DWQMS Procedure QP-01
Document & Records Control

1 Purpose

This procedure describes the methods by which the Town of Marathon manages the documents and records required by the Quality Management System. Specifically, this procedure will describe how documents are kept current and how documents and records are kept legible, readily identifiable, retrievable, stored, protected, retained, and disposed.

2 Responsibility

The Works, Operations, Facilities & Parks Manager, as QMS Representative, is ultimately responsible for ensuring the control of documents and records in accordance with this procedure. The control of electronic documents and records located on the shared network drive and hardcopy records located at the Town Office is the direct responsibility of the Manager. The control of hardcopy documents and records located at the Supervisor's office is the shared responsibility of the Supervisor and Manager, as is the control of electronic records associated with the Town's Computerized Maintenance Management System (CMMS).

3 Definitions

Document - Includes a photograph, chart, graph, map, plan, book of account, and information recorded or stored by means of any device; any document required by the Corporation of the Town of Marathon as identified in the procedure.

Record - A document stating results achieved or providing proof of activities performed; any record required by the Corporation of the Town of Marathon as identified in this procedure.

Controlled - Managed as per the conditions of this procedure.

Retention Period - Length of time that a document or record must be kept, beginning on the date of issue for records or from the point of time when a document is replaced by a new or amended document.

4 Procedure

4.1 Identifying controlled documents and records. Documents and records required by the Town of Marathon are listed in Table 1. Documents and records are reviewed for evidence of control during annual internal auditing processes.

Table 1: Controlled Documents and Records		
Document/Record	Type & Location (HC = Hardcopy, E = Electronic)	Minimum Retention Period
Internal Documents		
Operational Plan & DWQMS Procedures, including previous versions	E – Town of Marathon shared network drive	10 Years
QMS-related Documents, Policies & Guidelines, including any blank forms contained therein		Retained until superseded
Blank Standalone Forms (blank forms not already included in a controlled procedure or policy, including valve inspection/exercising forms, instrument calibration and maintenance forms, etc.)		
DWQMS Continual Improvement Tracking Sheet		
Current Revision Levels Summary for Internal QMS Documents		
Personnel Coverage & Availability Schedules	E – MS Outlook	Continually updated
Daily Work Assignment Schedule	E – Google Calendar	
External Documents		
Engineering Schematics/Plans/Drawings	HC – Supervisor's Office	Retained until superseded
Maintenance and Equipment Manuals		
Operator Certificates		
Approvals (Municipal Drinking Water Licence, Drinking Water Works Permit, Permit to Take Water)	E – Town of Marathon shared network drive	
Records		
Operator Training Records	HC/E – Town Office	6 years
Asset and Parts Inventory	E - CMMS	Continually updated
Maintenance Work Orders		10 years
Distribution Subsystem Logbooks	HC – Supervisor's Office	
Maintenance Records (i.e. records associated with valve exercising and inspection, leak detection, hydrant inspection and system flushing, targeted dead-end flushing, instrumentation calibration and maintenance records, and maintenance indicated on maps)		
Records associated with QMS processes such as management reviews, infrastructure reviews, emergency response training and testing, etc. (i.e. meeting minutes, task lists, budgets, etc.)	E – Town of Marathon shared network drive	
Audit Reports, Inspection Reports & Annual Reports		
Customer Complaint/Feedback Records		
Sampling Results		15 Years

4.2 **Ensuring documents are kept current.** The Operational Plan, DWQMS Procedures and other internally developed documents contain issue dates, revision levels, revision dates, and other information to ensure that current versions of those documents are being used at all times. The QMS Representative also monitors current revision levels of all QMS-related documents using the *Current Revision Levels Summary for Internal QMS Documents*.

The Operational Plan and DWQMS Procedures are reviewed annually by the QMS Representative as a component of the management review process. Other QMS-related documents are reviewed as significant changes occur (e.g. changes to regulations, new best practices, operational equipment or processes). External documents are reviewed during the annual internal audit process.

An employee may request, in writing, a revision to improve an existing internal document or the preparation of a new document. Written requests should indicate the reason for the requested change.

4.3 **Legibility and identification.** Internally developed documents and records (where possible) are generated electronically to ensure legibility and are identified through a combination of methods including using appropriate titles and footers (complete with revision history information). Handwritten records must be legible and permanently rendered in ink or non-erasable marker.

Additional controls for procedures and guidelines are used to ensure legibility and identification, including the use of an authorized approval process.

4.4 **Retrieval.** Current documents and records are readily accessible to operations personnel and to internal and external auditors/inspectors at the document control locations established by the QMS Representative. The designated document control locations are defined in Table 1. Additional access to facility records for the Marathon Distribution System contained within internal electronic databases and applications requires the permission of the Manager or designate.

4.5 **Storage and protection.** Document control locations are established in areas that provide adequate protection to prevent unauthorized use/access, damage, deterioration or a loss of documents and records. Copies of documents and records located outside of designated control locations are considered uncontrolled.

Documents stored electronically on the Town of Marathon's shared network drive are password-protected or are stored in a file format that will not allow the document to be altered. Operational Plan files are stored in folders and are appropriately labeled by version and/or date of the document. The shared network drive is backed up on a daily basis during weekdays, and the backup drive is stored in a secure vault.

Only authorized Town of Marathon personnel have access to electronic records stored on the Computerized Maintenance Management System.

4.6 **Retention and disposal.** Controlled documents and records are retained in accordance with applicable legislative and regulatory requirements. Documents and records without legislated minimum retention periods have been assigned retention periods (refer to Table 1).

The Manager or designate shall communicate any changes made to documents to relevant facility personnel. When a document is superseded, the hardcopy of the document is promptly removed from its location and forwarded to the Manager or designate for disposal or retention (as appropriate). The authorized method for disposal of hardcopy documents and records after the specified retention requirements have been met is shredding.

5 Related Documents & Records

Current Revisions Levels Summary for Internal QMS Documents

6 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Procedure issued
08-Nov-2010	1	Plan Revision
04-Mar-2011	2	Plan Revision internal audit
24-Oct-2011	3	Operational Plan Revision
30-Mar-2013	4	Plan Revision internal audit
21-Aug-2013	5	Plan revision SAI certification audit
09-Jun-2014	6	Revisions to enhance readability; address audit results
02-May-2016	7	Updated responsibilities, table and other sections
17-Apr-2017	8	Updated table to address audit results
01-May-2019	9	Updated procedure to refer to the new *Current Revision Levels Summary for Internal QMS Documents*
1-Jun-2021	10	Updated procedure and table

DWQMS Procedure QP-02

Risk Assessment and Risk Assessment Outcomes

1 Purpose

This procedure establishes methods for identifying and evaluating the significance of hazardous events and associated hazards that may affect drinking water quality or supply. This procedure also establishes methods for a) identifying monitoring processes and control measures associated with hazardous events, b) determining critical control points and respective critical control limits, and c) monitoring, responding to, reporting and recording deviations from the critical control limits.

Using a systematic approach for risk identification and assessment lessens the likelihood of overlooking potential treatment process hazards and associated risks to drinking water quality and public health. The outcomes of the risk assessment help to ensure that control measures, monitoring processes and response procedures are in place for critical hazardous events.

2 Definitions

Consequence - The potential impact to public health and/or operation of the drinking water system if a hazard or hazardous event is not controlled. The consequence of an event can be affected by the concentration of contaminants present and their nature, the time frame of the exposure, the geographical area of the exposure, or the number of persons exposed. Sensitivity of the exposed population may also be a factor in determining consequence.

Control Measure - Includes any processes, physical steps or other practices that have been put in place at a drinking water system to prevent or reduce a hazard or hazardous event before it occurs.

Critical Control Limit - The point at which a Critical Control Point response procedure is initiated.

Critical Control Point (CCP) - An essential step or point in the subject system at which control can be applied to prevent or eliminate a drinking water hazard or reduce it to an acceptable level.

Detectability - The ability to identify or detect a hazard. Hazards that cannot be defined or detected have a higher risk factor, as it may be unknown as to when appropriate control measures should be implemented. Risks that can be monitored in real time are lower risks, as appropriate control measures can be taken.

Hazard - A source of danger or a property that may cause drinking water to be unsafe for human consumption or may otherwise disrupt the reliable supply of safe drinking water.

Hazardous Event - An incident or situation that can lead to the presence of a hazard.

Likelihood - The probability of a hazard or hazardous event occurring. Likelihood is determined by how often or how likely a hazard or a hazardous event occurs. It must consider hazards or hazardous events that have occurred in the past and the likelihood of their recurrence and must also predict the likelihood of hazards and hazardous events that have not occurred to date.

Monitoring – Any checks or systems that are available to detect hazards or the potential for hazards.

Risk - The probability of identified hazards causing harm, including the magnitude of that harm or the consequences.

