

The Regional Municipality of Halton
Drinking Water Quality Management System

Operational Plan



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1 QUALITY MANAGEMENT SYSTEM

A Quality Management System is the policy and associated organizational structures, procedures, responsibilities, objectives and evaluation measures that ensure the capability of delivering a product to specified standards.

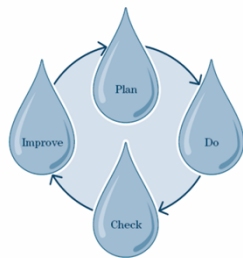
1.1 Background

The requirement for Owners and Operating Authorities of municipal residential drinking water systems to develop and implement Drinking Water Quality Management Systems was legislated under the [Safe Drinking Water Act, 2002 \(SDWA\)](#) and forms part of the Ministry of the Environment, Conservation and Parks (MECP) [Municipal Drinking Water Licensing Program](#). The mandating of a [Drinking Water Quality Management System \(DWQMS\) Standard Version 3.0](#) originated from the recommendations in Part Two of the Walkerton Inquiry Report.

1.2 The Drinking Water Quality Management Standard

The MECP's [Drinking Water Quality Management System \(DWQMS\) Standard Version 3.0](#) (or the Standard), released in February 2026, sets out a framework for the operating authority to develop a Drinking Water Quality Management System that is relevant and appropriate for the drinking water system and requires the Owner to endorse and accept the DWQMS. The DWQMS is the foundation for:

- Establishing and documenting management procedures;
- Achieving conformance with the procedures; and,
- Demonstrating conformity through an auditing process.



The Standard includes elements from the ISO 9001 management standard and the Hazard and Critical Control Point (HACCP) approach to product safety used in the food industry. The Standard also includes a Risk Assessment reflecting the multi-barrier approach for protecting drinking water and continuously supplying safe drinking water.

The Standard requires owners and operating authorities to formalize and document how they manage and operate their drinking water systems in an Operational Plan and requires that there is documented commitment throughout the organization to continuously review and improve these practices.

The Standard is based on implementing a PLAN, DO, CHECK and IMPROVE operational methodology. PLAN requires various policies and procedures to be documented in an Operational Plan. DO requires these policies and procedures be implemented. CHECK and IMPROVE require Internal Audits and Management Reviews to ensure conformance with requirements and continual improvement of the DWQMS.

1.3 Operational Plan for Halton Region's Drinking Water Systems

The Regional Municipality of Halton's DWQMS, documented in this Operational Plan, was developed to ensure safe drinking water is reliably supplied to all customers served by Halton Region's municipal residential drinking water systems. The development, implementation and continual improvement of the DWQMS will assist Halton Region in meeting all regulatory requirements and ensuring that consumers can be confident in the safety of their drinking water.

This Operational Plan is organized to follow the twenty-one elements of the Standard. The elements are as follows:

- Element 1 – Quality Management System
- Element 2 – Quality Management System Policy
- Element 3 – Commitment and Endorsement
- Element 4 – Quality Management System Representative
- Element 5 – Document and Records Control
- Element 6 – Drinking Water System(s)



Element 7 – Risk Assessment

Element 8 – Risk Assessment Outcomes

Element 9 – Organizational Structure, Roles, Responsibilities and Authorities

Element 10 – Competencies

Element 11 – Personnel Coverage

Element 12 – Communications

Element 13 – Essential Supplies and Services

Element 14 – Review and Provision of Infrastructure

Element 15 – Infrastructure Maintenance, Rehabilitation and Renewal

Element 16 – Sampling, Testing and Monitoring

Element 17 – Measurement and Recording Equipment Calibration, Verification and Maintenance

Element 18 – Emergency Management

Element 19 – Internal Audits

Element 20 – Management Review

Element 21 – Continual Improvement

1.4 Definitions

The following definitions are derived from the Standard and guidance materials and relate specifically to drinking water systems and DWQMS processes:

