4	1	6	No – Below Risk Threshold for CPP – No Control
	Biofilms	Adverse Water	Visual inspection of pipe breaks, reduced flow in pipes, inability to maintain chlorine residual Flushing and swabbing. Replacement of old water mains based on material, age, observations. Mapping	See Contingency Plans (Biofilm – Taste/Colour/Odour/Other Customer Complaints or Adverse Water and AWQI) Section 5 of Operations/Management Manual	2	2	1	5	No-Below risk threshold for CCP
	Long Term Impacts of Climate Change	Adverse Water Loss or reduction of source water Potential for AWQI	Schedule maintenance Activities Operational checks Public Advisory –water ban or restriction Municipality to supply an alternate source of drinking water	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plant	1	4	1	6	No – Below Risk Threshold for CPP – No Control

Table 1: Risk Assessment Table for the Richmond Community Drinking Water System									
Activity or Process Step	**Description of Hazard**	**Potential Result of Hazard**	**Available Monitoring & Control Measures**	**Emergency Procedure or Contingency Plans**	**Likelihood**	**Severity**	**Detectability**	**Total (High Risk CCP Threshold>7)**	**CCP?**
	Extreme Weather Events (e.g., tornado, ice storm)	Adverse Water Loss or reduction of source water Potential for AWQI	Schedule maintenance Activities Operational checks Public Advisory –water ban or restriction Municipality to supply an alternate source of drinking water	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plant	1	3	1	5	No – Below Risk Threshold for CPP – No Control
	Sustained Extreme Temperatures (e.g., heat wave, deep freeze)	Adverse Water Loss or reduction of source water Potential for AWQI	Schedule maintenance Activities Operational checks Public Advisory –water ban or restriction Municipality to supply an alternate source of drinking water	See Contingency Plans (Contamination of Source Water and/or Unable to Supply Water, AWQI and Procedural Guideline During A Prolonged Outage) Section 5 of O/M Manual. Water Supply Emergency Response Plan – Procedure D QMS Operational Plan	2	3	1	6	No – Below Risk Threshold for CPP – No Control