3 Responsibility

The QMS Representative is responsible for compiling the risk assessment team, facilitating the risk assessment process and the annual risk assessment review (typically coincident with the annual management review meeting), and updating the risk assessment outcomes accordingly.

The risk assessment team is responsible for completing the risk assessment in accordance with section 5 (Triennial Risk Assessment Procedure). The risk assessment review team is responsible for evaluating the currency of the information and the validity of the assumptions used in the risk assessment in accordance with section 6 (Annual Risk Assessment Review Procedure).

4 Frequency

Every 3 years, a new risk assessment shall be conducted in accordance with section 5.

Annually, the currency of the information and the validity of the assumptions used in the risk assessment shall be verified in accordance with section 6. This annual review is typically conducted as a component of the annual management review meeting.

5 Triennial Risk Assessment Procedure

5.1 Process Overview

The risk assessment process assumes the format of a roundtable discussion consisting of the following exercises: 1) identifying hazardous events and associated hazards, 2) assessing risks, 3) determining critical control points and identifying critical control limits, and 4) identifying monitoring processes and control measures.

The QMS Representative is responsible for facilitating the risk assessment process. At the beginning of the risk assessment, the QMS Representative shall review with participants Elements 7 (Risk Assessment) and 8 (Risk Assessment Outcomes) of Ontario’s DWQMS, DWQMS Procedure QP-02 (Risk Assessment and Risk Assessment Outcomes), and the previous risk assessment outcomes.

At the completion of the risk assessment, the QMS Representative is responsible for completing the Risk Assessment Outcomes attached to this procedure.

5.2 Risk Assessment Team

The risk assessment team shall be comprised of the Works, Operations, Facilities & Parks Manager, the Works, Operations, Facilities & Parks Supervisor and as many Water & Sewer Utility Workers as possible. The composition of the risk assessment team acknowledges that performing the risk assessment should rely on site-specific knowledge of the water system, and that the hazardous events should be ranked through a collaborative process by the risk assessment team. The team shall be responsible for identifying all hazardous events and hazards, assessing the associated risks, identifying monitoring processes and control measures, determining critical control points, and setting critical control limits.

5.3 Identifying Hazardous Events and Associated Hazards

To facilitate the risk assessment process, the QMS Representative shall compile and present to the risk assessment team a list of potential hazardous events for the subject system. This list shall be developed by considering 1) the hazardous events identified by the previous risk assessment, 2) the mandatory hazardous events and hazards identified in the Ministry document titled *Potential Hazardous Events for Municipal Residential Drinking Water Systems*, and 3) any findings that were the result of the annual risk assessment reviews documented in step 6 of this procedure.

The risk assessment team shall review and modify the list of hazardous events and proceed to identify any new potential hazardous situations. New hazardous events may be the result of actual events that have occurred subsequent to the previous risk assessment and were not previously identified. New hazardous events or modifications to previous events may also be the result of changes to the treatment process or distribution system that occurred subsequent to the previous risk assessment. At the conclusion of this exercise, the risk assessment team will have created a comprehensive list of hazardous events that applies to the entire subject system.

Following the identification of hazardous events, the risk assessment team shall identify the hazards associated with each event. Examples of hazards include contaminated water, a loss of source/production/supply, threats to personal or public safety, damage to property, equipment or infrastructure, etc.

The risk assessment team may choose to identify associated hazards, monitoring processes, and control measures and to assess the risk of a hazardous event before discussing the next hazardous event.

5.4 Assessing Risks and Ranking Hazardous Events

The risk assessment team shall assess the risks for each hazardous event. Each hazardous event is assigned a numeric value ranging from 1 to 5 in three different categories: likelihood, consequence, and detectability (refer to the *Risk Assessment Criteria Table* on the following page). Each numeric value is generally determined by group discussion and consensus. If a consensus cannot be achieved, the numeric value for a category shall be derived by calculating the average value across all risk assessment team members and rounding to the nearest whole number. The assessment of risks must account for the reliability and redundancy of equipment, particularly as it concerns evaluating the likelihood of a hazardous event.

Following the assessment of risks in the categories, the three assigned values for each event are then added to determine the overall risk value. An overall risk value provides a means to rank hazardous events. The highest overall risk values are typically indicators of high-risk hazardous events. Based on a review of the overall risk values and the associated events, a threshold number shall be chosen through consensus by the risk assessment team such that all events associated with risk values which are equivalent to or greater than the threshold number are considered high-risk hazardous events.

5.5 Critical Control Point Determination

All hazardous events ranked higher than the specified threshold value are considered to be high-risk hazardous events. In the risk assessment process for a drinking-water system based on the multiple barrier approach, there could be several control points that could address any particular hazard or hazardous events. Therefore, several CCPs may be identified for each hazardous event. In addition to the hazardous events above the threshold value, any other hazardous event that is associated with a step or process that either a) contributes to the minimum log removal or inactivation of pathogens in drinking water, b) is necessary to meet the pathogen log removal and inactivation criteria provided in Schedule E of the system's *Municipal Drinking Water Licence*, or c) is necessary for maintaining a distribution system disinfectant residual shall be considered a critical control point.

5.6 Critical Control Limit Identification

Critical limits are established for values that measure critical (high-risk) events. These limits provide operators with a range of acceptable values within which no preventive or corrective actions are required. Critical limits define the point at which an operator must take action to prevent escalation of the critical event or to correct the critical event. Limits are determined based on regulatory requirements, process monitoring capabilities, off-hours response time, and historical system performance.

The risk assessment team will proceed in assigning critical control limits for each critical control point. Generally, the limits correspond to the point at which Town of Marathon Guidelines should be enacted.

Risk Assessment Criteria Table	
Rating	**Likelihood**
1	Event very rarely occurs (once every 10+ yrs)
2	Event rarely occurs (once every 5-10 yrs)
3	Event regularly occurs (once every 1-5 yrs)
4	Event occurs often (once every year)
5	Event is very likely (weekly, monthly or several times a year)
Rating	**Consequence**
1	Little to no consequence, little public exposure, little or no health risk
2	Limited public exposure, minor health risk
3	Minor public exposure, health impact on small part of the population
4	Large part of population at risk, significant health impact
5	Major impact for large part of the population
Rating	**Detectability**
1	Easy to detect, on-line monitoring and automatic shut off
2	Moderately detectable, alarm present but no automatic shut off, someone has to notice alarm (event is only detectable from external lab results, etc.)
3	Normally detectable, either visually or through regular maintenance
4	Poorly detectable, visually detectable but not inspected on a regular basis; not normally detected before problem becomes evident; no regular lab tests
5	Cannot be detected

5.7 Identifying Monitoring Processes and Control Measures

After the hazardous events and their corresponding hazards have been identified, the risk assessment team shall consider measures that are in place to monitor the hazards and hazardous events. Various monitoring processes are in place to monitor hazardous events and associated hazards, and such processes are necessary to monitor critical control limits and to identify deviations from those limits. For control measures, the team must consider what is currently in place to keep the hazards or hazardous event under control. It is important to note that not all hazards or hazardous events can be controlled through subsequent processes, and that the best that can be achieved with some hazards or hazardous events is monitoring or response.

Examples of monitoring processes may include continuous monitoring and alarm notification, customer complaints, visual observations and routine inspections, routine sampling and testing, etc. Examples of control measures may include redundant equipment, planned maintenance, a spare parts inventory, and the existence of contingency plans.

5.8 Critical Control Limit Deviations

Procedures outlining how to respond to, report and record deviations from critical control limits exist as a series of Town of Marathon Guidelines. Specifically, these guidelines serve as contingency plans and include step-by-step response instructions, including instructions related to communication protocols and recordkeeping requirements.

All critical control limit deviations are recorded in the facility logbook but may also be recorded within Adverse Water Quality Incident documentation, customer complaint records, and other operational records.

6 Annual Risk Assessment Review Procedure

6.1 Process Overview

The risk assessment annual review process assumes the format of a roundtable discussion that consists of evaluating the currency of the information and the validity of the assumptions used in the risk assessment. The QMS Representative may choose to complete this review during the annual management review meeting or during a standalone meeting.

The QMS Representative is responsible for facilitating the risk assessment review and for recording the results of the review as meeting minutes. The minutes shall be controlled in accordance with DWQMS Procedure QP-01 (Document and Records Control).

6.2 Risk Assessment Review Team

The risk assessment review team shall be comprised of the Works, Operations, Facilities & Parks Manager, the Works, Operations, Facilities & Parks Supervisor, and as many Water & Sewer Utility Workers as possible.

