



Drinking Water Quality Management System

Operational Plan Manual

This Operational Plan Manual applies to the following municipal systems:

- The Long Sault-Ingleside Water Distribution System,
- The St. Andrew's /Rosedale Water Distribution System, and
- The Newington Water Distribution System.

The Township of South Stormont

2 Mille Roches Road

Long Sault, ON K0C 1P0

www.southstormont.ca

Table of Contents

1. Quality Management System	3
2. Quality Management System Policy	4
3. Commitment and Endorsement	5
4. Quality Management System Representative	7
5. Document and Records Control	8
6. Drinking-Water System	9
7. Risk Assessment	14
8. Risk Assessment Outcomes	14
9. Organizational Structure, Roles, Responsibilities and Authorities	20
10. Competencies	24
11. Personnel Coverage	27
12. Communications	28
13. Essential Supplies and Services	29
14. Review and Provision of Infrastructure	30
15. Infrastructure Maintenance, Rehabilitation & Renewal	31
16. Sampling, Testing and Monitoring	32
17. Measurement and Recording Equipment Calibration and Maintenance	33
18. Emergency Management	34
19. Internal Audits	35
20. Management Review	36
21. Continual Improvement	37
Appendices	38

1. Quality Management System

In keeping with its responsibilities under the Municipal Drinking Water Licensing Program (MDWLP) and the Safe Drinking Water Act, the Township of South Stormont has developed a Drinking Water Quality Management System for the Distribution of its drinking water, and it is documented in this Operational Plan.

The Township acknowledges the origins of the MDWLP as being recommendations from the Walkerton Inquiry. Further, the Township recognizes that the overall objective of the MDWLP (and its requirement for a quality-based operations plan) is to reduce risks to public health by decreasing the variability in management of municipal drinking water systems.

With these factors in mind, and utilizing a risk-based approach, the Township of South Stormont has developed this Plan and its associated procedures to meet the Ministry of the Environment's Drinking Water Quality Management Standard.

The Township's portfolio of drinking water-related assets includes three separate portions, each geographically and hydraulically distinct from the others. These are:

1. The Long Sault-Ingleside WTP and Distribution System,
2. The St. Andrew's/Rosedale Booster Station and Distribution System, and
3. The Newington WTP and Distribution System.

In each case, the Township operates the Distribution Systems and Caneau Water & Sewage Operations Inc. operates the treatment facilities. St. Andrew's/Rosedale receives treated water from the City of Cornwall and is classified as a distribution system only. In this case, Caneau operates the booster station and water tower and the Township operates the balance of the system. Put simply, the Township operates everything "outside of the fence" in each system and Caneau operates everything "inside the fence".

This Operational Plan Manual, and the documents to which it refers, is applicable to the entire portfolio of distribution assets because they share common:

- Operations staff,
- Operations management,
- Top management, and
- Ownership.

2. Quality Management System Policy

The following policy will be communicated to the Owner (represented by the Mayor and Council), operating authority personnel, goods and services providers and the public according to the QMS Communications Procedure (QMS SYS-P9) found in the Appendices of this document.

Drinking Water Quality Management System Policy

The Township of South Stormont is committed to:

- Providing a safe and reliable supply of drinking water to all of its customers,
- Meeting or exceeding the requirements of all legislation and regulations applicable to drinking water, and
- Maintaining and continually improving its Quality Management System.

The Township recognizes this policy as the foundation of its Quality Management System.

3. Commitment and Endorsement

This Operational Plan is endorsed by the system Owner and Operating Authority, the Township of South Stormont.

The Mayor and Councilors of South Stormont, representing the Owner, acknowledge their responsibility to ensure the provision of all necessary resources for the maintenance of:

- The waterworks infrastructure, and
- The Quality Management System.

Top Management of the Operating Authority, represented by the Director of Public Works and the Chief Administrative Officer, commits to:

- Ensure a Quality Management System is in place that meets the requirements of the Drinking Water Quality Management Standard,
- Ensure that the Operating Authority is aware of all applicable legislative and regulatory requirements,
- Effectively communicate the Quality Management System according to the communications procedure in this Operational Plan, and
- Determine, obtain or provide the resources needed to maintain and continually improve the Quality Management System.

The DWQMS Representative, appointed by Top Management of the Operating Authority, understands and acknowledges the responsibilities inherent to the role, and commits to:

- Administer the Quality Management System by ensuring that processes and procedures needed for the Quality Management System are established and maintained,
- Report to Top Management on the performance of the Quality Management System and any need for improvement,
- Ensure that current versions of documents required by the Quality Management System are being used at all times,
- Ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the subject system, and
- Promote awareness of the Quality Management System throughout the Operating Authority.



Signed, on behalf of the Owner

Date

Mayor
Bryan McGillis

Signed, on behalf of the Operating Authority

Date

Director of Public Works
Ross Gellately (QMS Top Management)

Date

Chief Administrative Officer
Debi LucasSwitzer (QMS Top Management)

Date

Public Works Supervisor
Mark Zoppas (QMS Representative)

4. Quality Management System Representative

Top Management of the Township of South Stormont has appointed and authorized its Public Works Supervisor, Mark Zoppas, as QMS Representative and Jay St. Thomas as alternate QMS Representative.

In addition to the commitment made in [Element 3, Commitment and Endorsement](#), and the responsibilities detailed in [Element 9, Organizational Structure, Roles, Responsibilities and Authorities](#), the QMS Representative requires him to:

- Be familiar with the drinking-water system of the Township of South Stormont,
- Have knowledge of best practices for drinking-water systems,
- Have a thorough understanding of the DWQMS,
- Demonstrate his understanding of the importance of management commitment,
- Be familiar with audit principles and what is needed to demonstrate that DWQMS requirements have been met to an auditor,
- Be familiar with applicable legislative and regulatory requirements, and
- Understand the importance of developing and maintaining good, open communication with Top Management.

5. Document and Records Control

The Township of South Stormont recognizes effective document and records control as being a key element in the successful implementation and maintenance of its drinking water quality management system. With this in mind, comprehensive procedures for control of both documents (QMS SYS-P1) and records (QMS SYS-P2) have been developed and are included in this Plan.

The acknowledged benefits of the implementation of these procedures include:

- The integrity of the information contained in the Operational Plan is ensured.
- Training of new personnel is facilitated.
- Procedures are consistent in content, format, and currency, and are more likely to be correctly followed.
- The most up-to-date versions of documents are easily retrievable by the people who need them.
- Conformance audits and compliance inspections are facilitated.
- Due diligence is demonstrated.
- Owner and consumer confidence is promoted.
- Internal and external communications are facilitated.
- Decision making is made more focused and consistent.

Over time, the QMS Operational Plan and its associated procedures will change. Recognizing this, the QMS Representative will ensure that training of existing personnel and new hires includes these fundamental instructions to staff with respect to document control:

- Documents can be changed (by following the appropriate process) but records cannot,
- Always check that the version of the document you are using is the most current, and
- Always communicate changes that affect your drinking water system to the QMS Representative so that timely updates to the QMS can be made.

Document: includes a sound recording, video tape, film, photograph, chart, graph, map, plan, survey, book of account, and information recorded or stored by means of any device.