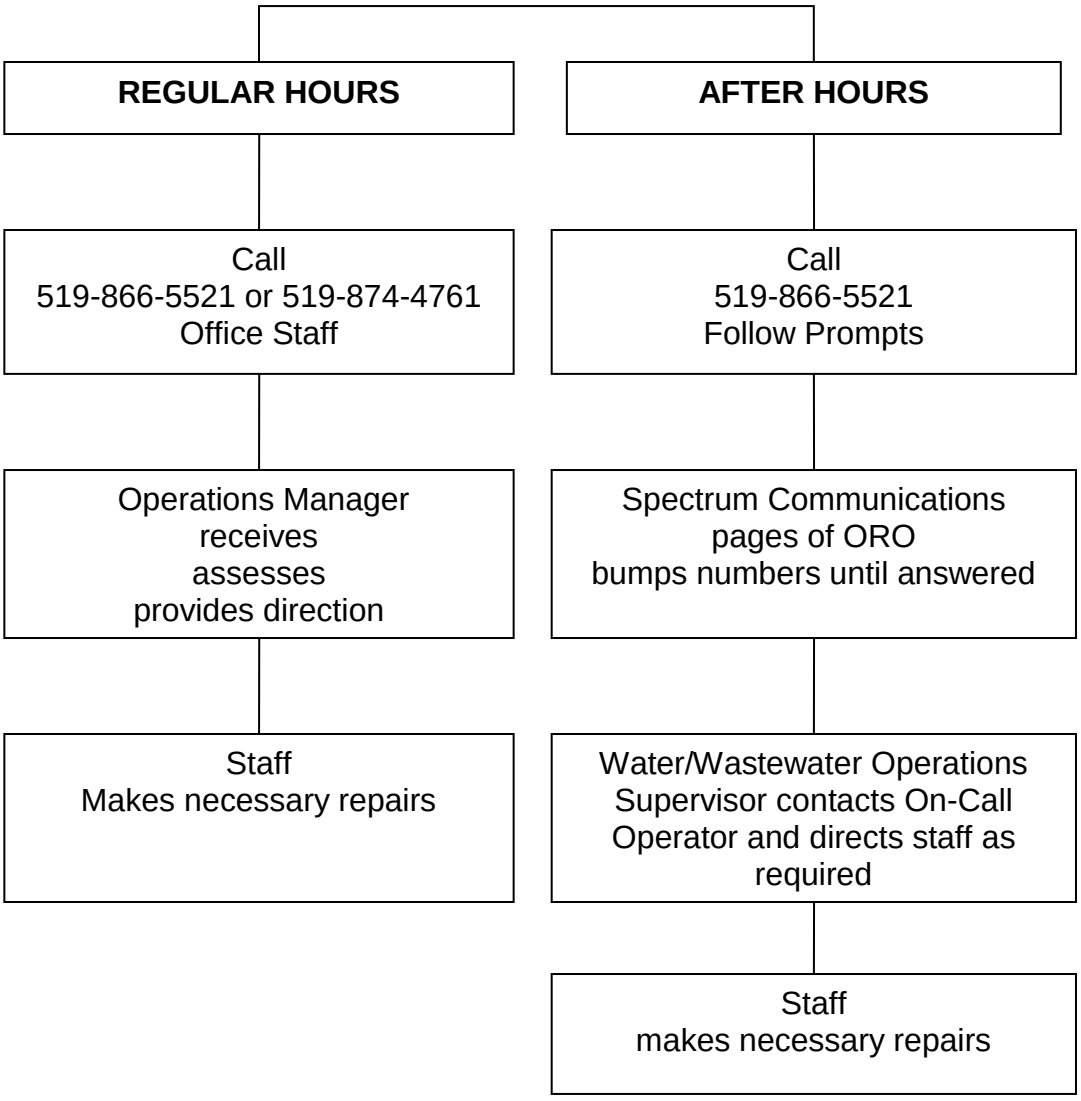
Table 1: Risk Assessment Table for the Richmond Community Drinking Water System									
Activity or Process Step	**Description of Hazard**	**Potential Result of Hazard**	**Available Monitoring & Control Measures**	**Emergency Procedure or Contingency Plans**	**Likelihood**	**Severity**	**Detectability**	**Total (High Risk CCP Threshold>7)**	**CCP?**
	Pandemic Events(e.g. COVID-19)	Loss of Personnel Coverage Supply Issues Potential for AWQI	Discussion of mutual aid with ONWARN and surrounding municipalities at staffing shortage Personal protective equipment (gown, masks, face shields, gloves, hand sanitizer) on hand for operators Stocking up on supplies contacting suppliers on availability Rescheduling of manpower Working remotely Staggered shifts. Physical distancing Individual assignments	Health and Safety Policy - Communicable Diseases (June 9, 2020) COVID-19 Workplace Safety Guidelines – October 16, 2020 Comprehensive update Amendments to O.Reg. 128/04 to provide with temporary staff options during an emergency. Inform MECP SAC as soon as you anticipate difficulties such as inability to collect samples, lack of staffing, supply issues or a break in continuity of operations.	3	2	1	6	No – Below Risk Threshold for CPP – No Control

Table 2: Identified Critical Control Points (CCPs)

Identified Critical Control Points of the Richmond Community Drinking Water System			
CCP	**Critical Control Limits**	**Monitoring Procedures**	**Response, Reporting and Recording Procedures**
Primary Disinfection	**Free Chlorine Residual Alarms – Pre Alarms** Low set point = 0.85 mg/L High set point = 3.00 mg/L	SCADA (continuous on-line analyzers) Weekly operator checks via plant data tracker – trend, review and sign-off as per O. Reg. 170/03 Operator on-site checks including CT calculations if required	Refer to: - Chemical Feed Pump Failure Contingency Plan - Low Chlorine Residual Contingency Plan - AWQI Contingency Plan
Storage (Holding) Tanks	**Storage (Holding) Tank Low Level Alarm** Low set point = 0.50 meters	SCADA (continuous on-line level measurement) Weekly operator checks via plant data tracker – trend, review and sign-off as per O. Reg. 170/03 Operator on-site checks including CT calculations if required	Refer to: - Contamination of Source Water and/or Unable to Supply Water Contingency Plan - AWQI Contingency Plan
Turbidity Analyzers	**Turbidity Analyzer High Level Alarm** High set point = 1.00 NTU	SCADA (continuous on-line analyzers) Weekly operator checks via plant data tracker – trend, review and sign-off as per O. Reg. 170/03 Operator on-site checks including manual confirmation using hand-held unit	Refer to: - Contamination of Source Water and/or Unable to Supply Water Contingency Plan - AWQI Contingency Plan
UV Units	**UV Unit Failure Alarm**	SCADA (continuous on-line monitoring) Operator on-site checks	Refer to: - Contamination of Source Water and/or Unable to Supply Water Contingency Plan - AWQI Contingency Plan
Secondary Disinfection	**Free Chlorine Residual – Post Alarms** Low set point = 0.40 mg/L High set point = 4.00 mg/L	SCADA (continuous on-line analyzers) Weekly operator checks via plant data tracker – trend, review and sign-off as per O. Reg. 170/03 Operator on-site checks including CT calculations if required Distribution chlorine residuals as per O. Reg. 170/03	Refer to: - Chemical Feed Pump Failure Contingency Plan - Low Chlorine Residual Contingency Plan - AWQI Contingency Plan