Term	Definition
Audit	A systematic and documented verification process that involves objectively obtaining and evaluating documents and processes to determine whether a Quality Management System conforms to the requirements of this Standard.
Competence	The combination of observable and measurable knowledge, skills and abilities which are required for a person to carry out assigned responsibilities.
Consumer	The drinking water end user.
Corrective Action	Action taken to eliminate the cause of a detected nonconformity of the Quality Management System with the requirements of the Drinking Water Quality Management System or other undesirable situation.
Critical Control Limit (CCL)	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 by the Operating Authority to prevent or eliminate a Drinking Water Health Hazard or to reduce it to an acceptable level.
Document	Includes, but not limited to a policy, procedure, work instruction, form, sound recording, video tape, film, photograph, chart, graph, map, plan, survey, book of account, and information recorded or stored by means of any device.
Drinking Water	This means (a) water intended for human consumption, or (b) water that is required by an Act, regulation, order, municipal by-law or other document issued under the authority of an Act, (i) to be potable, or (ii) to meet or exceed the requirements of the prescribed drinking water quality standards.

Term	Definition
Drinking Water Health Hazard	This means, in respect of a drinking water system, (a) a condition of the system or a condition associated with the system's waters, including any thing found in the waters, (i) that adversely affects, or is likely to adversely affect, the health of the users of the system, (ii) that deters or hinders, or is likely to deter or hinder, the prevention or suppression of disease, or (iii) that endangers or is likely to endanger public health, (b) a prescribed condition of the drinking water system, or (c) a prescribed condition associated with the system's waters or the presence of a prescribed thing in the waters.
Drinking Water System (DWS)	means a system of works, excluding plumbing, that is established for the purpose of providing users of the system with drinking water and includes, (a) any thing used for the collection, production, treatment, storage, supply or distribution of water, (b) any thing related to the management of residue from the treatment process or the management of the discharge of a substance into the natural environment from the treatment system, and (c) a well or intake that serves as the source or entry point of raw water supply for the system.
Emergency	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.
Emergency Response	The effort to mitigate the impact of an emergency on consumers.
Examination Summary Report	A report summarizing sampling, testing and monitoring information that is created for the purpose of demonstrating compliance with legislated requirements for a given time period.
HAACP	Hazard Analysis and Critical Control Points is a management system approach to product safety used in the food industry.
Harm	The cause of ill-health, injury, or physical damage.
Hazard	A source of danger or a characteristic that may cause drinking water to be unsafe for human consumption. The hazard may be biological, chemical, physical or radiological in nature.
Hazardous Event	An incident or situation that can lead to the presence of a hazard.
Infrastructure	The set of interconnected structural elements that provide the framework for supporting the operation of the drinking water system, including buildings, workspace, process equipment, hardware and software, and supporting services, such as transportation or communication.
Monitoring	Includes any checks or systems that are available to detect hazards or the potential for hazards.
Non-Conformity	The non-fulfillment of a DWQMS requirement.
Operating Authority	The person or entity given responsibility by the Owner for the operation, management, maintenance or alteration of the subject system.

Term	Definition
Operational Plan	A component of the documented DWQMS that is required under the Safe Drinking Water Act and the Municipal Drinking Water Licensing Program in Ontario.
Operational subsystem	Means a part of a municipal residential drinking water system operated by a single operating authority and designated by the Owner as being an operational subsystem.
Owner	Includes every person who is a legal or beneficial owner of all or part of the drinking water system, not including the Ontario Clean Water Agency or any of its predecessors where the Agency or predecessor is registered on title as the Owner of the system.
Preventive Action	Action to prevent the occurrence of nonconformity of the Quality Management System with the requirements of the Drinking Water Quality Management System or other undesirable situation.
Public	Subject system consumers and stakeholders.
Quality Management System also known as DWQMS	A quality management system to: a) Establish policy and objectives, and to achieve those objectives, and b) Direct and control an organization with regard to quality.
Record	A document stating results achieved or providing proof of activities performed. Once created, a record cannot be changed.
Rehabilitation	The process of repairing or refurbishing an infrastructure element.
Renewal	The process of replacing the infrastructure element with new elements.
Risk	The probability of identified hazards causing harm including the magnitude of that harm or its consequences.
Risk Assessment	An orderly methodology of identifying hazards or hazardous events that may affect the safety of drinking water and evaluating their significance.
Subject System	A municipal residential drinking water system where the system is operated by one Operating Authority.
Supplier	An organization or person that provides a product or service that affects drinking water quality.
Top Management	A person or group of people at the highest level of management within an Operating Authority that make(s) decisions about the QMS and makes recommendations to the Owner about the Subject Systems.