Record: a document stating results achieved or providing proof of activities performed.

The Procedures for both Document and Records control are included with the Appendices of this Plan.

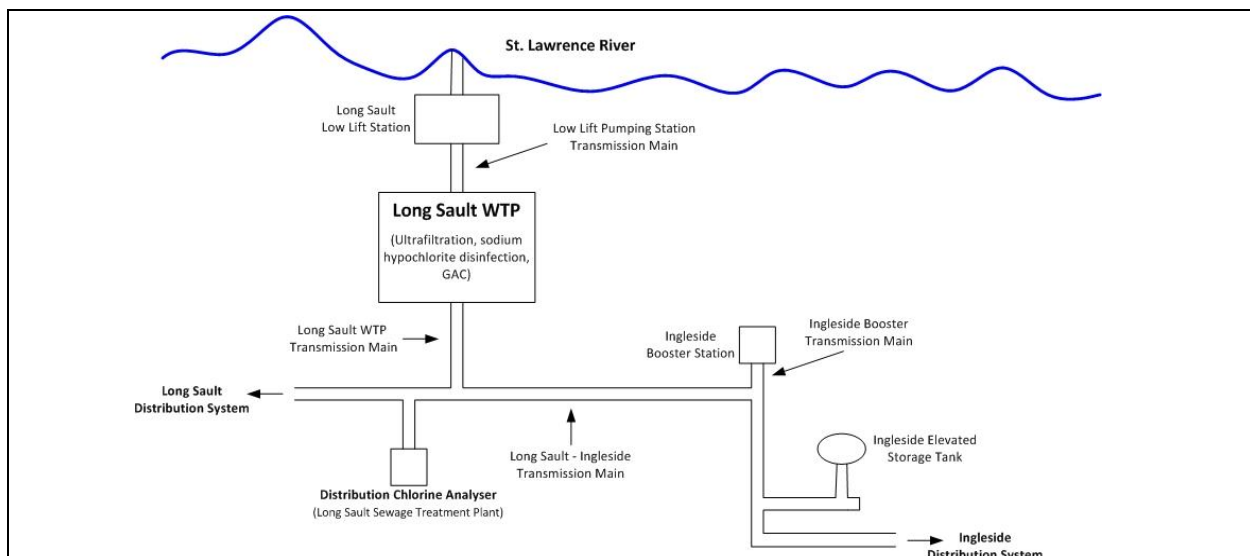
6. Drinking-Water System

6.1 Long Sault – Ingleside Water Distribution System

6.1.1 Treatment System Summary

Treatment facility description:	Ultrafiltration (Zenon membrane filtration), booster station, elevated tank
Capacity:	148 l/s
Service area:	Villages of Long Sault and Ingleside
Service population:	3500
In-service date:	2006
Raw water source:	St. Lawrence River
Disinfection method:	Sodium Hypochlorite (liquid chlorine)
Operated by:	Caneau Water & Sewage Operations Inc.

6.1.2 Drinking Water System Schematic



6.1.3 System Description

The Long Sault – Ingleside Water Distribution system is supplied to the distribution system from the Long Sault Water Treatment Plant which is owned by the Township of South Stormont and is operated on contract with Caneau Water & Sewage Operations Inc. Distribution sampling is done by Caneau as part of their contract with the Township of South Stormont. The entire system consists of ductile iron, cast iron and PVC water main pipe ranging in size from 450mm to 150 mm with various construction dates.

System pressure is maintained in Long Sault and downstream of the Ingleside Booster Station by variable speed pumps located at the water treatment plant.

System pressure in Ingleside is maintained by the Ingleside Elevated Water Tower. The Ingleside Booster Station consists of two reservoirs supplying (2) booster pumps and chlorine

boost system to maintain secondary chlorine supplied to the Ingleside Elevated Water Tower. The Ingleside Booster Station is operated on contract with Caneau Water & Sewage Operations Inc. Distribution sampling is done by Caneau as part of their contract with the Township of South Stormont.

6.1.4 Owner and Operating Authority

Owner: The Township of South Stormont

Operating Authority: The Township of South Stormont

6.1.5 Description of Water Source

The original source of the water is the St. Lawrence River. The Township's distribution system receives water that has been treated at the Long Sault WTP.

6.1.6 Critical Upstream or Downstream Processes

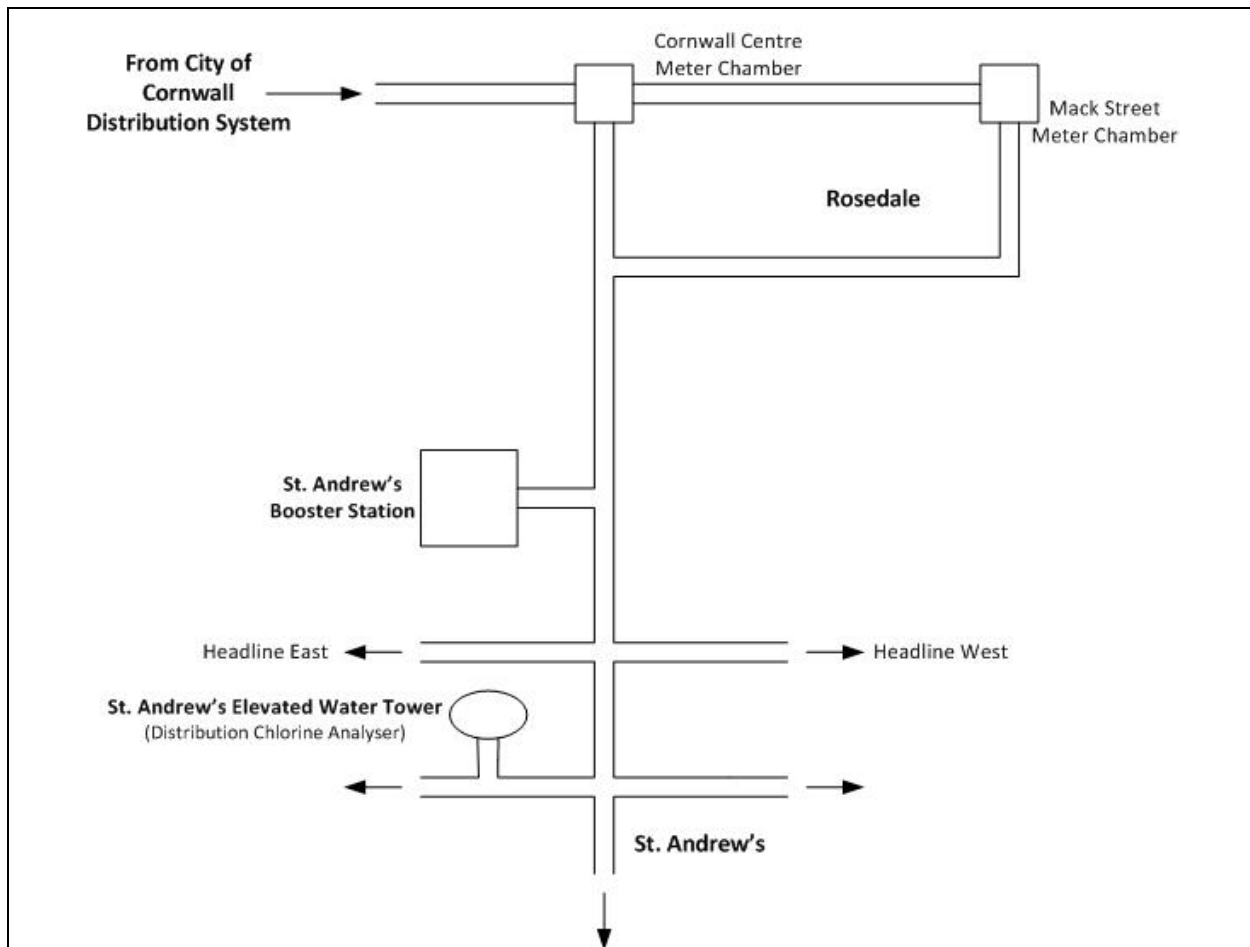
Caneau Water & Sewage Operations Inc. manages the operation of the Long Sault WTP. This facility features ultrafiltration (Zeeweed membrane system), granular activated carbon (GAC) for taste and odour removal, and primary disinfection by sodium hypochlorite.