PROCEDURE C

PERSONNEL COVERAGE 24/7



PROCEDURE D

WATER SUPPLY EMERGENCY RESPONSE PLAN

AIM:
The aim of this plan is to:

- Provide a guideline to assist the Municipality in responding to water supply emergency affecting residents, community or infrastructure within the Municipality of Bayham.
- Define the roles and responsibilities of municipal staff and departments, and supporting agencies during a water supply emergency.

AUTHORITY AND CUSTODIAN:
This plan is published as an Annex to the Corporation of the Municipality of Bayham Emergency Response Plan as established under By-law 2006-113, and the *Emergency Management and Civil Protection Act, RSO 1990.*

The Custodian of this plan shall be the Corporation of the Municipality of Bayham Community Emergency Management Coordinator and Community Emergency Management Program Committee, who are responsible for annual review, revisions and testing of the plan.

WATER SUPPLY EMERGENCY DEFINITION:
A water supply emergency is defined as a situation where in the lives or property of the Municipality of Bayham and residents of the municipality are threatened by the effects of a water supply emergency from:

- Contamination of the treated water supply
- A major or prolonged loss of water supply (24 hours or greater)

NOTIFICATION AND IMPLEMENTATION:
This plan may be implemented in whole or in part, as required, by the Municipality of Bayham

- Head of Council
- Chief Administrative Officer (CAO)
- Manager of Water/Wastewater Operations
- Community Emergency Management Coordinator (CEMC), or
- Municipality of Bayham Community Control Group
  with or without the declaration of an emergency by the Head of Council.

This plan may be activated through the notification of the Head of Council, CAO or CEMC.

Upon implementation, all participating departments and agencies will respond in accordance with the guidelines described within this plan.

AGENCY/INDIVIDUAL ROLES & RESPONSIBILITIES:

Elgin St. Thomas Health Unit

- Issuing a Seek Alternative Source Water Advisory or Boil Water Advisory
- Request the activation of the Emergency Operation Centre(s) in the event of an emergency resulting from a major or prolonged water supply event.
- Act as lead agency to coordinate the County's response during a prolonged water supply emergency.
- Contact known schools and day care facilities who may be at high risk of severe health impacts due to water supply loss or contamination.
- Print and distribute materials on the Seek Alternative Source Water Advisory or Boil Water Advisory.
- Provide 24/7 "on call" service to respond to public inquiries regarding water related issues and refer concerned citizens' calls, as appropriate.
- Make necessary logistical arrangements for news conferences, as required.

Water/Wastewater Department, Municipality of Bayham

- Determine the source of the water supply emergency.
- Immediate and ongoing consultation with the Ministry of Environment, Conservation and Parks and the Medical Officer of Health and will advise CEMC.
- Coordinate the delivery of potable water where vulnerable people are likely to gather, if required.
- Coordinate the delivery of potable water to designated pick-up centers, as required.
- Once water supply is restored, flushing of the system and the collection of samples for lab analysis until the Seek Alternative Source Water Advisory or Boil Water Advisory is lifted.

Fire Department

- Increase awareness of, and report on, persons who may be vulnerable to the water supply emergency.
- Increase vigilance of how the water supply emergency affects firefighters' performing duties.
- Arrange alternate supply sources for fire protection in areas normally protected by municipal hydrants.

Emergency Management Ontario (if necessary)

- Provide advice, assistance, and liaison with the EOC

Canadian Red Cross (if necessary)

- Provide shelter management in times of declared disaster.
- Train on recognition of potential illness, first aid and personal disaster assistance training for staff and volunteers of community agencies who serve vulnerable clients.

Human Resources Manager (As Designated)

- Register and coordinate volunteer assistance

Emergency Information Officer

- Coordinate communications with County/Southwestern Public Health of all press releases and information fact sheets issued.
- Coordinate local public inquiry messaging for staff.
- Develop public education strategies for vulnerable populations within the Municipality.