6.3 Discussion Items

Risk assessment review participants may consider the following items during the annual review of the risk assessment outcomes:

(a) whether any changes have occurred to the system that would affect the risk assessment, including the addition of new infrastructure/equipment, new monitoring and/or control measures, discarding old equipment, planned maintenance and repair of key pieces of infrastructure, etc.;

(b) whether any regulatory changes have affected the current risk assessment outcomes;

(c) whether any new hazardous events should be identified and assessed;

(d) whether the rankings for high-risk hazardous events and for events that are below but close to the threshold value are current;

(e) whether the identified critical control limits are current;

(f) how the risk assessment outcomes should inform future emergency response training and testing sessions and emergency response procedure development over the next year; and,

(g) whether there are any suggestions for improvement to the risk assessment process.

6.4 Updating the Risk Assessment Outcomes

The QMS Representative shall monitor the results of risk assessment reviews conducted between triennial risk assessments and shall ensure that the results of all reviews are incorporated into the next triennial risk assessment.

7 Related Documents & Records

Minutes resulting from the annual risk assessment review
DWQMS Procedure QP-01 (Document & Records Control)

8 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Procedure issued
8-Nov-2010	1	Plan Revision
4-Mar-2011	2	Plan Revision internal audit
24-Oct-2011	3	Plan Revision
20-Mar-2013	4	Revise CCP table as per internal audit
21-Aug-2013	5	Plan revision SAI certification audits
9-Jun-2014	6	Revisions to enhance readability
12-Jun-2015	7	Clarified responsibilities and frequencies and updated procedure; new risk assessment
6-Jun-2018	8	Significant revisions to better describe risk assessment processes; new risk assessment
1-Jun-2021	9	Minor updates to the procedure to better describe risk assessment processes; new risk assessment

9 Risk Assessment Outcomes

Date of Risk Assessment:	June 1, 2021
Risk Assessment Team:	Brian Hyshka (Works, Operations, Facilities & Parks Manager), Tammy Ibey (Works, Operations, Facilities & Parks Supervisor), Mike Duhaime (Water & Sewer Utility Worker), Dean Manuel (Water & Sewer Utility Worker), Nicholas Kyle (Compliance Manager – Northern Waterworks Inc.)
Risk Ranking Threshold Value (for CCP Determination):	7

Hazardous Event	Associated Hazards	L	C	D	Risk	CCP?	CCL	Monitoring and Control Procedures
Source water supply shortfall (e.g., due to aquifer depletion, infrastructure failure, high system flows with multiple wells out of service, etc.)	Loss of supply	1	3	2	**6**	No	n/a	• Daily water level checks, continuous monitoring of flows and water levels • Multiple wells with different capture zones (i.e., redundancy in the form of an alternate supply) • Implementation of a leak detection and repair program to minimize system flows • Implementation of community-wide water conservation measures and temporary storage (elevated reservoir) • Provision of an alternate supply (i.e., bottled water)
Chemical spill impacting source water	Water contamination, loss of supply	1	2	2	**5**	No	n/a	• Daily operational checks and water quality testing • Routine regulatory sampling and groundwater monitoring • Potential notification from the public and external parties • Well isolation capability and multiple wells with different capture zones • Implemented source water protection measures (signage, bylaws, etc.) • Temporary water storage and secondary disinfection depending on the contaminant • Town of Marathon Guideline No. WO0019

L = Likelihood; C = Consequence; D = Detectability.

Hazardous Event	Associated Hazards	L	C	D	Risk	CCP?	CCL	Monitoring and Control Procedures
Backflow (i.e., backflow caused by backpressure or backsiphonage through a cross-connection)	Water contamination	1	3	3	**7**	Yes	Any adverse or abnormal monitoring results; customer complaint; any direct/indirect evidence of a backflow event	• Daily operational checks and water quality testing • Routine regulatory sampling • Potential notification from the public (e.g., customer complaint) • Backflow prevention device inspection program and requirements for all new facilities to install backflow prevention devices • Secondary disinfection depending on the contaminant
Sustained pressure loss*	Loss of supply, water contamination	2	2	1	**5**	Yes	Sustained distribution system pressure less than 20 PSI; customer complaint; any other evidence of a pressure loss or watermain break	• Continuous system pressure monitoring and alarm notification • Potential notification from the public (e.g., customer complaint) • Elevated reservoir to maintain pressure for the majority of the community • Redundant equipment (i.e. pumps and emergency generators) at booster stations • Ability to isolate different pressure zones and/or sections of the system • Town of Marathon Guideline No. WO0011
Category 1 water main break	Localized pressure loss, loss of supply	3	1	3	**7**	Yes		• Continuous system pressure/flow monitoring and alarm notification • Visual observation during daily operational checks • Potential notification from the public (e.g., customer complaint) • Implementation of a leak detection and repair program • Elevated reservoir to maintain pressure and provide temporary water storage • Ability to isolate sections of the system and the availability of a parts inventory to facilitate repairs • Town of Marathon Guideline No. WO0010
Category 2 water main break	Localized pressure loss, loss of supply, water contamination	1	2	3	**6**	No	n/a	

*Sustained pressure loss is considered to be a mandatory critical control point.

Hazardous Event	Associated Hazards	L	C	D	Risk	CCP?	CCL	Monitoring and Control Procedures
Long term impact of climate change – extreme weather events	Loss of supply, infrastructure damage, threat to personal and public safety	1	2	1	**4**	No	n/a	• Visual observation and potential notification from external parties • Temporary water storage and standby power systems • Multiple wells with different capture zones (i.e. redundancy in the form of an alternate supply) • Implementing event-specific changes to operating protocols • Supplementing personnel coverage with treatment subsystem operating authority personnel
Long term impact of climate change – sustained extreme temperatures	Increase in demand, loss of supply (e.g., due to aquifer depletion)	1	2	1	**4**	No	n/a	• Visual observation and potential notification from external parties • Multiple wells with different capture zones (i.e. redundancy in the form of an alternate supply) • Implementation of a leak detection and repair program to minimize system flows • Implementation of community-wide water conservation measures, including the current bylaw regulating the external use of water in the community. • Provision of an alternate supply (i.e., bottled water)
Terrorist threat	Water contamination, infrastructure damage, threat to personal and public safety	1	3	1	**5**	No	n/a	• Potential notification from the public or external parties • Daily operational checks (including facility inspections) and water quality testing • Routine regulatory sampling • Remote monitoring and control capability • Security systems, including video monitoring, at all sites • Security fencing at the reservoir and Well 5 • Secondary disinfection depending on the contaminant • Town of Marathon Emergency Plan • Town of Marathon Guideline No. WO0009

Hazardous Event	Associated Hazards	L	C	D	Risk	CCP?	CCL	Monitoring and Control Procedures
Vandalism	Infrastructure damage, loss of supply, water contamination	2	2	2	**6**	No	n/a	• Potential notification from the public or external parties • Daily operational checks (including facility inspections) and water quality testing • Routine regulatory sampling • Security systems, including video monitoring, at all sites • Security fencing at the reservoir and Well 5
Disease pandemic	Threat to personal and public safety, critical personnel shortages	1	3	3	**7**	Yes	Emergency/ pandemic declarations by municipal, provincial and/or federal levels of government	• Notification and updates from public health authorities • Implementing event-specific changes to operating protocols based upon public health guidance (e.g., implementing split shifts, physical distancing in the workplace, other public health measures, etc.) • Developing event-specific operating procedures for common scenarios (e.g., how to prioritize and manage water main breaks during a pandemic) • Supplementing personnel coverage with treatment subsystem operating authority personnel • Town of Marathon Emergency Plan

DWQMS Procedure QP-03
Personnel Coverage

1 Purpose

This procedure describes the processes for ensuring that sufficient and competent personnel are available for duties that directly affect drinking water quality and supply.

2 Responsibility

This procedure applies to all personnel who have duties that directly affect drinking water quality and supply. The Works, Operations, Facilities and Parks Manager (Manager), the Works, Operations, Facilities and Parks Supervisor (Supervisor), Water & Sewer Utility Workers (Operators), and other Town of Marathon employees have specific responsibilities concerning personnel coverage.

3 Definitions

Competency – An integrated set of requisite skills and knowledge that enables an individual to effectively perform the activities of a given occupation.

4 Procedure

4.1 Ensuring Personnel Coverage

The Manager or designate shall ensure that personnel meeting identified competencies are available for duties that directly affect drinking water quality and supply. Water & Sewer Utility Workers employed by the Corporation of the Town of Marathon are represented by a union.

4.2 Coverage – Business Hours

The Marathon Distribution System is staffed by the Corporation of the Town of Marathon personnel between 7:00 a.m. to 3:30 p.m., Monday to Friday. The Manager or designate shall approve vacation time and training for operating authority staff in a manner which ensures that sufficient personnel are available to perform operational duties.

4.3 Coverage – After-hours

After-hours (i.e. on-call) coverage is provided 7 days a week throughout the year by means of an emergency phone number. Town of Marathon employees responsible for answering calls to the emergency phone number are assigned on a rotational basis. After a call is received, the on-call employee proceeds to contact any relevant Town of Marathon personnel who may be available to respond. To accomplish this, the on-call employee refers to an after-hours employee availability schedule maintained by the Manager or designate.