6.2 St. Andrew's/Rosedale Water Distribution System

6.2.1 Booster System Summary

Booster facility description:	Water booster pumping station
Capacity:	898 m ³ /day
Service area (population):	St. Andrews/Rosedale Subdivision (1850)
Raw water source:	St. Lawrence River (treated water supplied by the City of Cornwall)
Operated by:	Caneau Water & Sewage Operations Inc.

6.2.2 Drinking Water System Schematic



6.2.3 System Description

The St. Andrews/Rosedale Water Distribution system was constructed by the original Owner, the Township of Cornwall. Water, which has been treated at the Cornwall WTP, is supplied to the distribution system under an agreement with the City of Cornwall.

The system generally consists of SDR pipe and pressure is maintained south of the St. Andrews Booster Station by City of Cornwall (system pressure) and north of the booster station by the St. Andrews Elevated Water Tower. The St. Andrews Booster Station consists of two in line booster pumps and a chlorine boost system to maintain secondary chlorine supplied to the St. Andrews Elevated Water Tower. System pressure is consistently maintained.

6.2.4 Owner and Operating Authority

Owner: The Township of South Stormont

Operating Authority: The Township of South Stormont

6.2.5 Description of Water Source

The Township's distribution system receives water that has been treated at the Cornwall WTP.

6.3 Newington Water Distribution System

6.3.1 Treatment System Summary

Treatment facility description:	Communal ground water supply system
Capacity:	328 m ³ /day
Service area:	Village of Newington
Service population:	150
In-service date:	1937
Raw water source:	Ground water
Disinfection method:	Sodium Hypochlorite (liquid chlorine)
Operated by:	Caneau Water & Sewage Operations Inc.

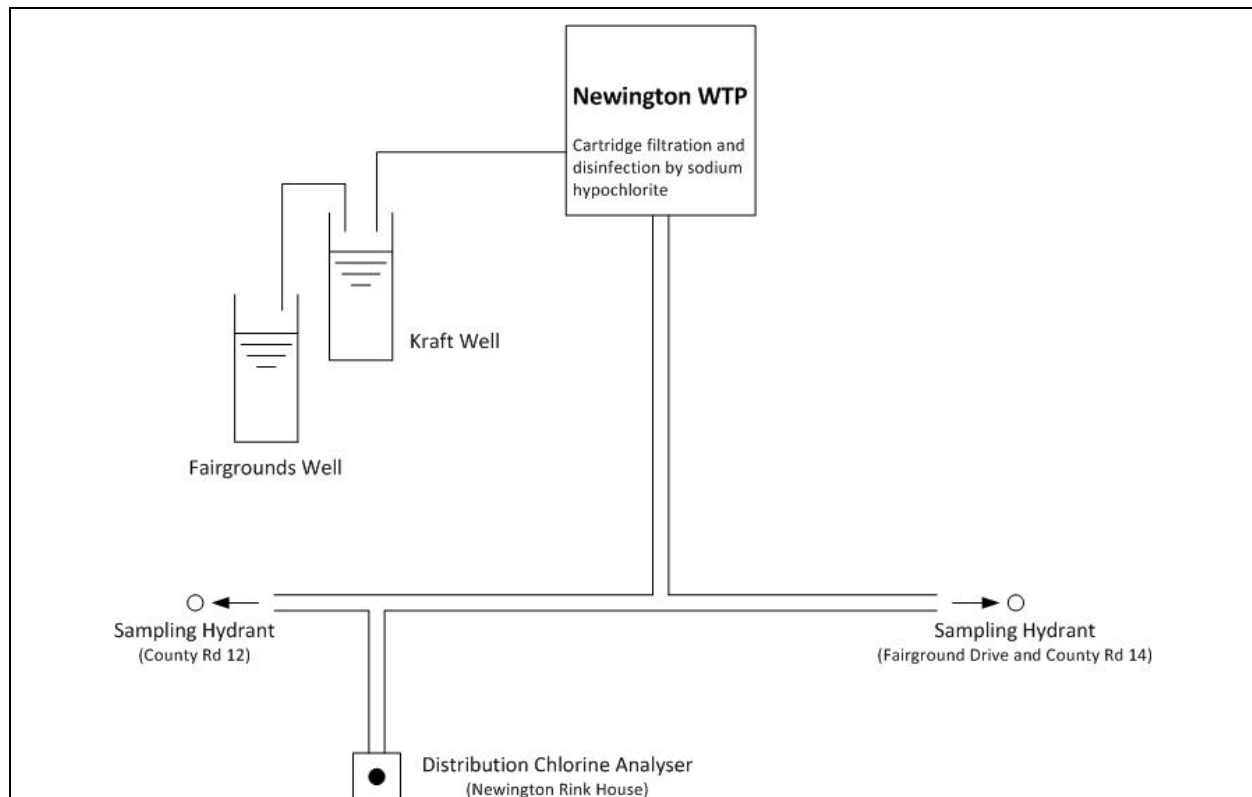
6.3.2 System Description

The Township of South Stormont is the owner and operator of the Newington Distribution System which services approximately 150 customers.

The Newington Water Distribution system was constructed by the original Owner, the Township of Osnabruck. Water is supplied to the distribution system by the Newington Water Treatment Plant which is owned by the Township of South Stormont and is operated on contract with Caneau Water & Sewage Operations Inc. Distribution sampling is done by Caneau as part of their contract with the Township of South Stormont.

The system consists of 75mm polyethylene pipe with two sampling hydrants placed at remote ends of the system. System pressure is maintained at the water treatment plant and is maintained in a range of 50-70 psi.

6.3.3 Drinking Water System Schematic



6.3.4 Owner and Operating Authority

Owner: The Township of South Stormont

Operating Authority: The Township of South Stormont

6.3.5 Description of Water Source

The original water source is a dug well (the Kraft Well) approximately 5.2m deep. A drilled well (the Fairgrounds Well) provides back-up supply. Water received into the Township's distribution system has been treated at the Newington WTP.