Other Definitions

Acronym	Definition
CAR	Corrective Action Request
CMMS	Computerized Maintenance Management System
MECP	Ministry of the Environment, Conservation and Parks



Acronym	Definition
DWQMS	Drinking Water Quality Management System
HREPP	The Halton Region Emergency Program & Plan
OIC	Operator-in-Charge
PM	Preventive Maintenance
SDWA	Safe Drinking Water Act
QApp	A software application including QDoc, QCAR and QLegal. This system includes the DWQMS, documents and processes. • QDoc is designed to ensure that documents are controlled, reviewed, approved, retained, readily available and easily retrievable. • QCAR is designed to ensure non-conformances, non-compliances and associated corrective and preventive actions are investigated, documented, tracked to completion and monitored for effectiveness in order to support continual improvement. • QLegal is designed to ensure PW legal instruments (licenses, permits, approvals etc.) and related conditions and activities are centrally stored, readily available, easily retrievable, managed, tracked and reported on in accordance with legislated requirements.
SAP	Systems Applications and Products software
SCADA	Supervisory Control and Data Acquisition
WTP	Water Treatment Plant

2 QUALITY MANAGEMENT SYSTEM POLICY

Halton Region maintains and operates municipal drinking water systems that services residents and businesses of Burlington, Halton Hills, Milton and Oakville. The Region is committed to:

- Providing customers with safe drinking water
- Complying with applicable legislation and regulations
- Maintaining and continually improving the Drinking Water Quality Management System

The Halton Region's [DWQMS Policy](#) is the foundation of the Drinking Water Quality Management System.

3 COMMITMENT AND ENDORSEMENT

Top Management endorses this Operational Plan and supports the DWQMS by committing to meet the requirements of the Standard, ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements, following the procedure for communications, and determining, obtaining or providing the resources needed to maintain and continually improve the DWQMS.

To formally document this endorsement, Top Management provides written approval through the [Signatures of Commitment and Endorsement \(DW-PO-1229\)](#). This document serves as the official record confirming that Top Management has reviewed the Operational Plan, agrees with its contents, and authorizes its implementation.

The Owner endorses the contents of the Operational Plan to satisfy the requirements of the Standard and fulfill the duties of owners under the [SDWA](#). The Owner endorses the Operational Plan through Council resolution, as documented in the Council meeting minutes.

Re-endorsement of the Operational Plan is required when major revisions occur. Major revisions include a



change of Council, a change of system ownership, a change to the Owner's Role, and an addition or removal of a municipal drinking water subsystem to this Operational Plan. Any other changes are considered minor and do not require a re-endorsement of the Operational Plan. Changes will be documented within the version history section of the QUEST Management System Software.

4 QUALITY MANAGEMENT SYSTEM REPRESENTATIVE

Top Management has appointed a Drinking Water Quality Management System Representative and this individual is identified in the [DWQMS Representative Appointment Letter \(DW-LI-1981\)](#).

The responsibilities of the Drinking Water Quality Management System Representative are documented in [Organizational Structure Roles Responsibilities and Authorities \(DW-PR-1215\)](#).

5 DOCUMENT & RECORDS CONTROL

A document and records control process is required to ensure documents are kept up to date with changes in the operation of the drinking water systems and with changes in applicable legislation and regulations. Documents and records must be legible, easily retrievable and readily identifiable. Documents and records must also be stored so that they are protected from damage or loss, retained for an appropriate period of time (in some cases the retention period is legislated) and disposed of properly after the retention period.

5.1 Control of Documents

Halton Region has established procedures for the creation, modification, review, approval, distribution, retrieval and protection of drinking water system documentation. [Document and Records Control \(DW-PR-1209\)](#) describes measures developed to control documentation (both internal and external) relating to Halton Region's drinking water systems. Documentation created by or managed by Halton Region's Laboratory is maintained according to the Laboratory Quality Manual Policies and Procedures and falls outside of the scope of this procedure.