Ontario Works

- Liaison with Red Cross for co-ordination of evacuation and emergency shelters

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NOTIFICATION GUIDELINE:

Southwestern Public Health

- The Medical Officer of Health (or designate) activates a Seek Alternative Source Water Advisory or Boil Water Advisory and provides relevant fact sheets by fax or email to the regional media if an extended alert is anticipated.

Municipality of Bayham

- The Medical Officer of Health notifies the Mayor or CAO when a Seek Alternative Source Water Advisory or Boil Water Advisory.

- The Municipality is responsible for internal notification of its staff and for the notification of their external partnering services.

- The Mayor, CAO and CEMC will consult with each other to determine if the Municipality of Bayham Community Control Group (CCG) will assemble to discuss the impacts of the issued Water Supply Emergency Alert.

- If the CCG is to be assembled CCG members shall be notified in accordance with the Municipality of Bayham Emergency Response Plan Notification Protocol.

RESPONSE GUIDELINE:

When a major or prolonged water supply emergency event is declared by the Warden of Elgin County and/or the Mayor of any municipality in Elgin County, the lead will be the Emergency Community Control Group at Elgin County. The Elgin County Community Control Group will provide direction to municipalities involved in the emergency in accordance with the mandate of the Elgin County CCG.

The following guideline shall be followed when water supply conditions pose a threat to municipal infrastructure, property and/or residents.

- The Municipality of Bayham CCG will assemble upon request from the Elgin County CCG.
- The Municipality of Bayham Emergency Operation Center will be activated upon receiving a request from the Elgin County CCG for assistance or deployment of municipal resources.
- Upon activation of the EOC, the CCG will determine the most appropriate method of providing emergency response resources to facilitate effective response pertaining to the request of the Elgin County CCG.

In the event the Elgin County CCG requests assistance from the Municipality of Bayham and the Bayham EOC is activated, the roles and responsibilities of municipal departments/representatives will include the following in addition to roles and responsibilities outlined in the Bayham ERP:

<u>Emergency Information Officer</u>

- Develop and issue emergency evacuation information
- Coordinate communications with County of all press releases and information fact sheets issued.
- Coordinate local public inquiry messaging for staff.
- Develop public education strategies for vulnerable populations within the Municipality.

<u>Water/Wastewater Department</u>

- Immediate and ongoing consultation with the Ministry of Environment, Conservation and Parks and the Medical Officer of Health and will advise CEMC.
- Coordinate the delivery of potable water where vulnerable people are likely to gather, if required.
- Coordinate the delivery of potable water to designated centers, as required.
- Increase awareness of, and report on, persons who may be vulnerable to the water supply emergency.
- Increase vigilance of how the water supply emergency affect water/wastewater employees working outside and performing duties

Fire Department

- Increase awareness of, and report on, persons who may be vulnerable to the water supply emergency.
- Increase vigilance of how the water supply emergency affects firefighters' performing duties.
- Arrange alternate supply sources for fire protection in areas normally protected by municipal hydrants.

Roads Department

- Increase awareness of, and report on, persons who may be vulnerable to the water supply emergency.
- Increase vigilance of how the water supply emergency affects road employees working outside and performing duties.

Deputy Clerk

- Set up of EOC
- Coordinate connection of EOC communications (e.g. phones, fax, email, etc.)
- Coordinate set up of public inquiry avenues (e.g. website update, phone inquiry messaging)

Administrative Support Staff

- Registering members of public attending a water pick-up center(s)
- Staffing public inquiry phone lines
- Updating municipal website information and municipal sign
- Monitoring of water pick-up center supplies

Clerk

- Register and coordinate volunteer assistance
- Coordinating volunteers and or municipal employees to staff (supervise) water pick-up center(s)

RESOURCES

Water

Canadian Kool Water – 53104 Vienna Line, Port Burwell, ON – Ph. 519-765-4970
Roses Sandytown Variety – 9292 Plank Road, Straffordville, ON – 519-866-5800
Kohli's Freshmart – 54362 Heritage Line, Straffordville, ON – 519-866-5505
Fountain Water Products – London, ON – 519-453-7052
GFS Bulk Water Services – Greg – 519- 633-1391

Water Pick-Up Facilities

Bayham Community Centre, 54164 Heritage Line, Straffordville, ON
Straffordville Fire Station, 55264 Third Street, Straffordville, ON
Port Burwell Fire Station, 55451 Nova Scotia Line, Port Burwell, ON

TRAINING AND SUPPLIES

Each participating agency is responsible for defining and providing the training required by its own staff in performing its emergency roles at its own cost.