6.3.6 Critical Upstream or Downstream Processes

Caneau Water & Sewage Operations Inc. manages the operation of the Newington WTP. This facility features cartridge filtration and primary disinfection by sodium hypochlorite.

7. Risk Assessment

The Township of South Stormont's drinking water infrastructure is comprised of three geographically (and hydraulically) separate and unique treatment/distribution combinations. The Township of South Stormont operates three distribution systems, and contracts out the operation of three treatment plants to a single operating company, Caneau Water & Sewage Operations Inc. This working relationship requires close communication between Township of South Stormont and Caneau Water and Sewage Operations Inc. personnel. This communication is maintained by regular meetings of representatives of both Top Managements and the QMS Representatives.

In keeping with this operations arrangement, the Township of South Stormont has developed the QMS Risk Assessment Procedure (QMS SYS-P8) included with this Operational Plan. This procedure identifies each distribution system and also the responsibility for operations, hazard identification and in turn the risk assessments associated with those systems. Caneau Water and Sewage Operations Inc. are responsible for the treatment plants and are in turn responsible for the operations, hazard identifications, and risk assessments associated with those systems, and are included in the Caneau Operational Plan. This is seen as the most effective way to ensure the completion of risk assessments for all systems.

The effectiveness of this process will be evaluated at each Risk Assessment (at a minimum, every three years) or at such a time as the contractual division of water management changes. In the interim, any modifications to the procedure require the mutual agreement of the QMS Representatives for each operating authority.

8. Risk Assessment Outcomes

Using the QMS Risk Assessment Procedure (QMS SYS-P8), the Township of South Stormont's drinking water distribution systems have been evaluated to identify and quantify potential risks to drinking water quality.

As described in the procedure, complete risk assessments are conducted on individual distribution systems. What appear in this section of the Operational Plan are the risk assessment outcomes of the following elements:

- The Long Sault-Ingleside Water Distribution System,
- The St. Andrew's/Rosedale Water Distribution System, and
- The Newington Water Distribution System.

The Drinking Water Quality Management Standard (DWQMS) requires that the following outcomes of the risk assessment be documented:

- Potential hazardous events and associated hazards,
- Assessed risks associated with the occurrence of hazardous events,
- A ranking of the hazardous events that have been identified,
- The identified control measures to address the potential hazards and hazardous events,
- The identified critical control points and their respective critical control limits,
- Procedures and/or processes to monitor the critical control limits,
- Procedures to respond to deviations from the critical control limits, and
- Procedures for reporting and recording deviations from the critical control limits.

For ease of reading and to facilitate simpler updating of this document, each operational subsystem's comprehensive risk assessment outcomes (completed QMS SYS-F4 forms) are included in the Appendices of this document, as are the relevant procedures relating to critical control points (CCPs) and limits. Tables of ranked hazards and a list of identified CCPs are included in this section of the Operational Plan, summarized by subsystem.

8.1 The Long Sault-Ingleside Water Distribution System

8.1.1 Ranked Hazards Table *(presented in declining order of risk)*

Process Step	Hazard/Hazardous Event	Result	Detectability	Severity	Likelihood	Total	CCP?
Distribution	Break in transmission main	Loss of water supply to Ingleside. Possible contamination of treated drinking water	2	5	2	9	Yes
Distribution	Loss of chlorine residual	Possible contamination of treated drinking water	2	4	3	9	Yes
Distribution	Break in distribution system	Loss/reduction of system pressure. Possible contamination of treated drinking water.	2	3	3	8	No
Distribution	Chemical spill impacting water source	Possible contamination of treated drinking water.	3	4	1	8	No
Distribution	Sustained pressure loss	Possible contamination of treated drinking water.	1	4	3	8	No
Distribution	Backflow	Possible contamination of treated drinking water.	1	4	3	8	No
Distribution	Cross connection	Possible contamination of treated drinking water.	3	3	1	7	No
Distribution	Terrorist and vandalism actions	Loss of system.	1	5	1	7	No
Distribution	Extreme weather events	Loss of system.	1	5	1	7	No
Distribution	Sustained extreme temperatures	Loss/reduction of pressure	1	4	1	6	No
Distribution	Long-term impact of climate change	Possible contamination of treated drinking water. Loss/reduction of pressure.	1	4	1	6	No
Distribution	Water supply shortfall	Possible contamination of treated drinking water. Loss/reduction of pressure.	1	4	1	6	No

8.1.2 Critical Control Points (CCPs)

The critical threshold was set at “8”. Any hazard ranked above “8” is considered critical. However, due to the operational arrangement within South Stormont, the CCPs that were identified for the Township (Distribution System) Operating Authority are the responsibility of the “treatment” Operating Authority.

Caneau Water & Sewage Operations Inc., the “treatment” operating authority, is responsible for conducting all sampling, testing, and monitoring within the distribution system. This means that Caneau, not the Township, has the systems in place to control/mitigate hazards in real time, and to set and monitor critical control limits. The Township’s role is one of recovery and repair and it has developed operational procedures detailing these activities (see Element 18, Emergency Management).

Two hazards/hazardous events exceeded the risk threshold. These events are outside the controls available to distribution operators to prevent or mitigate them. As such, they have been classified as *emergency* situations, and included for discussion in the QMS Emergency Management Procedure (QMS SYS-P10). Additionally, procedures addressing each are included in the Appendices of this operational plan as:

- **QMS Distribution System Low Chlorine Residual Procedure (QMS OP-P5),**

- QMS Emergency Water Transmission Main Repair Procedure (QMS OP-P1), and
- QMS Emergency Water Main Repair Procedure (QMS OP-P2).

8.2 The St. Andrew's/Rosedale Water Distribution System

8.2.1 Ranked Hazards Table *(presented in declining order of risk)*

Process Step	Hazard/Hazardous Event	Result	Detectability	Severity	Likelihood	Total	CCP?
Distribution	Loss of chlorine residual	Possible contamination of distributed water.	2	4	3	9	Yes
Distribution	Transmission Main Break	Loss of water supply to St. Andrews West. Possible contamination of distributed water.	2	5	2	9	Yes
Distribution	Break in distribution system	Loss/reduction of system pressure; possible contamination of distributed water.	2	3	3	8	No
Distribution	Sustained pressure loss	Possible contamination of treated drinking water.	1	4	3	8	No
Distribution	Backflow	Possible contamination of treated drinking water.	1	4	3	8	No
Distribution	Chemical spill impacting water source	Possible contamination of treated drinking water.	3	4	1	8	No
Distribution	Terrorist and vandalism actions	Loss of system.	1	5	1	7	No
Distribution	Extreme weather events	Loss of system.	1	5	1	7	No
Distribution	Cross connection	Possible contamination of distributed water.	3	3	1	7	No
Distribution	Long-term impacts of climate change	Possible contamination of treated drinking water. Loss/reduction of pressure.	1	4	1	6	No
Distribution	Water supply shortfall	Possible contamination of treated drinking water. Loss/reduction of pressure.	1	4	1	6	No
Distribution	Sustained extreme temperatures	Loss/reduction of pressure	1	4	1	6	No

8.2.2 Critical Control Points (CCPs)

The critical threshold was set at “8”. Any hazard ranked above “8” is considered critical. However, due to the operational arrangement within South Stormont, the CCPs that were identified for the Township (Distribution System) Operating Authority are the responsibility of the “treatment” Operating Authority.