DWQMS documents are each identified with a unique document number. Internal documentation is formatted using a standard header and footer, wherever possible. The standard formatting measures help to ensure that documentation is readily identifiable.

Documents may be stored and accessed electronically through QApp in QDoc and may be made available in hardcopy at select controlled locations where required. When a document is revised, the old version of the document is removed from circulation and replaced with the newly revised and approved version. The DWQMS Representative is responsible for overseeing the document control program for the Operating Authority.

5.2 Control of Records

[Document and Records Control \(DW-PR-1209\)](#) describes measures developed to control drinking water system-related records under the control of Halton Region's Operating Authority. Records created by or managed by Halton Region's Laboratory are maintained according to the laboratory's Quality Manual policies and procedures and fall outside of the scope of this procedure.

Drinking water system-related records are maintained to demonstrate conformance with the Standard, to demonstrate compliance with specified legislative and regulatory requirements and to provide a historical view of drinking water system operation & performance.

The DWQMS Representative is responsible for the management of the Operating Authority's record control program. Records are kept legible and are filed and stored such that they are readily identifiable, protected from tampering, and remain accessible and up to date. [Record Retention Matrix \(DW-LI-1192\)](#) lists the drinking water system records that are managed under this procedure. For each record listed within the Matrix, the name of the record, the owner of the record, the form of storage of the record, the minimum retention time and the method of destruction of the record are provided. Retention times specified in the Matrix are designated in consultation with relevant legislation, regulations or other requirements, where applicable.

6 DRINKING WATER SYSTEMS

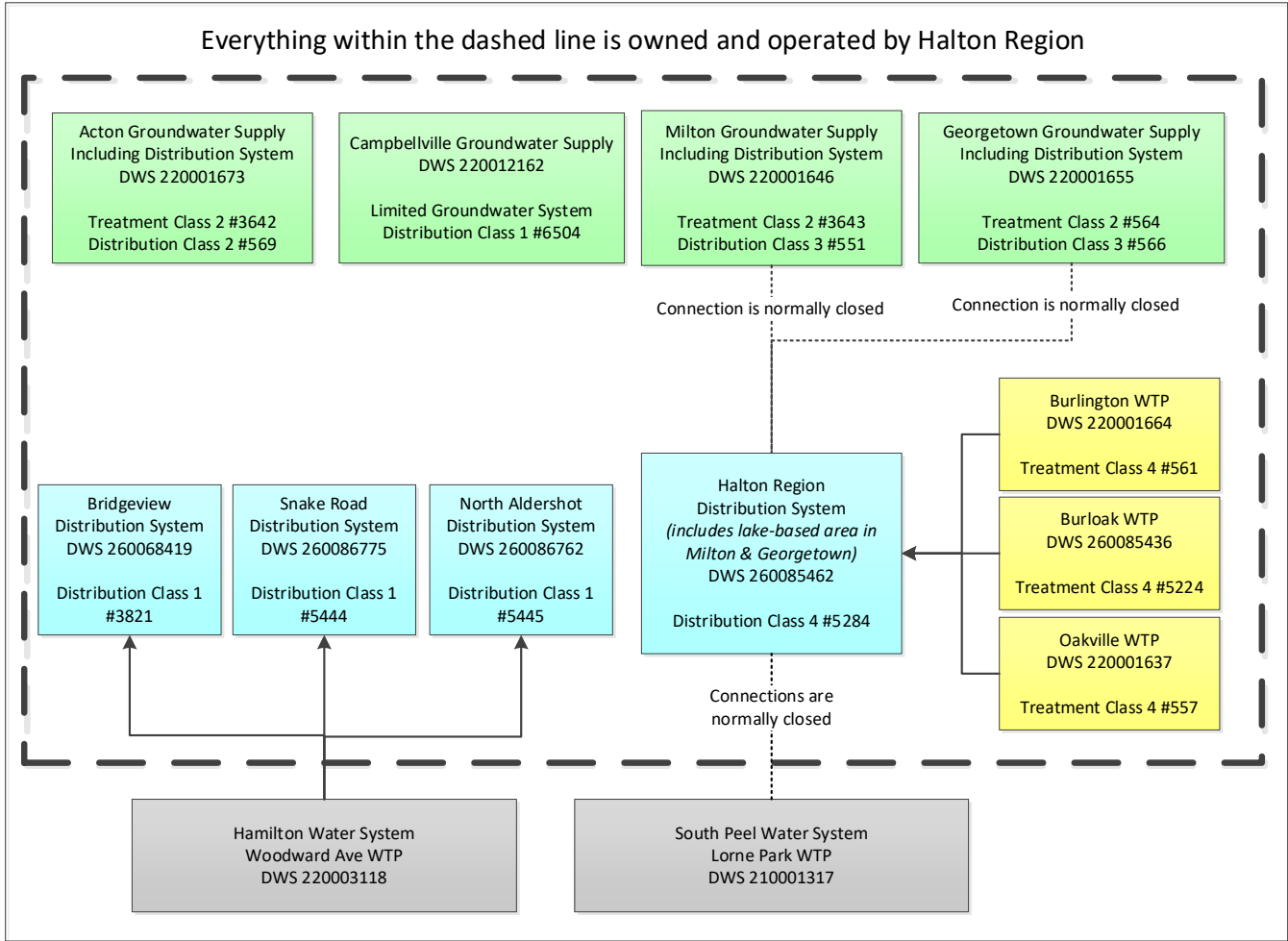
The purpose of this element is to provide a description of each drinking water system and its source water.