All costs and/or damages resulting from a water supply emergency will be forwarded to the Treasurer of the Municipality of Bayham for consideration and resolution.

RECOVERY

Recovery procedures will be implemented in accordance with the Municipality of Bayham Recovery/Business Continuity Plan.

PROCEDURE E

INTERNAL AUDIT

Internal audits will be conducted to ensure that the QMS conforms to the requirements of the Municipality of Bayham and of the DWQMS. These requirements include ensuring that the QMS has been effectively implemented and properly maintained.

The Municipality of Bayham may, from time-to-time, request that trained auditors from a neighbouring municipality conduct internal audits. In turn, the Municipality of Bayham may provide the same service to other municipalities as the case arises.

Audits Conducted by Bayham

Auditors

- All internal auditors must have successfully completed a recognized 14 hour Internal Auditor workshop

Internal Audit Schedule

- Internal audits are scheduled throughout the year. The assigned auditor's name will appear on the schedule.
- Internal audits are to be completed at least once every calendar year.

Audit Planning

- The auditor shall review all related QMS documentation and obtain the current version of the DWQMS checklist prior to the audit, which will include results from the previous internal and external audits.

Conducting the Audit

- The auditor shall observe activities, review records and interview personnel as necessary to ensure that the status of the audited element of the QMS has been effectively covered.

Reporting the Results

- The auditor shall submit a completed checklist and report to the QMS Representative.

- The report shall include any requirement for corrective actions. Corrective actions shall be communicated to the responsible individual and included as part of Management Review input.

Audits Conducted by Another Municipality

Auditors

- Outside auditors must provide proof of competency prior to conducting an audit.
- Current version of the DWQMS checklist must be used during the audit.

Audit Schedule

- Audits are to be conducted per the Municipality of Bayham schedule.

Planning and Conducting the Audit and Reporting the Results

- Audits may be planned and conducted per the procedures of the auditing Municipality. Prior approval by the Manager of Water/Wastewater Operations.

- Audit results may be reported per the procedures of the auditing municipality as long as the results are documented. Requirements for corrective action must be indicated.

- A document management spreadsheet is used to track and document any changes to documents, corrective action reports, opportunities for improvement, management review, emergency response testing and internal audit and/or actions taken.

- Previous internal and external audits to be reviewed prior to the commencement of a new audit.

PROCEDURE F

MANAGEMENT REVIEW

This procedure defines the Management Review process to ensure the continuing suitability, adequacy and effectiveness of the QMS.

Review Frequency

Management Reviews shall be conducted on an annual basis.

Review Participants

The QMS Representative convenes the management review. Attendees shall include the QMS Representative and the Chief Administrating Office (Top Management).

Review Input

The QMS Representative shall provide information and data concerning the following categories, for the review:

- Incidents of regulatory non-compliance
- Incidents of adverse drinking water tests
- Deviations from critical control point limits and response actions
- Efficacy of the risk assessment process
- Results of internal and 3rd party audits
- Results of relevant emergency response testing
- Operational performance and water quality trends including raw water supply
- Follow-up on actions items from previous management reviews
- Status of action items (if any) identified between reviews
- Changes in resource requirements, infrastructure, process, personnel, Drinking Water Quality Management Standard or regulations that could affect the QMS
- Resources needed to maintain the Quality Management System
- Operational plan currency, content and updates
- Consumer feedback (including consumer complaint reports), and
- Staff suggestions

Review Process

The Management Review shall be a planned event. An appropriate time shall be set aside by the participants to ensure a thorough review of the QMS is conducted.

Each input category shall be reviewed in order to identify if, where and when improvements to the QMS and its procedures are required.

The QMS Representative shall make note of any changes or action items required during the course of the review.

Review Output

A list of changes required to be made to procedures or other QMS based documentation and processes and/or amendments must be made prior to the next annual internal audit.

Complete a list of “action” items if applicable. Action items shall identify the individual responsible.

A list of recommendation(s) for any human or financial resources may be required to maintain and improve the QMS.

The QMS Representative shall maintain minutes of management review. These minutes shall include the date and time of the review activity and the name of participants.

The QMS Representative shall review findings to the owner annually.