Caneau Water & Sewage Operations Inc., the “treatment” operating authority, is responsible for conducting all sampling, testing, and monitoring within the distribution system. This means that Caneau, not the Township, has the systems in place to control/mitigate hazards in real time, and to set and monitor critical control limits. The

Township's role is one of recovery and repair and it has developed operational procedures detailing these activities (see Element 18, Emergency Management).

Two hazards/hazardous events exceeded the risk threshold. These events are outside the controls available to distribution operators to prevent or mitigate them. As such, they have been classified as *emergency* situations, and included for discussion in the QMS Emergency Management Procedure (QMS SYS-P10). Additionally, procedures addressing each are included in the Appendices of this operational plan as:

- QMS Distribution System Low Chlorine Residual Procedure (QMS OP-P5),
- QMS Emergency Water Transmission Main Repair Procedure (QMS OP-P1), and
- QMS Emergency Water Main Repair Procedure (QMS OP-P2).

8.3 The Newington Water Distribution System

8.3.1 Ranked Hazards Table (presented in declining order of risk)

Process Step	Hazard/Hazardous Event	Result	Detectability	Severity	Likelihood	Total	CCP?
Distribution	Loss of chlorine residual	Possible contamination of distributed water.	2	4	3	9	Yes
Distribution	Break in distribution system	Loss/reduction of system pressure; possible contamination of distributed water.	2	3	3	8	No
Distribution	Sustained pressure loss	Possible contamination of treated drinking water.	1	4	3	8	No
Distribution	Backflow	Possible contamination of treated drinking water.	1	4	3	8	No
Distribution	Sustained extreme temperatures	Loss of supply.	1	5	2	8	No
Distribution	Chemical spill impacting source water	Loss of supply.	1	5	2	8	No
Distribution	Cross connection	Possible contamination of distributed water	3	3	1	7	No
Distribution	Extreme weather events	Loss of System.	1	5	1	7	No
Distribution	Terrorist and vandalism actions	Loss of supply	1	5	1	7	No
Distribution	Long-term impacts of climate change	Possible contamination of treated drinking water. Loss/reduction of pressure.	1	4	1	6	No
Distribution	Water supply shortfall	Possible contamination of treated drinking water. Loss/reduction of pressure.	1	4	1	6	No

8.3.2 Critical Control Points (CCPs)

The critical threshold was set at "8". Any hazard ranked above "8" is considered critical. However, due to the operational arrangement within South Stormont, the CCPs that were identified for the Township (Distribution System) Operating Authority are the responsibility of the "treatment" Operating Authority.

Caneau Water & Sewage Operations Inc., the "treatment" operating authority, is responsible for conducting all sampling, testing, and monitoring within the distribution system. This means that Caneau, not the Township, has the systems in place to

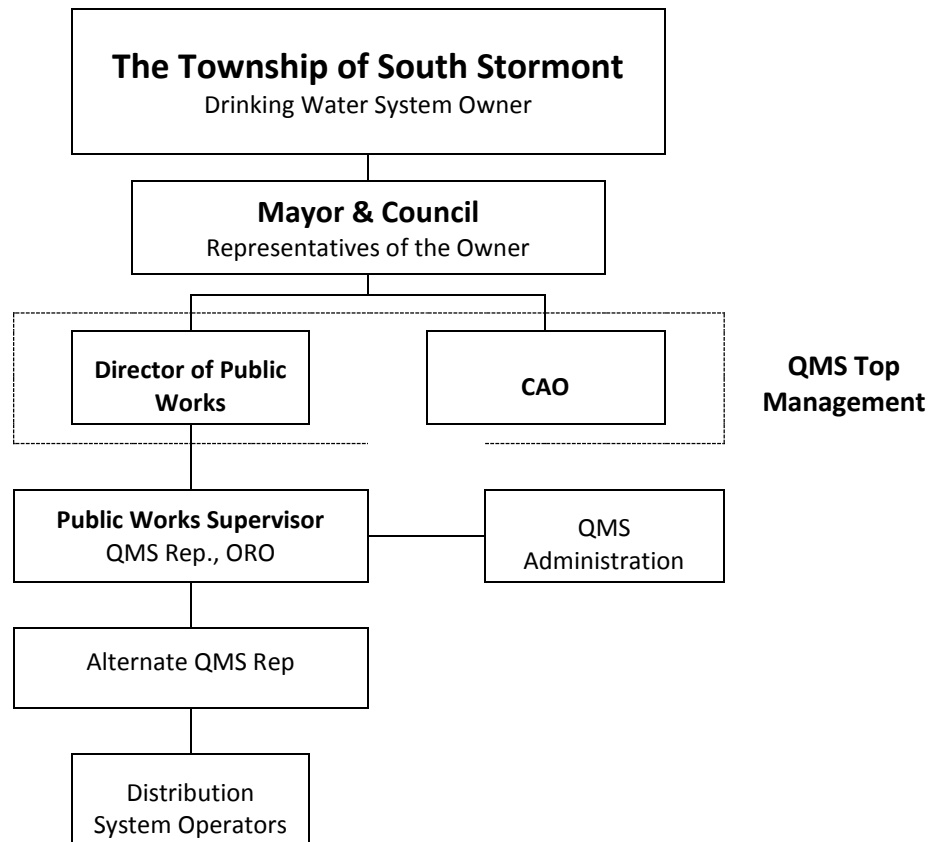
control/mitigate hazards in real time, and to set and monitor critical control limits. The Township's role is one of recovery and repair and it has developed operational procedures detailing these activities (see Element 18, Emergency Management).

One hazards/hazardous events exceeded the risk threshold. These events are outside the controls available to distribution operators to prevent or mitigate them. As such, they have been classified as *emergency* situations, and included for discussion in the QMS Emergency Management Procedure (QMS SYS-P10). Additionally, procedures addressing each are included in the Appendices of this operational plan as:

- **QMS Distribution System Low Chlorine Residual Procedure (QMS OP-P5),** and
- **QMS Emergency Water Main Repair Procedure (QMS OP-P2).**

9. Organizational Structure, Roles, Responsibilities and Authorities

9.1 Organizational Structure



9.2 Drinking Water System Owner

The Township of South Stormont is the Drinking Water System Owner and Operating Authority.

9.3 Top Management

As defined by the DWQMS, top management must meet the following criteria:

- They work within the operating authority,
- They will make decisions about your QMS,
- They will make recommendations to the owner about the subject system or subject systems, and
- They are at the highest level of management within the operating authority making these decisions and recommendations.

For the Township of South Stormont's Drinking Water Distribution System, the Director of Public Works and/or the CAO fulfill the role of Top Management.

9.4 Responsibility for Management Review

9.4.1 Top Management

As Top Management, the Director of Public Works and/or CAO are responsible for:

- Ensuring that a Management Review is conducted at least once every twelve months,
- Selecting participants for the Management Review,
- Leading the Review, and
- Communicating its outcomes to the System Owner, represented by Mayor and Council.