4.4 Coverage – ORO and OIC

Town of Marathon personnel are assigned to act as and fulfil the duties of Overall-Responsible-Operator (ORO) and Operator-In-Charge (OIC) in accordance with O. Reg. 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts) and O. Reg. 129/04 (Licensing of Sewage Works Operators).

The Manager or designate shall select the ORO, to be indicated in the facility logbook. Generally, the Supervisor or a Water & Sewer Utility Worker assumes the role of Overall-Responsible-Operator.

All qualified staff shall ensure that they assume OIC responsibilities where appropriate. At a minimum, one (1) OIC must be designated for each shift, as indicated in the facility logbook. Generally, Water & Sewer Utility Workers assume the role of Operator-In-Charge.

4.5 Coverage – Labour Disruptions and Special Circumstances

There may exist circumstances during which the Supervisor and Water & Sewer Utility Workers are not available to provide coverage, such as may be the case during labour disruptions or when personnel must travel to attend training courses. During these circumstances, the contracted operating authority for the treatment subsystem or other operating authorities are available to provide personnel coverage, including assuming ORO & OIC responsibilities.

5 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Procedure issued
08-Nov-2010	1	Plan Revision
04-Mar-2011	2	Plan Revision internal audit
24-Oct-2011	3	Plan Revision
30-Mar-2013	4	Plan Revision internal audit
09-Jun-2014	5	Revisions to enhance readability
03-Jun-2015	6	Plan Revision internal audit; updated certain sections
02-May-2016	7	Revision to clarify after-hours coverage
01-May-2019	8	Revision to clarify responsibilities in various sections

DWQMS Procedure QP-04
QMS Communications

1 Purpose

This procedure describes how relevant aspects of the Quality Management System are communicated between Top Management and the system Owner (the Corporation of the Town of Marathon), operating authority personnel, the public and essential suppliers. This procedure has been developed to conform with Element 12 of Ontario's Drinking Water Quality Management Standard.

2 Responsibility

Top Management, defined as the Chief Administrative Officer/Clerk and the Works, Operations, Facilities & Parks Manager, is responsible for ensuring that relevant aspects of the QMS are communicated to all required internal and external parties.

3 Procedure

3.1 Communication with the Town of Marathon (Owner)

- The QMS Representative provides an annual report to Mayor and Council on the continuing suitability, adequacy and effectiveness of the QMS. This *DWQMS Compliance Report* includes the provision of the most recent management review meeting minutes, infrastructure review meeting minutes and internal audit report.

- Mayor and Council have access to all QMS-related documentation and related Town of Marathon Guidelines. These materials are maintained in hardcopy in a binder by the QMS Representative.

- Mayor and Council representatives may also participate in regular QMS meetings such as management reviews or infrastructure reviews.

- Ongoing updates concerning the performance of the QMS and the drinking-water system may also be provided to Mayor and Council during scheduled meetings (i.e. council meetings) and through electronic, verbal, and written communications. Top Management regularly participates in council meetings.

3.2 Communication with operating authority personnel

- During employee orientation, all new personnel whose duties are related to drinking-water shall be provided with a copy of the Operational Plan for the Marathon Water Distribution System. Relevant aspects of the QMS shall also be communicated to new personnel during the orientation process.

- All operations staff have ready access to all QMS-related documentation and related Town of Marathon Guidelines. These materials are maintained in hardcopy in a binder by the QMS Representative. Employees also have ready access to electronic versions of all QMS-related documentation.

- Relevant aspects of the QMS shall be communicated to operating authority personnel through their active participation in a variety of QMS processes, including internal audits, management reviews, infrastructure reviews, risk assessments and emergency response training and testing.

- Relevant aspects of the QMS may also be communicated to personnel on an as-needed basis by the QMS Representative.

3.3 Communication with the public and essential suppliers

- Hard copies of the Operational Plan and associated procedures are made available to the public at the Town of Marathon's administration building.

- Electronic copies of the Operational Plan and associated procedures are available on the Town's website for viewing by the public and essential suppliers.

- Communication requirements related to ensuring that essential suppliers and service providers understand relevant policies, procedures and expectations are described in *DWQMS Procedure QP-05 (Essential Supplies and Services)*. Where applicable, verbal and written communication will be used to inform suppliers about the relevant aspects of the QMS. Copies of specific procedures may also be provided to suppliers.

4 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Procedure issued
08-Nov-2010	1	Plan Revision
04-Mar-2011	2	Plan Revision internal audit
24-Oct-2011	3	Plan Revision
30-Mar-2013	4	Plan Revision internal audit
21-Aug-2013	5	Plan revision SAI certification audit
09-Jun-2014	6	Revisions to enhance readability; address audit results
03-Jun-2015	7	Incorporated Town of Marathon Guideline No. WO 0027 and clarified methods of communication
25-May-2020	8	Clarified methods of communication and removed communication processes unrelated to the QMS

DWQMS Procedure QP-05
Essential Supplies and Services

1 Purpose

This procedure describes the processes for ensuring the procurement and quality of essential supplies and services as they pertain to the Marathon Distribution System.

2 Responsibility

The Works, Operations, Facilities & Parks Manager, the Works, Operations, Facilities & Parks Supervisor and other Town of Marathon personnel have responsibilities with respect to ensuring the procurement and quality of essential supplies and services. Specifically, this procedure applies to all Town of Marathon personnel who manage or purchase essential supplies or services pertaining to the Marathon Distribution System.

3 Definitions

Essential Supplies and Services – Supplies and services deemed to be critical for the delivery of safe drinking water.

4 Procedure

4.1 Procurement criteria. Procurement of essential supplies and services is conducted in accordance with the purchasing by-law, and suppliers and service providers are evaluated against a host of criteria in order to ensure that products and services are always available. Criteria are applied both in the selection of new suppliers or service providers and in the review of existing (approved) suppliers and service providers.

Procurement criteria include 1) the ability to deliver the required supply or service, 2) the ability to deliver the required supply or service to the specifications indicated by the Town, 3) vendor proximity and the timeframes in which supplies or services can be delivered (shorter timeframes are preferred), 4) the availability of supplies or services from the vendor (i.e. always available, special order, etc.), 5) the cost of the supply or service, and 6) the ability of the vendor to meet the stated delivery schedule.

4.2 Additional methods to ensure procurement. The Town of Marathon ensures the availability of essential supplies and services through the availability of alternative suppliers or service providers. The maintenance of spare part and equipment inventories is also a method used by the Town of Marathon to ensure that distribution supplies are immediately available.

4.3 **Quality criteria.** Distribution supplies and disinfectant must meet the conditions of the Municipal Drinking Water Licence for the Marathon Drinking Water System. Distribution supplies must meet NSF/ANSI Standard 61 for drinking-water components and NSF/ANSI Standard 372 for lead content, unless they qualify for an exemption. Water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC, fibre and/or steel wire reinforced cement pipe or high density polyethylene are exempt from meeting the safety criteria standards, as are articles made from stainless steel, glass, HDPE, Teflon, and gaskets made from NSF approved materials. Disinfectant must meet NSF/ANSI Standard 60 for water treatment chemicals.

Laboratory service providers must be licenced by the Ministry to provide analytical services, in accordance with Ontario's *Safe Drinking Water Act*. Additionally, a condition of licencing under the *Act* is that laboratories be accredited to certain international standards. The Ministry maintains a list of licensed laboratories.

4.4 **Ordering and receiving.** Town employees who are involved in the selection and ordering of supplies are obligated to clearly state and describe the product requirements to the vendor. If an employee wishes to order equipment or supplies from a non-approved vendor, approval must be sought from the Manager or designate prior to issuing the purchase order.

Upon receiving product, Town of Marathon employees shall 1) perform a visual inspection of the product, 2) test the product (if necessary), and 3) confirm the existence of documentation and certification respecting quality criteria.

4.5 **Assessing performance.** Suppliers and service providers are retained based on satisfactory past experience in accordance with the procurement and quality criteria. Performance is assessed periodically during product or service delivery.

Any employee who observes a discrepancy or failure of a supplier to meet the criteria shall notify the Manager or designate. Discrepancies originating from ordering and receiving processes will be investigated by comparing the criteria to the information stated in the purchase order or other communications with the vendor. The vendor will not be held liable for non-conformance if the requirements in the request were not clear.

4.6 **Approved essential suppliers and service providers.** Table 1 identifies essential suppliers and service providers that have been approved in accordance with prevailing procurement and quality criteria. The Manager is responsible for reviewing the list on an annual basis, at a minimum.