6.1 Overall Description of Drinking Water Systems

Halton Region owns and operates eleven (11) drinking water systems that treat and/or distribute drinking water to urban areas of the City of Burlington, Town of Oakville, Town of Milton including part of the village of Campbellville, and Town of Halton Hills (communities of Georgetown and Acton). Halton Region operates all components of its drinking water treatment and distribution systems including wells, outlying reservoirs and elevated tanks and pumping stations. [Schedule C “Directors Directions for Operational Plans”](#) includes system name, system number and contact information. The drinking water systems are depicted in Figure 6-1.

Figure 6-1 Halton Region’s Drinking Water Systems^{1 2}



Under the MECP licensing program, the drinking water systems are grouped according to connections between systems. Halton Region has three Municipal Drinking Water Licenses. Table 6-1 lists the licences and the individual systems:

¹ The Hamilton Water System is owned by the Mayor and Council of the City of Hamilton. The City of Hamilton’s Operating Authority has been defined as the City of Hamilton, Hamilton Water Division.

² The South Peel Water System is owned by the Regional Municipality of Peel. The Regional Municipality of Peel’s Operating Authority has been defined as the Regional Municipality of Peel.

Table 6-1: Summary of Halton Region's Drinking Water Systems

Licence	System Components	MECP Drinking Water System Number	System Classification	Inter-system Connections
Halton Region	Burlington WTP	DWS 220001664	Treatment Class 4	Supply treated water to the Halton Region Distribution System (DWS 260085462)
	Oakville WTP	DWS 220001637	Treatment Class 4	
	Burloak WTP	DWS 260085436	Treatment Class 4	
	Halton Region Distribution	DWS 260085462	Distribution Class 4	Normally closed connections with Peel Region (Lorne Park WTP DWS 210001317). Normally closed connections with Milton Ground water (DWS 220001646) and Georgetown Groundwater (DWS 220001655).
	Milton Groundwater Treatment & Distribution	DWS 220001646	Treatment Class 2 Distribution Class 3	Normally closed connection with Halton Region Distribution System (DWS 260085462)
	Georgetown Groundwater Treatment & Distribution	DWS 220001655	Treatment Class 2 Distribution Class 3	Normally closed connection with Halton Region Distribution System (DWS 260085462)
	Bridgeview Distribution	DWS 260068419	Distribution Class 1	Treated water supplied from City of Hamilton (Woodward Ave. WTP, DWS 220003118)
	North Aldershot Distribution	DWS 260086762	Distribution Class 1	
	Snake Road Distribution	DWS 260086775	Distribution Class 1	
Acton	Acton Treatment & Distribution	DWS 220001673	Treatment Class 2 Distribution Class 2	N/A
Campbellville	Campbellville Treatment & Distribution	DWS 220012162	Limited Groundwater Subsystem Distribution Class 1	N/A