9.4.2 QMS Representative

With respect to the Management Review, the QMS Representative is responsible for:

- Ensuring that all information required for the Review is made available to the Review participants as per the QMS Management Review Procedure (QMS SYS-P12), and
- Participating in the Management Review itself.

9.5 Roles, Responsibilities and Authorities

9.5.1 The Township of South Stormont (Owner), represented by Mayor and Council

Responsibilities	Authorities
Overall responsibility to provide safe and reliable drinking water to the customers of South Stormont.	Delegate the management of the drinking water system to qualified staff.
Ensure the provision of all necessary resources for the maintenance of the waterworks infrastructure and the Quality Management System.	Overall administrative and financial authority relating to the drinking water system.
Endorse the QMS Operational Plan.	Recommend changes to the QMS Operational Plan.
Ensure that an accredited Operating Authority is in place for each Operational Subsystem within its drinking water portfolio.	

9.5.2 Director of Public Works (Top Management)

Responsibilities	Authorities
Ensure that the Distribution System is being operated in compliance with current regulations and that a safe and reliable supply of water is being provided to customers of South Stormont.	To act as technical authority relating to the drinking water system.
Ensure a Quality Management System is in place that meets the requirements of the Drinking Water Quality Management Standard.	To ensure staff is in place to effectively manage the Distribution System.
Ensure that Distribution Staff is aware of all applicable legislative and regulatory requirements.	To appoint a QMS Representative (in partnership with the CAO).
Effectively communicate the Quality Management System according to the QMS Communications Procedure (QMS SYS-P9).	To conduct the QMS Management Review.
	To recommend changes to the QMS Operational Plan.
	To Lead, conduct, or commission analysis of the Distribution System to enable effective long term planning and budgeting relating to staffing

Responsibilities	Authorities
Determine, obtain or provide the resources needed to maintain and continually improve the Quality Management System. Lead the Management Review of the QMS as per the QMS Management Review Procedure (QMS SYS-P12). Lead the annual Infrastructure Review using the QMS Review and Provision of Infrastructure Procedure (QMS SYS-P3) and the QMS Infrastructure Maintenance, Rehabilitation & Renewal Procedure (QMS SYS-P4). Ensure a QMS Representative is in place.	and infrastructure, maintenance and capital work. To assist the CAO in preparing responses to regulatory bodies on legal and compliance issues relating to drinking water.

9.5.3 Chief Administrative Officer – CAO (Top Management)

Responsibilities	Authorities
Communicate the outcomes of Distribution System planning and budgeting (relating to staffing and infrastructure) to Mayor and Council. Effectively communicate the Quality Management System to the Owner, in accordance with the QMS Communications Procedure (QMS SYS-P9). Participate in the Management Review, and communicate its outcomes to the Owner as per the QMS Management Review Procedure (QMS SYS-P12). Coordinate communication with Drinking Water regulatory bodies. Ensure a QMS Representative is in place.	To act as financial and administrative authority relating to the drinking water system. To communicate with regulatory bodies on legal and compliance issues relating to drinking water. To appoint a QMS Representative (in partnership with the Director of Public Works). To recommend changes to the QMS Operational Plan.

9.5.4 Public Works Supervisor (QMS Representative and ORO or Alternate)

Responsibilities	Authorities
Oversees day-to-day operations and maintenance by Distribution System Operators and contractors. Ensure adequate staffing levels of competent Operators. Adhere to current regulations, record and report system conditions to the Director of Public Works as required. Administer the Quality Management System by ensuring that processes and procedures needed for the Quality Management System are established and maintained. Report to Top Management on the performance of the Quality Management System and any need for improvement. Ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the subject system. Promote awareness of the Quality Management System throughout the Operating Authority.	To assume command of emergency situations in the Distribution System. To change, update and improve the QMS Operational Plan, and to approve QMS documents. To direct the activities of Distribution Operators in day to day operations and maintenance.

Responsibilities	Authorities
Ensure that current versions of documents required by the Quality Management System are being used at all times as per the QMS Document Control Procedure (QMS SYS-P1). Participate in the annual Infrastructure Review, led by Top Management, in keeping with QMS SYS-P3 and QMS SYS-P4. Collect and provide information to Top Management for use in the Management Review and participate in the Review itself according to QMS SYS-P12. Additional responsibilities as specified by QMS procedures. This includes overall responsibility for the Risk Assessment and Internal Audit processes. Overall Responsible Operator (ORO) for the Distribution System. Maintain required MOE certification levels to fulfill responsibility of ORO.	

9.5.5 Distribution System Operators

Responsibilities	Authorities
Maintain required certification for Distribution System Operation, as per the Ministry of the Environment. Conduct daily operational duties in compliance with current regulations and act upon, record and report incidents of non-compliance with regulations. Ensure that the documents (procedures, forms) used in day-to-day operations are the appropriate version as per the QMS Document Control Procedure (QMS SYS-P1). Report errors and omissions in QMS documentation to the QMS Representative. Understand the QMS and be able to describe their role within it to auditors and inspectors.	Ability to collect samples and perform testing within the Distribution System to ensure the provision of safe and reliable drinking water. Respond to water-related issues raised by customers, in consultation with the Public Works Supervisor. Recommend changes to the QMS Operational Plan.

9.5.6 QMS Administration

Responsibilities	Authorities
Assist the QMS Representative administratively. Understand their role within the QMS and be able to describe it to auditors and inspectors. Maintain a good working knowledge of the DWQMS and the Township's QMS documents, particularly relating to Document and Records Control (Element 5, QMS SYS-P1 and QMS SYS-P2) and Communications (Element 12, QMS SYS-P9).	To modify, update, communicate, file, archive and dispose of QMS documents as instructed by the QMS Representative.

10. Competencies

10.1 Identifying Competencies

Competence: the combination of observable and measurable knowledge, skills, and abilities which are required for a person to carry out assigned responsibilities.

The following table identifies the minimum competencies of Township Staff whose roles directly impact the provision of safe and reliable drinking water in South Stormont. Over time, the table will be expanded to include elements of desired competencies. This is seen as an opportunity for continual improvement of the organization and the QMS.

Role	Required Competencies
Director of Public Works (Top Management)	An advanced theoretical and working knowledge of the Safe Drinking Water Act and applicable regulations, and the Township of South Stormont Drinking Water Supply System. Thorough understanding of DWQMS and QMS Operational Plan. QMS Internal Auditor Training. Advanced knowledge of the Township's water distribution system. An understanding of secondary disinfection. Knowledge of water regulations and identifying, reporting, and responding to adverse drinking water conditions as required by regulations.
CAO (Top Management)	Shall possess advanced theoretical and working knowledge of administrative skills expected of a senior level manager. An advanced theoretical and working knowledge of the Safe Drinking Water Act and applicable regulations. Ability to effectively communicate QMS and Regulatory issues to staff, Council and external agencies.
Public Works Supervisor (QMS Rep & ORO or Alternate)	The Overall Responsible Operator (ORO) shall have a minimum Class 2 Distribution certificate. An advanced theoretical and working knowledge of the Safe Drinking Water Act and applicable regulations, and the Township of South Stormont Drinking Water Supply System. Thorough understanding of DWQMS and QMS Operational Plan. QMS Internal Auditor Training. Advanced knowledge of the Township's water distribution system. An understanding of secondary disinfection. Knowledge of water regulations and identifying, reporting, and responding to adverse drinking water conditions as required by regulations. WHMIS. Confined spaces training.