5 Related Documents

Purchasing By-law

Table 1: List of Approved Essential Suppliers and Service Providers

Supply or Service	Suppliers or Service Providers
Distribution Supplies Distribution supplies include but are not limited to pipes (including copper pipe), hydrants, valves and fittings, repair materials, corporation/curb stops, etc.	The Town of Marathon Works, Operations, Facilities & Parks Department maintains an inventory of distribution supplies. Emco Western Supplies Tungsten St., Thunder Bay, ON 1-888-496-5555 Wolseley Group 1149 Roland St., Thunder Bay, ON 1-888-860-0039 Meuller Canada 496 Raquette St., Winnipeg, MB 1-204-895-3312
Laboratory Services	ALS Environmental – Thunder Bay 1081 Barton St., Thunder Bay, ON 1-800-668-9878 ALS Environmental – Waterloo serves as a secondary service provider.
Disinfectant (Sodium Hypochlorite)	Northern Waterworks Inc. 41 Howe St., Marathon, ON 229-1186 ClearTech Industries Inc. and Brenntag Canada Inc. serve as secondary suppliers.

6 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Procedure issued
08-Nov-2010	1	Plan Revision
04-Mar-2011	2	Plan Revision internal audit
24-Oct-2011	3	Plan Revision
30-Mar-2013	4	Plan Revision internal audit
09-Jun-2014	5	Revision to enhance readability
02-May-2016	6	Updated Table 1; incorporated Town of Marathon Guideline No. WO 0028 (Supplier Assessment)
01-May-2019	7	Updated Table 1; expanded the description of quality criteria in section 4.3

DWQMS Procedure QP-06
Review and Provision of Infrastructure

1 Purpose

This procedure describes the processes used by the Town of Marathon to review the adequacy of infrastructure necessary to operate and maintain the Marathon Distribution System. Comprehensive and structured mechanisms for reviewing infrastructure adequacy and provision are critical for maintaining a reliable supply of safe drinking-water. This procedure has also been established to conform to both Element 14 (Review and Provision of Infrastructure) and aspects of Element 15 (Infrastructure Maintenance, Rehabilitation and Renewal) of Ontario's Drinking Water Quality Management Standard.

2 Responsibility

The Works & Operations Manager is responsible for facilitating annual infrastructure review meetings and for communicating the results to appropriate parties. The Works & Operations Manager is also responsible for budget preparation and execution.

The CAO and Works & Operations Supervisor are responsible for providing input into the infrastructure review process and for assisting with budget preparation and execution.

Water & Sewer Utility Workers are responsible for providing input into the infrastructure review process.

The Town of Marathon Council is responsible for considering the outcomes of the infrastructure review meeting and for approving proposed budgets.

3 Procedure

3.1 Infrastructure review meeting scheduling. The first step in the infrastructure review cycle consists of scheduling an infrastructure review meeting. The Works & Operations Manager shall plan and schedule a meeting with the CAO, the Works & Operations Supervisor, and the Water & Sewer Utility Workers. Such a meeting shall occur on an annual basis at a minimum (i.e. once per calendar year).

3.2 Agenda preparation. The infrastructure review meeting shall review infrastructure adequacy and provide infrastructure repair/replacement recommendations (where necessary). The infrastructure review meeting is also intended to satisfy various other annual requirements related to infrastructure maintenance, rehabilitation and renewal, such as reviewing the long-term forecast of infrastructure maintenance, rehabilitation and renewal activities.

The Works & Operations Manager shall prepare an agenda in advance of the infrastructure review meeting that includes, at a minimum, the following standing agenda items:

1) Review of Infrastructure Maintenance, Rehabilitation and Renewal Program Summary. In accordance with Element 15, the description of infrastructure maintenance, rehabilitation and renewal programs must be kept current. Meeting participants shall review the program description in section 15 of the Operational Plan to ensure it is current. Alternatively, this review may also be completed during the annual management review. An outdated program description shall result in an action item to update the Operational Plan accordingly.

2) Ongoing Maintenance Programs and Effectiveness. This item shall include a discussion on ongoing infrastructure maintenance, rehabilitation and renewal programs, including a discussion about training levels. In accordance with Element 15, the effectiveness of maintenance programs must be monitored. During this discussion topic, infrastructure review meeting participants shall determine if there are any program deficiencies and action items shall be assigned where necessary.

3) Past Maintenance, Rehabilitation and Renewal. This item shall include a discussion of the results of past maintenance, rehabilitation and renewal activities undertaken following the previous infrastructure review meeting.

4) Review of Risk Assessment Outcomes. In accordance with Element 14, the infrastructure review process must consider the outcomes of the risk assessment documented under Element 8. Specifically, infrastructure review meeting participants shall determine whether maintenance, rehabilitation or renewal programs can be altered or monies can be spent to further minimize risk, particularly as it concerns events identified as high-risk hazardous events. Risk may be minimized by reducing the likelihood, improving the detectability, or reducing the severity of a hazardous event.

5) Review of long-term forecast. In accordance with Element 15, the long-term forecast of major infrastructure maintenance, rehabilitation and renewal activities must be reviewed at least once every calendar year. Infrastructure review participants shall review the documented long-term forecast and determine whether updates to the forecast are required.

6) Planned maintenance on roads and distribution. This discussion item includes any signification planned maintenance on roads and the distribution system, including watermain replacement and renewal, leak detection surveys, backflow prevention, other condition surveys, etc.

The agenda may also include the following optional items to evaluate overall infrastructure adequacy: Water quality trends, consumer complaints, planned growth, information provided by the treatment subsystem operating authority, and MOECC inspection reports.

3.3 **Conducting the meeting.** The annual infrastructure review meeting shall begin with 1) an acceptance of the agenda, 2) a review of the QMS Policy by participants, and 3) an acceptance of the minutes from the previous infrastructure review.

While reviewing the information, participants shall provide recommendations for improvement or to address any identified deficiencies. These recommendations are considered to be infrastructure review action items and shall be reviewed at the end of the meeting and recorded in the minutes.

The Works & Operations Manager shall ensure that the meeting minutes are recorded and controlled in accordance with DWQMS Procedure QP-01 (Document & Records Control). The Works & Operations Manager shall also record any infrastructure review action items that were assigned during the meeting on the *Continual Improvement Spreadsheet.*

3.4 **Budget development and execution.** Using the input collected during the infrastructure review meeting and with additional input from the CAO and/or the Works & Operations Supervisor, the Works & Operations Manager shall be responsible for the preparation of the proposed capital and operational budgets for any planned infrastructure maintenance, rehabilitation and renewal for the Marathon Distribution System.

The Works & Operations Manager shall provide these recommendations to the Town of Marathon Council. Based upon the outcome of Council deliberations (i.e. budget approval), the Works & Operations Manager shall create and maintain a list of priorities for infrastructure renewal and rehabilitation.

3.5 **Management review evaluations.** Annual management reviews conducted in accordance with Element 20 shall consider the results of the most recent infrastructure review cycle as a standing agenda item. The may include evaluating the effectiveness of the infrastructure review process as a whole.

4 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Procedure issued
8-Nov-2010	1	Plan Revision
4-Mar-2011	2	Plan Revision internal Audit
24-Oct-2011	3	Plan Revision
30-Mar-2013	4	Plan Revision
9-June-2014	5	Revisions to enhance readability
31-May-2018	6	Revisions to clarify infrastructure review process

DWQMS Procedure QP-07
Sampling, Testing and Monitoring

1 Purpose

This procedure describes the processes for sampling, testing and monitoring drinking water quality for the Marathon Water Distribution System as conducted by the Town of Marathon. Sampling, testing and monitoring activities are performed to verify that drinking water is safe, to comply with applicable legislation and regulations, and to monitor parameters that affect water quality.

This procedure is primarily concerned with 1) microbiological sampling and free chlorine residual testing, 2) distribution pH, alkalinity and lead sampling and 3) Drinking Water Surveillance Program sampling and field testing.

2 Responsibility

The Works, Operations, Facilities & Parks Manager, the Works, Operations, Facilities & Parks Supervisor and Water & Sewer Utility Workers are responsible for ensuring that sampling, testing and monitoring activities are conducted in accordance with this procedure.

Only those operators who have been issued a valid Drinking-Water Operator Certificate or are under the direct supervision of a certified operator are permitted to conduct drinking water sampling, testing, and monitoring. These operators are responsible for performing all applicable sampling, testing, and monitoring processes.

3 Procedure

3.1 Microbiological sampling and free chlorine residual testing

The Town of Marathon occasionally collects microbiological samples and/or free chlorine residuals from within the water distribution system. Such non-routine microbiological sampling and/or free chlorine residual testing may be conducted during times of adverse water quality or during a period of heightened risk to drinking water quality. Non-routine samples may also be collected in association with rescinding a water advisory, completing regulatory corrective actions (i.e. sampling following the repair of a Category 2 watermain break) or resolving a customer complaint.

All microbiological samples are collected and delivered according to the instructions of the accredited laboratory performing the analyses. Free chlorine residuals are determined using a handheld colorimeter or similar, in accordance with proper analytical methodologies. Importantly, all water samples that are collected and tested for a microbiological parameter must also be immediately tested for free chlorine residual.