Additional details regarding the Halton Region's drinking water systems are available in the following procedures:

- [Drinking Water Systems – Halton Region \(DW-PR-1211\)](#)
- [Drinking Water Systems - Acton \(DW-PR-1213\)](#)
- [Drinking Water Systems - Campbellville \(DW-PR-1212\)](#)

6.2 Source Water – Surface Water Systems

Raw water for the Burlington, Burloak and Oakville WTPs is obtained from Lake Ontario (surface water source). Treated water from these WTPs feeds the Halton Region Distribution System. The raw water from Lake Ontario

is monitored on a regular basis; chemical and bacteriological analysis of the raw water indicates a source of relatively good quality.

The Bridgeview, North Aldershot and Snake Road distribution systems are supplied treated water from the City of Hamilton's Woodward Avenue WTP (see Section 6.1). Lake Ontario serves as the raw water source for the Woodward Avenue WTP (surface water). Woodward Avenue WTP processes fall outside Halton Region's DWQMS scope and are documented in the City of Hamilton's DWQMS procedures.

Halton Region's surface water sources are being actively studied through the Source Water Protection Program under the [Clean Water Act, 2006](#). Relevant Source Protection Plans identify potential threats and provide for the protection of the drinking water sources.

6.3 Source Water – Groundwater Systems

The Milton, Georgetown, Acton and Campbellville systems draw from groundwater and include distribution systems. Each of these systems is self-contained.

Source groundwater is taken from both overburden and bedrock aquifers at eight (8) well fields located across the Milton, Acton and Georgetown areas. The well fields are identified as follows:

- Town of Milton: Kelso
- Town of Milton (Campbellville): Campbellville
- Town of Halton Hills (Acton): Prospect Park, Fourth Line and Davidson
- Town of Halton Hills (Georgetown): Lindsay Court, Princess Anne and Cedarvale

All production wells in Acton and the Cedarvale well field in Georgetown are classified as groundwater under the direct influence of surface water (GUDI) sources with effective in-situ filtration. The remaining production wells in Georgetown and those in Campbellville and Milton are considered "true" groundwater wells that are not under the direct influence of surface water.

Halton Region's groundwater sources are continually studied through the Source Water Protection Program under the [Clean Water Act, 2006](#). The relevant Source Protection Plans identify potential threats and provide for the protection of the drinking water sources. A network of sentry wells allows the groundwater quality upstream of the drinking water production wells to be monitored so that any threats can be identified before the raw water is impacted.