	First aid (including CPR). Valid driver's license. Ability to direct staff in repairing leaks safely and following regulatory requirements for disinfection of new and repaired watermain.
Distribution System Operators	At least an OIT level certificate, while ultimately working toward obtaining a Class 2 Distribution certificate. WHMIS. Confined spaces training. First aid (including CPR). Valid driver's license. General understanding of DWQMS and QMS Operational Plan. Familiarity with the Township's water distribution system. An understanding of secondary disinfection. Knowledge of water regulations and identifying, reporting, and responding to adverse drinking water conditions as required by regulations. Ability to follow procedures in repairing leaks safely and following regulatory requirements for disinfection of new and repaired watermain.
Administration	Thorough knowledge of the QMS Operational Plan, specifically: • Element 5: Document and Records Control, • Element 12: Communications, and • Element 13: Essential Supplies and Services.

10.2 Satisfying Competencies

Competence can be defined as the “demonstrated ability to apply knowledge and skills”. In order to assess competence, an organization must consider an employee's education, training, skills and experience.

The methods used by the Township of South Stormont to ensure competence of the personnel directly involved in the production of safe drinking water are summarized in the following table.

Role	Methods for Satisfying Competency
Top Management	Top Management is briefed on operating conditions and the functioning of the QMS by the Public Works Supervisor (QMS Representative). Other competencies are a prerequisite for employment in the positions of Public Works Supervisor and CAO.

Public Works Supervisor or Alternate	The Public Works Supervisor identifies and records all operator training (as below) including his own. • Identifies desired and required training for all operators, • Arranges for training, • Receives confirmation of successfully completed training and forwards to Administration. • Applies for operator licenses (the Municipality assumes responsibility for the cost) and retains licenses in the personnel files.
Distribution System Operators	Monitors License requirements and due dates.
Administration	Maintains an ongoing electronic record of training hours, including: • License details and expiry dates for each operator, • Director approved training required and completed, and • On-the-job training required and completed.

11. Personnel Coverage

Personnel coverage of the Township of South Stormont's Distribution system is coordinated through the Public Works Department with licensed operators as lead hands.

Procedure to Ensure Adequate Staffing

The Public Works Supervisor is responsible for ensuring that the Distribution System is adequately staffed by qualified personnel. Qualified personnel means those possessing the competencies described in [Element 10, Competencies](#).

On a day-to-day basis, the Public Works Supervisor assigns sufficient licensed Distribution Operators to regular operations and maintenance duties, and confirms that an On-Call Operator is scheduled. At a higher level, he reviews existing staffing levels and competencies against existing and anticipated system conditions and recommends adjustments to the Director of Public Works, on an as-needed basis. At a minimum, the Public Works Supervisor and Manager review staffing levels annually.

After hour emergencies are directed through a call centre to reach the On-Call Operator who assesses the problem and contacts the required personnel.

The following table illustrates typical coverage of the Distribution System:

Personnel	Weekdays (0700-1530)	After Hours – all days (1530-0700)	Weekends/Holidays (0000-0000)
Public Works Supervisor	1	0	0
Distribution Operator(s)	1	0	0
On-Call Operator	0	1	1

Strikes and Lockouts

The Public Works Supervisor meets license requirements and therefore, in the event of a strike or lockout is able to ensure adequate staff coverage.

12. Communications

The Township of South Stormont Operating Authority acknowledges that if a QMS is not effectively communicated, it is not implemented.

The DWQMS standard requires a procedure that describes how relevant aspects of the QMS are communicated between Top Management and:

- The Owner,
- Operating Authority Personnel,
- Suppliers, and
- The Public.

Additionally, the standard calls for a procedure to describe how QMS-related information is fed back to Operating Authority Top Management.

Through the QMS Communications Procedure (QMS SYS-P9), the Operating Authority seeks to ensure that all stakeholders of the Drinking Water System are aware of the QMS and its importance. Further, it aims to make certain that all who share responsibility for the production of safe and reliable drinking water understand their roles, the responsibilities and authorities that come with those roles, and the QMS processes and procedures that are relevant to those roles. The procedure is attached in the Appendices of this document.



13. Essential Supplies and Services

Products and services used in a drinking water operation can introduce risk. By documenting the level of quality expected, and by continuing to assess whether or not supplies and services consistently meet these requirements after they have been selected, an operating authority demonstrates due diligence in minimizing the risk to drinking water quality.

The Township of South Stormont has developed a procedure that describes how it ensures the quality and availability of supplies and services deemed essential to the drinking water systems it operates. The document is called the QMS Essential Supplies and Services Procedure (QMS SYS-P7) and it is included with the Appendices of this Operational Plan.

14. Review and Provision of Infrastructure

The Township of South Stormont has developed a procedure for the annual review of the infrastructure necessary to safely and effectively operate and maintain the drinking water systems it owns.

The procedure ensures a consistent, regular review of the condition and capacity of the drinking water systems that are operated by the Township. A thoughtful, effective, and reliable review that is effectively communicated to the Owner ensures that infrastructure needs are appropriately communicated to those who can provide them.

The QMS Review and Provision of Infrastructure Procedure (QMS SYS-P3) is included with the Appendices of this Operational Plan Manual.

15. Infrastructure Maintenance, Rehabilitation & Renewal

The following table details the Township of South Stormont Operating Authority's existing programs for maintenance, rehabilitation and renewal of its drinking water distribution system.

Category	Activity	Timing/Frequency
Planned Maintenance	Hydrant flushing	Bi-annually (Spring and Autumn)
	Hydrant preventative maintenance	Annually (in Autumn following hydrant flushing)
	Valve exercising and maintenance	Annually (early Autumn)
Unplanned Maintenance	Hydrant repair	ASAP after discovery
	Broken water mains	
	General services repair	
Rehabilitation & Renewal	Planning occurs annually and follows the QMS Review and Provision of Infrastructure Procedure (QMS SYS-P3).	Rehabilitation and renewal activities are completed as deemed required by agreement of the Director of Public Works and Council.
Long-term Forecast	Asset Management Plan, including water infrastructure, being developed and implemented which will help identify areas requiring upgrade or replacement.	Annually.

The Township Operating Authority recognizes the importance of keeping these summaries current, communicating the programs and any modifications of them to the Owner, and periodically reviewing the effectiveness of its maintenance programs. A procedure has been created and implemented detailing how these functions are to take place. It is the QMS Infrastructure Maintenance, Rehabilitation and Renewal Procedure (QMS SYS-P4) and is included with the Appendices of this Operational Plan.

16. Sampling, Testing and Monitoring

This element of the QMS Operational Plan addresses how measurements are taken within the distribution system to monitor what is happening, the Operating Authority's level of control, and the quality of treated drinking water.