3.2 Distribution pH, alkalinity and lead sampling

The Marathon Drinking Water System previously qualified for reduced lead sampling, and ultimately became exempt from sampling at plumbing locations.

Three (3) samples shall be collected during designated sampling periods from points in the water distribution system and analyzed for pH and alkalinity. Analyses related to pH and alkalinity may be performed in-house or by the accredited laboratory. The distribution samples must also be analyzed for lead by an accredited laboratory in every third 12-month period. The distribution pH, alkalinity and lead sampling program is outlined in the table below. Samples are typically collected from hydrants.

Where applicable, samples shall be collected and delivered according to the instructions of the accredited laboratory performing the analyses, in addition to the provisions of section 15.1-7 (Sampling Protocol and Testing) of Schedule 15.1 (Lead) of O. Reg. 170/03.

Sample Period	# of Distribution Sample Locations	Analyses to be Performed
15-Dec-2019 to 15-Apr-2020	3	pH, alkalinity
15-Jun-2020 to 15-Oct-2020	3	pH, alkalinity
15-Dec-2020 to 15-Apr-2021	**3**	**Lead, pH, alkalinity**
15-Jun-2021 to 15-Oct-2021	**3**	**Lead, pH, alkalinity**
15-Dec-2021 to 15-Apr-2022	3	pH, alkalinity
15-Jun-2022 to 15-Oct-2022	3	pH, alkalinity
15-Dec-2022 to 15-Apr-2023	3	pH, alkalinity
15-Jun-2023 to 15-Oct-2023	3	pH, alkalinity
15-Dec-2023 to 15-Apr-2024	**3**	**Lead, pH, alkalinity**
15-Jun-2024 to 15-Oct-2024	**3**	**Lead, pH, alkalinity**
15-Dec-2024 to 15-Apr-2025	3	pH, alkalinity
15-Jun-2025 to 15-Oct-2025	3	pH, alkalinity
15-Dec-2025 to 15-Apr-2026	3	pH, alkalinity
15-Jun-2026 to 15-Oct-2026	3	pH, alkalinity

3.3 Drinking Water Surveillance Program sampling and field testing

The Town of Marathon participates in the Drinking Water Surveillance Program (DWSP). This program monitors water quality at selected municipal drinking water systems for scientific and research purposes. DWSP is a voluntary partnership that compliments the regulatory monitoring that must be performed by drinking water systems. DWSP monitors for inorganic, organic and radiological parameters.

Routine and any special samples shall be collected and delivered according to the DWSP protocol. Specifically, the DWSP protocol includes information about sampling locations, types, parameters, frequencies, and methods.

Town of Marathon personnel shall also conduct any and all required field testing associated with DWSP sampling, including conducting field tests for turbidity, pH, temperature and free chlorine residual.

3.4 Challenging conditions

The frequency of sampling may be increased during conditions which are deemed most challenging to the system. Challenging conditions that may warrant additional sampling include, but are not limited to, the following: Water advisories, chemical contamination events, backflow events and adverse water quality incidents. Additional sampling may also be conducted in response to directions from regulatory authorities or to a customer complaint.

3.5 Upstream sampling, testing and monitoring activities

The contracted operating authority for the Marathon Well Supply System (i.e. the treatment component) maintains sampling, testing and monitoring procedures that comply with the *SDWA* and associated regulations. These upstream activities include, but are not limited to, a) routine sample collection and analysis for microbiological and chemical parameters, b) daily in-house testing for free chlorine residual at various locations, c) weekly in-house testing for turbidity and pH at various locations and d) continuous monitoring and recording of various parameters including flows, levels, pressures, free chlorine residuals and pH. Importantly, continuous monitoring and recording ensures that the variables monitored must necessarily be monitored at conditions that are most challenging to the Marathon Drinking Water System.

3.6 Recordkeeping and communicating results

All laboratory results (i.e. microbiological, lead) are sent directly from the lab to the Town of Marathon and are stored electronically. Free chlorine residual, pH, alkalinity, turbidity and/or temperature test results may be recorded in logbooks, within lab results (i.e. where residuals are collected coincident with a microbiological sample) or within other records (i.e. lead tracking spreadsheets, DWSP results and Chains of Custody).

Results of certain sampling, testing and monitoring activities are documented in an Annual Report, which addresses section 11 and Schedule 22 of O. Reg. 170/03. These reports are submitted to the DWS Owner prior to the end of February in each calendar year.

Sampling, testing and monitoring results associated with both the treatment and water distribution operational subsystems are shared and regularly reviewed by the Works, Operations, Facilities & Parks Manager.

The results of sampling, testing and monitoring activities may also be communicated to the DWS Owner on an event-driven basis, particularly during challenging conditions. DWS Owners may also request access and be provided with a copy of all sampling, testing and monitoring program results.

4 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Procedure issued
08-Nov-2010	1	Plan Revision
04-Mar-2011	2	Plan Revision internal audit
24-Oct-2011	3	Plan Revision
30-Mar-2013	4	Plan Revision internal audit
09-Jun-2014	5	Revisions to enhance readability; added sampling info
17-Apr-2017	6	Revisions to address internal audit findings
25-May-2020	7	Expanded and reorganized all sections; updated lead sampling schedule table

DWQMS Procedure QP-08

Measurement and Recording Equipment Calibration and Maintenance

1 Purpose

This procedure describes the processes used by the Town of Marathon to ensure that all measurement and recording equipment is calibrated and maintained. The Town of Marathon uses a limited amount of equipment to test water quality.

2 Responsibility

The Works & Operations Manager is responsible for keeping current this procedure. The Works & Operations Supervisor and operational staff are responsible for ensuring that all calibration and maintenance is performed according to this procedure.

3 Procedure

3.1 The majority of measurement and recording equipment for the Marathon Drinking Water System is associated with the treatment operational subsystem. The contracted operating authority for the treatment subsystem is responsible for ensuring that all such equipment is calibrated and maintained in accordance with Ontario Regulation 170/03 and with their respective internal procedures.

3.2 The Town of Marathon conducts calibration and maintenance on the following equipment:

- One (1) Hach Pocket Colorimeter – Chlorine
- One (1) Hanna pH Meter

3.3 Calibration and maintenance activities are conducted by the Town of Marathon in accordance with the methods provided by manufacturers' instructions.

3.4 Records associated with calibration and maintenance activities are kept in the logbook or in associated files.

3.5 Prior to using any primary or secondary standards to conduct calibration and/or quality assurance, personnel shall verify that the standards are not expired. If the standards are expired, calibration and/or quality assurance shall be postponed and new standards promptly ordered.

3.6 Town of Marathon personnel may use measurement and recording equipment that is calibrated and maintained by the treatment subsystem operating authority. Such equipment may be used for field testing different parameters, including free chlorine residual, pH and turbidity. Prior to its use, Town of Marathon personnel shall verify the integrity of equipment and shall review all relevant calibration and maintenance records pertaining to that piece of equipment.

4 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Procedure issued
08-Nov-2010	1	Plan Revision
04-Mar-2011	2	Plan Revision internal audit
24-Oct-2011	3	Plan Revision
30-Mar-2013	4	Plan Revision
09-Jun-2014	5	Revisions to enhance readability; address audit results
17-Apr-2017	6	Revisions to address audit results

DWQMS Procedure QP-09
Emergency Management

1 Purpose

This procedure has been established to identify emergency situations and to manage responses to these events. Establishing a procedure for emergency situations facilitates preparedness, promotes an efficient response and supports a rapid recovery. This procedure shall describe:

- Potential emergency situations and service interruptions;
- Processes for emergency response and recovery;
- DWS Owner and Operating Authority responsibilities during emergency situations;
- Emergency contact lists and communication protocols; and,
- Emergency response training and testing requirements.

2 Responsibility

The Works, Operations, Facilities & Parks Manager, the Works, Operations, Facilities & Parks Supervisor and other operational staff are responsible for identifying and responding to any emergency conditions that may occur at the level of the facility. More serious operational emergencies may require additional involvement at the corporate level or from outside agencies.

3 Definitions

Contingency Plan – A facility-level plan of preparedness for emergencies that can be managed by operational staff and local resources.

Emergency Plan – A corporate-level plan of preparedness for serious operational emergencies.

4 Procedure

4.1 Potential emergency situations and service interruptions. An emergency constitutes a potential situation or service interruption that may result in the loss of the ability to maintain a supply of safe drinking water to consumers. An emergency requires immediate action and includes events that compromise drinking water quality and supply.

A list of potential emergency situations or service interruptions is provided within *DWQMS Procedure QP-02 (Risk Assessment and Risk Assessment Outcomes)*. Specifically, potential emergency situations or service interruptions correspond to the list of critical hazardous events (i.e. hazardous events associated with a critical control point) provided within the risk assessment outcomes.