The Distribution Operating Authority understands the focus of the sampling, testing and monitoring component of the DWQMS as being to ensure:

- The reliability of the sampling, testing and monitoring performed to meet legislated requirements,
- That adequate operational sampling, testing and monitoring are undertaken to maintain the Treatment process and identify potential problems early, and
- That sampling, testing and monitoring activities are planned, consistently performed, documented and communicated.

Regulatory requirements determine what is to be sampled and set minimum requirements for frequency. The DWQMS requires that the following additional information be described by the Operating Authority:

- Details about how sampling, testing and monitoring is performed on the conditions most challenging to the drinking water system,
- Relevant sampling, testing, and monitoring activities that are performed upstream of the subject system (even if they are not carried out by the Operating Authority), and
- How the Owner and Operating Authority share sampling, testing and monitoring results.

A procedure to address these requirements has been implemented. It is called the QMS Distribution System Sampling, Testing and Monitoring Procedure (QMS SYS-P5) and is included in the Appendices of this Operational Plan.

17. Measurement and Recording Equipment Calibration and Maintenance

If measurement and recording devices are used to inform and guide an operator's actions within a drinking water system, those devices must be appropriately maintained and calibrated.

A procedure has been written and implemented that documents how measurement and recording equipment used by the Distribution System Operating Authority is calibrated and maintained, who is responsible for scheduling the calibrations and how the calibration results are recorded.

The document is included in the Appendices of this Operational Plan Manual as the QMS Measurement and Recording Equipment Calibration and Maintenance Procedure (QMS SYS-P6).

18. Emergency Management

The development, implementation and maintenance of procedures to ensure emergency preparedness are recognized by the Township of South Stormont as an important facet of the QMS. Emergencies, as defined in the MOE's Implementation Guide and as used in this document, are:

- Potential situations or service interruptions that may result in the loss of the ability to maintain a supply of safe drinking water to customers.

By effectively anticipating and planning for emergency situations, the consequences of emergencies, when they occur, can be mitigated.

The Township of South Stormont's Distribution Operating Authority maintains emergency preparedness as described in its QMS Emergency Management Procedure (QMS SYS-P10). This procedure describes how the Operating Authority maintains, communicates, and tests the robustness of its emergency preparedness. Additionally, this document lists the emergency situations that are a natural outcome of the QMS Risk Assessment process (described by QMS SYS-P8), describes how responsibility for response and communication is delineated, refers to applicable operations procedures and provides a general list of emergency contacts.

The QMS Emergency Management Procedure (QMS SYS-P10) is included in the Appendices of this Operational Plan Manual, as are the following operations procedures, referred to in QMS SYS-P10:

- QMS Water Transmission Mains Emergency Repair Procedure (QMS OP-P1),
- QMS Emergency Water Main Repair Procedure (QMS OP-P2),
- QMS Adverse Water Reporting Procedure (QMS OP-P3),
- QMS Disinfection Procedure for Water Main Repair (QMS OP-P4),
- QMS Distribution System Low Chlorine Residual Procedure (QMS OP-P5), and
- QMS Notification of Boil Water Advisory Procedure (QMS OP-P6).

19. Internal Audits

An internal audit of the Township of South Stormont's Distribution System QMS is conducted annually to ensure that:

- The Operational Plan meets or exceeds the standard of the DWQMS for each element, and
- The Operating Authority is functioning in conformance with its own Operational Plan.

The output of the audit process is an audit report which includes:

- A completed audit checklist,
- Corrective action request (CAR) forms for each issue of non-conformance,
- A brief summary detailing the outcomes of the audit, including areas of strong performance and areas of non-conformance, and
- A list of suggested improvements to the audit process and audit checklist.

Internal audits serve a valuable purpose by providing feedback on the effectiveness of the QMS, and by informing and focusing the Management Review Process. The Township of South Stormont has described the process used to conduct internal audits in its QMS Internal Audit Procedure (QMS SYS-P11). This procedure is included as part of the Appendices of this document.

20. Management Review

The Township of South Stormont recognizes that support and oversight of the drinking water QMS is an important role fulfilled by Top Management. The Management Review process supports a high level of connection and familiarity between Top Management and the QMS and enables focused and effective decision making regarding how to best improve and maintain the quality management system.

The Township of South Stormont has prepared a procedure that describes how QMS Management Reviews are to be conducted. The document is called the QMS Management Review Procedure (QMS SYS-P12) and it is included in the Appendices of this Operational Plan Manual.

In following the Management Review procedure, Top Management ensures that the Owner receives consistent, timely, and focused information about how the QMS is functioning. Additionally, the process affords an opportunity to reinforce with the Owner the resources that are required to continue to maintain and improve the quality management system.



21. Continual Improvement

A QMS cycle is described as PLAN, DO, CHECK, and IMPROVE. The Township of South Stormont recognizes that this Operational Plan is simply a beginning. The element of Continual Improvement, while it has no PLAN requirement, is a reminder that the Township is obligated to continually strengthen and improve its QMS.

The Township expects that the processes it has described, both in this document and its associated procedures, will change and evolve over time as the QMS matures. It believes that this evolution will be initiated by the corrective action processes built into the Plan, and, in particular, described in the areas relating to Internal Audit and Management Review.

The Township of South Stormont has prepared a procedure that describes how continual improvement is tracked and measured. The document is called the QMS Continual Improvement Procedure (QMS SYS-P13) and it is included in the Appendices of this Operational Plan Manual.

List of Appendices

Appendix A	QMS Document Control Procedure	<i>QMS SYS-P1</i>
Appendix B	QMS Records Control Procedure	<i>QMS SYS-P2</i>
Appendix C	QMS Review and Provision of Infrastructure Procedure	<i>QMS SYS-P3</i>
Appendix D	QMS Infrastructure Maintenance, Rehabilitation and Renewal Procedure	<i>QMS SYS-P4</i>
Appendix E	QMS Sampling, Testing and Monitoring Procedure	<i>QMS SYS-P5</i>
Appendix F	QMS Measurement and Recording Equipment Calibration and Maintenance Procedure	<i>QMS SYS-P6</i>
Appendix G	QMS Essential Supplies and Services Procedure	<i>QMS SYS-P7</i>
Appendix H	QMS Risk Assessment Procedure	<i>QMS SYS-P8</i>
Appendix I	QMS Communications Procedure	<i>QMS SYS-P9</i>
Appendix J	QMS Emergency Management Procedure	<i>QMS SYS-P10</i>
Appendix K	QMS Internal Audit Procedure	<i>QMS SYS-P11</i>
Appendix L	QMS Management Review Procedure	<i>QMS SYS-P12</i>
Appendix M	Comprehensive Risk Assessment Outcomes – <i>Long Sault-Ingleside, Newington, St. Andrew's</i>	<i>QMS SYS-F4 (completed forms)</i>
Appendix N	Caneau Water & Sewage Operations Inc. QMS Sampling, Testing and Monitoring Tables	<i>QMS SYS-T4A, T4L, T4N</i>
Appendix O	Miscellaneous Forms, including the Comprehensive QMS Schedule Template	
Appendix P	QMS Continual Improvement Procedure	<i>QMS SYS-P13</i>