The list of emergency situations or service interruptions is reviewed and revised at least once every three years by knowledgeable personnel, in accordance with the established risk assessment process. Emergency situations (i.e. critical hazardous events) documented in the risk assessment outcomes also include information about associated hazards, monitoring and control measures, and response procedures.

4.2 Processes for emergency response and recovery. Successful processes for emergency response and recovery rely upon the establishment and utilization of contingency plans, the availability of trained and knowledgeable personnel, the availability of adequate emergency response equipment, and the establishment of communication protocols and contact lists.

The Town of Marathon maintains a series of contingency plans (i.e. Town of Marathon Guidelines) which provide processes for emergency response and recovery. The contingency plans outline how the Department assesses the situation, protects consumers, and restores the operation of the distribution system. The contingency plans also outline responsibilities and communication protocols to be followed.

The Corporation of the Town of Marathon also maintains a municipal Emergency Plan in accordance with prevailing legislation.

4.3 Owner and operating authority responsibilities. The contracted operating authority for treatment subsystem maintains contingency plans in accordance with the Municipal Drinking Water Licence for the Marathon Drinking Water System. The contracted operating authority is generally responsible for responding to emergencies which originate within the treatment subsystem, while the Town of Marathon is generally responsible for responding to emergencies which originate within the distribution subsystem. The nature of the emergency may require a coordinated response between the contracted operating authority and the Town of Marathon.

4.4 Emergency communication protocols and contact lists. Communication protocols are outlined in the respective contingency plans. Specifically, individual contingency plans direct the responder to the appropriate contact in the event of an emergency. The procedures may instruct the responder to contact the Manager, Supervisor, ORO/OIC, treatment subsystem operating authority, or regulatory agencies.

Emergency contact information may be included in the series of contingency plans. A list of emergency contacts is also provided within this procedure in Table 1. Insofar as it is a component of this procedure, a list of emergency contacts is located on the Town website and at the Town Office. Generally, the primary contact during emergencies pertaining to the distribution system is the Manager or designate.

Table 1: Emergency Contact List

Contact	Phone Number
Town of Marathon (Business Hours)	T: 229-1340
Town On-call Manager (After Hours)	T: 229-6125
Works, Operations, Facilities & Parks Manager	T: 229-1340 ext. 2229 C: 228-0040
Mayor	T: 229-1340 ext. 2224
Contracted Operating Authority (Marathon) On-call Operator	T: 229-1186 C: 228-4402
Ministry's Spills Action Centre	T: 1-800-268-6060
Ministry Regional Office (Water Compliance)	T: 1-800-875-7772
Thunder Bay District Health Unit	T: 1-888-294-6630 ext. 5930 T: 807-625-5900 T: 807-623-7451 (After Hours Reporting)
Emergency (Police, Fire, Ambulance)	T: 911
Police (Local Office)	T: 229-0220

4.5 **Emergency response training and testing.** Training respecting emergency situations and contingency plans is provided to operational staff at least once per calendar year. Such training also involves the review and testing of at least one (1) of the facility-level contingency plans with the Manager or designate. Contingency plans may be revised based on the results of the emergency response training and testing session. Relevant emergency response training and testing records are maintained according to *QP-01 (Document & Records Control)*.

5 Related Documents & Records

Town of Marathon Guideline series (Contingency Plans)
Municipal Emergency Plan
Minutes related to emergency response training and testing

6 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Procedure issued
08-Nov-2010	1	Plan Revision
04-Mar-2011	2	Plan Revision internal Audit
24-Oct-2011	3	Plan Revision
30-Mar-2013	4	Plan Revision
21-Aug-2013	5	Plan Revision
09-June-2014	6	Revisions to enhance readability
01-May-2019	7	Updated all sections and confirmed contact list

DWQMS Procedure QP-10
Internal Audits

1 Purpose

This procedure describes the process for evaluating the conformity of the Quality Management System for the Marathon Distribution System against the requirements of Ontario's Drinking Water Quality Management Standard. Internal audits are conducted to confirm that the QMS is effectively implemented and meets or exceeds the requirements of the Standard. Internal audits are also important for identifying and correcting deficiencies related to the implementation of internal policies and procedures.

2 Responsibility

The QMS Representative shall ensure that internal audits are conducted at the minimum required frequency. Top Management and other personnel may be involved in the auditing process, particularly in those circumstances where they may be required to provide evidence or where they may be responsible for resolving nonconformities and potential nonconformities.

3 Definitions

Internal Audit - A systematic and documented internal verification process that involves objectively obtaining and evaluating documents and processes to determine whether a quality management system conforms to the requirements of the DWQMS.

Internal Auditor – A person conducting the internal audit who has the necessary skills, training, and/or experience to do so.

Nonconformity – An instance where there has been a failure to meet a requirement of the DWQMS.

Potential nonconformity – An instance where activities or processes have not been adequately implemented or have not been implemented in a manner that is consistent with the intent of internal policies and procedures.

4 Procedure

4.1 The QMS Representative shall ensure that an internal audit is conducted at least once every calendar year, and that the scope of the audit includes all Elements of the Standard. The QMS Representative is also responsible for ensuring that audits are conducted by personnel with adequate skills, training, and/or experience.

4.2 Auditor(s) shall review and consider all relevant policies and procedures (i.e. the Operational Plan, DWQMS Procedures, etc.), the results of previous internal and external audits, the status of corrective and preventive actions, and other related documentation prior to the audit.

4.3 Auditor(s) may collect evidence through interviews, observations, and reviews of documents and records. Internal auditors from outside agencies may follow their respective audit protocols at the discretion of the QMS Representative. The QMS Representative is responsible for communicating audit expectations on behalf of the Town of Marathon in those cases where internal auditors are from outside agencies.

4.4 An internal audit report and any associated corrective and preventive action documentation are the outcome of the internal audit process. At a minimum, the report must include information about audit objectives, audit criteria, audit scope, audit methods, a discussion concerning previous audit results, a summary of audit results, and a discussion concerning any nonconformities and potential nonconformities. The QMS Representative is responsible for ensuring that the internal audit report includes all necessary information if prepared by an external organization.

4.5 Nonconformities and potential nonconformities (opportunities for improvement) identified during the audit shall be described within the final audit report or as a separate document (i.e. a Corrective/Preventive Action Report). Nonconformities and potential nonconformities must include sufficient details, including comments and/or suggestions.

When a nonconformity or potential nonconformity is identified during the internal audit, the QMS Representative shall follow the continual improvement processes described in DWQMS Procedure QP-12 (Continual Improvement).

4.6 Upon completion of the final audit report, the auditor(s) shall review the results and any identified nonconformities and potential nonconformities with the QMS Representative. The audit report and supporting documentation are filed by the QMS Representative according to DWQMS Procedure QP-01 (Document and Records Control).

5 Related Documents & Records

Internal Audit Reports
Continual Improvement Spreadsheet
DWQMS Procedure QP-01 (Document & Records Control)
DWQMS Procedure QP-12 (Continual Improvement)

6 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Procedure issued
8-Nov-2010	1	Plan Revision
4-Mar-2011	2	Plan Revision internal audit
24-Oct-2011	3	Plan Revision
30-Mar-2013	4	Plan Revision
9-Jun-2014	5	Revisions to enhance readability
3-Jun-2015	6	Plan Revision internal and external audit
31-May-2018	7	Revision to clarify internal audit processes

DWQMS Procedure QP-11
Management Review

1 Purpose

This procedure has been established by the Town of Marathon to conform with Element 20 of Ontario's Drinking Water Quality Management Standard. This procedure defines the process for the annual evaluation by Top Management of the effectiveness of the Quality Management System. It is the intent of this procedure to provide a structured mechanism for management to perform an annual review of prescribed topics.

Management reviews are conducted to assess the continuing suitability, adequacy, and effectiveness of the Quality Management System (QMS). Additionally, management reviews consider various performance aspects of the drinking water system. These reviews are intended to facilitate the identification and correction of deficiencies.

2 Responsibility

As QMS Representative, the Works, Operations, Facilities & Parks Manager is responsible for coordinating annual management review meetings and for communicating the results to appropriate parties. The QMS Representative is also a member of Top Management.

Top Management is responsible for undertaking the management review. Top Management includes the Manager (QMS Representative) and the CAO/Clerk. Mayor and Council may also participate in the management review.

Other management review meeting participants may include the Works, Operations, Facilities & Parks Supervisor and Water & Sewer Utility Workers.

3 Definitions

Management Review - A formal (documented) meeting conducted on an annual basis by Top Management to evaluate the continuing suitability, adequacy and effectiveness of the Corporation of the Town of Marathon's QMS.

4 Procedure

4.1 Management review meeting scheduling. The Manager, as QMS Representative, shall plan and schedule a meeting with the CAO. Best efforts shall also be used to include the Supervisor, Water & Sewer Utility Workers, and representatives from Mayor and Council. Management review meetings shall occur on an annual basis at a minimum (i.e. once per calendar year). Management review participants should be notified at least two weeks in advance.

4.2 Agenda preparation and distribution. The management review meeting shall evaluate the effectiveness of the Quality Management System and various aspects of drinking-water system performance. The management review meeting is also used to satisfy various other requirements of the Standard.

The QMS Representative shall compile information and prepare an agenda for the management review meeting. The agenda shall be distributed to all participants in advance of the meeting, along with any related reference materials. The standing agenda shall include, at a minimum, the following items:

1A) Incidents of regulatory non-compliance;
1B) Best management practices (once every thirty-six months);
2) Incidents of adverse drinking water tests;
3) Deviations from critical control limits and response actions;
4) *The effectiveness of the risk assessment process;
5) Internal and third-party audit results;
6) Results of emergency response testing;
7) Operational performance;
8) Raw water supply and drinking water quality trends;
9) Follow-up on actions items from previous management reviews;
10) The status of management action items identified between reviews;
11) **Changes that could affect the Quality Management System;
12) Consumer feedback;
13) **The resources needed to maintain the Quality Management System;
14) The results of the infrastructure review;
15A) ***Operational Plan currency, content and updates;
15B) ***System description;
15C) ***Organization structure, roles, responsibilities, and authorities;
15D) ***Essential supplies and services; and,
16) Staff suggestions.

*The purpose of item 4) is to evaluate whether the current risk assessment process is adequate for identifying hazardous events, associated hazards, monitoring processes, control measures, etc. This item may identify improvements to the overall risk assessment process. The verification of the currency of information and the validity of the assumptions of the risk assessment outcomes are evaluated separately at an annual risk assessment outcomes review meeting.

**Items 11) and 13) are specifically concerned with the Quality Management System in place for the Marathon Distribution System. These items are not concerned with the drinking-water system.

***The purpose of item 15) is to evaluate the currency of information in different sections of the Operational Plan or in DWQMS Procedures. These items fulfil various requirements of the Standard to keep documentation current. Item 15A) may include a general overview of QMS currency, content and updates.

4.3 Conducting the meeting. The annual management review meeting shall begin with 1) an acceptance of the agenda, 2) a review of the QMS Policy by participants, and 3) an acceptance of the minutes from the previous management review.

Management review participants shall review the information presented and make recommendations and/or assign action items to address identified deficiencies as appropriate. Participants shall be given an opportunity to discuss the overall effectiveness and functioning of the QMS, areas for improvement to any aspect of the QMS, the provision of human and financial resources, and improvement in the level of consumer and customer satisfaction.

Any recommendations are considered to be management review action items and shall be reviewed at the end of the meeting and recorded in the minutes (see section 4.4). Action items must include information concerning personnel responsible and proposed timelines for completion.

4.4 Meeting minutes and results communication. The QMS Representative shall ensure that meeting minutes are recorded and controlled in accordance with DWQMS Procedure QP-01 (Document & Records Control). Minutes must also include the names of participants and the date, time, and location of the meeting. The QMS Representative shall also record any management review action items that were assigned during the meeting within the *Continual Improvement Spreadsheet.*

The QMS Representative shall distribute the meeting minutes and any associated materials to all management review participants and to Mayor and Council.

As part of the continual improvement process, the QMS Representative shall monitor the progress toward achieving the action items identified during the management review.

5 Related Documents & Records

Continual Improvement Spreadsheet
Minutes resulting from the Management Review

6 Revision History

Date	Revision	Description of Revision
26-Jan-2010	0	Procedure issued
08-Nov-2010	1	Plan Revision
04-Mar-2011	2	Plan Revision internal Audit
24-Oct-2011	3	Plan Revision
30-Mar-2013	4	Plan Revision
09-Jun-2014	5	Revisions to enhance readability
03-Jun-2015	6	Incorporated Town of Marathon Guideline No. WO 0030 and updated procedure
01-May-2019	7	Revision to clarify management review process

DWQMS Procedure QP-12
Continual Improvement

1 Purpose

This procedure defines the processes used by the Town of Marathon for ensuring continual improvement of the Quality Management System through the application of best management practices, corrective actions, and preventive actions. This procedure describes how such methods of continual improvement are initiated, assigned, documented, implemented and validated as being effective.

2 Responsibility

The QMS Representative is responsible for tracking and monitoring continual improvement through the application of best management practices, corrective actions, and preventive actions.

Works & Operations personnel may be involved in the continual improvement process through the implementation of action items associated with best management practices, corrective actions, and preventive actions.

3 Definitions

Corrective Action – action to eliminate the cause of a detected nonconformity of the QMS with the requirements of the DWQMS or another undesirable situation.

Preventive Action – action to prevent the occurrence of a nonconformity of the QMS with the requirements of the DWQMS or another undesirable situation.

4 Procedure

4.1 Continual improvement: Best management practices

4.1.1 Continual improvement shall be achieved by incorporating the review and consideration of best management practices into the management review process documented in DWQMS Procedure QP-11 (Management Reviews). The QMS Representative shall ensure that best management practices, particularly those identified within annual Ministry of the Environment and Climate Change (MOECC) drinking-water inspection reports as recommendations and best practice issues, are reviewed and considered at least once every thirty-six months during the management review process. Management review action items shall be assigned by Top Management where deficiencies are identified through the review and consideration of best management practices.

4.1.2 The QMS Representative may also review and consider best management practices in between management reviews. Where unresolved deficiencies are identified, the QMS Representative shall initiate the assignment of an action item. For the purposes of the management review, any assigned action items would be classified as "an action item issued between management reviews".

4.1.3 All action items associated with the review and consideration of best management practices shall be recorded by the QMS Representative on the *Continual Improvement Spreadsheet*. This spreadsheet includes information about the source of action item, personnel responsible for completing the action item, and timelines for completion.

4.2 Continual improvement: Quality Management System Corrective Actions

4.2.1 The primary method for ensuring continual improvement through Quality Management System Corrective Actions is described in DWQMS Procedure QP-10 (Internal Audits), such that all nonconformities identified during the annual internal audit shall be assigned corrective actions. Corrective actions may also be initiated following the identification of nonconformities through other processes, including management reviews and infrastructure reviews. An employee may also initiate a corrective action. This corrective action process is separate from the formal process for addressing nonconformities identified during third-party audits.

4.2.2 Corrective actions are issued for each nonconformity identified through internal audits, through other processes, or by employees. Upon notification of a nonconformity, the QMS Representative shall record the corrective action as an action item in the *Continual Improvement Spreadsheet.*

The QMS Representative shall determine the person or persons who are best positioned to 1) investigate the cause of the identified nonconformity and 2) undertake action to correct the nonconformity and prevent it from re-occurring.

4.2.3 The QMS Representative shall track and follow up on all identified corrective actions associated with nonconformities. Once completed, the QMS Representative shall review the actions taken to correct the nonconformity, verify that they are implemented and are effective in correcting and preventing the re-occurrence of the nonconformity. If the QMS Representative considers the corrective actions to be adequate, implemented and effective, then the action item may be considered completed.

4.3 Continual improvement: Quality Management System Preventive Actions

4.3.1 The primary method for ensuring continual improvement through Quality Management System Preventive Actions includes assigning preventive actions to opportunities for improvement identified during the internal and third-party audit processes. Preventive actions may also be initiated following the identification of potential nonconformities through other processes, including management reviews and infrastructure reviews. An employee may also initiate a preventive action.

4.3.2 Preventive actions are issued for each potential nonconformity identified through audits, through other processes, or by employees. Upon notification of a potential nonconformity, the QMS Representative shall record the preventive action as an action item in the *Continual Improvement Spreadsheet*. This spreadsheet includes information about the source of action item, personnel responsible for addressing the preventive action (if required), and timelines for completion (if required).

The QMS Representative shall then proceed to review the potential nonconformity in order to determine if preventive actions are necessary. If preventive actions are not necessary (i.e. if the opportunity for improvement is based on a misinterpretation of the Operational Plan or is not valid), then the action item can be closed.

If preventive actions are necessary, the QMS Representative shall determine the person or persons who are best positioned to 1) investigate the cause of the identified potential nonconformity and 2) undertake action to prevent the nonconformity from occurring.

4.3.3 The QMS Representative shall track and follow up on all identified preventive actions associated with potential nonconformities. Once completed, the QMS Representative shall review the actions taken to prevent the nonconformity, verify that they are implemented and are effective in preventing the occurrence of the nonconformity. If the QMS Representative considers the preventive actions to be adequate, implemented and effective, then the action item may be considered completed.

5 Related Documents & Records

Continual Improvement Spreadsheet
DWQMS Procedure QP-10 (Internal Audits)
DWQMS Procedure QP-11 (Management Reviews)

6 Revision History

Date	Revision	Description of Revision
31-May-2018	1	Procedure issued