6.4 Treatment

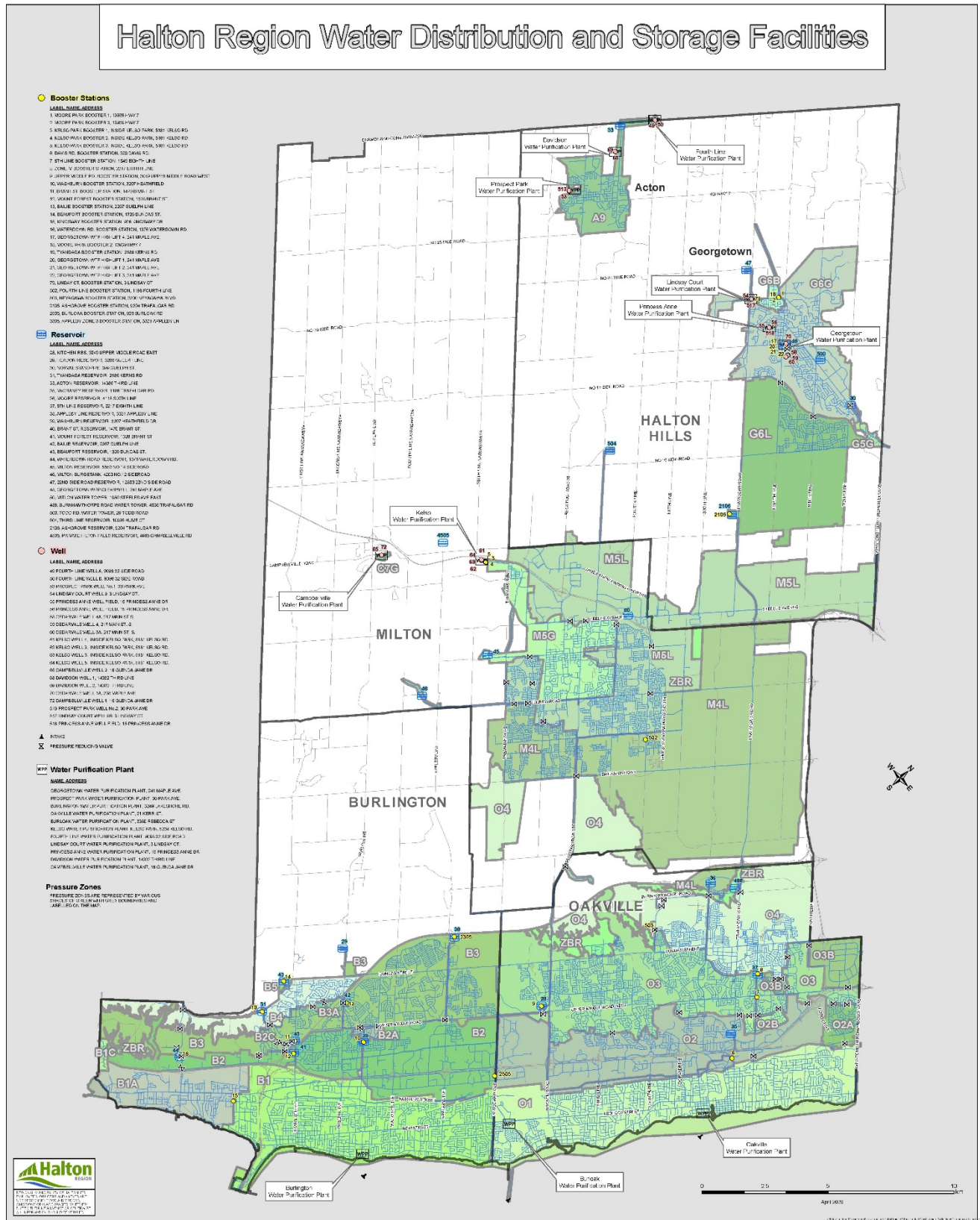
In operating each of Halton Region's seven (7) water treatment systems, treatment is provided to meet or surpass the drinking water quality requirements of [O. Reg. 170/03](#) under the [Safe Drinking Water Act, 2002](#). Treatment for aesthetic parameters is also provided.

Water treatment systems are controlled through a computerized Supervisory Control and Data Acquisition (SCADA) system that is monitored 24 hours a day, 7 days a week.

6.5 Distribution

Halton Region's treated water is distributed to customers via water mains, reservoirs, elevated tanks, booster pumping stations and other types of infrastructure. Re-chlorination is provided, as needed, to ensure that secondary disinfection is maintained throughout each of the distribution systems. Water Treatment staff are responsible for the operation of the treatment facilities. Reservoirs, elevated tanks, booster pumping stations and the linear infrastructure (water mains, valves, etc.) are the responsibility of Water Distribution staff. Figure 6-2 is an overview of the municipal water mains in Halton Region.

Figure 6-2 Halton Region's Water Distribution Systems



7 RISK ASSESSMENT

A Risk Assessment is a means of systematically identifying potential hazardous events and associated hazards in the drinking water system and the control measures which are in place to address those hazards. Hazardous events and hazards can result from natural or technological causes or from human activities. Risk is the probability of identified hazards³ causing harm, including the magnitude of that harm or the consequences.

In the Risk Assessment process, the most critical process steps in terms of drinking water safety are identified. If control is possible at these steps, they are Critical Control Points (CCP). Control limits for the CCPs are set, as well as monitoring and response procedures to follow when a control limit is reached.

In summary, [Risk Assessment \(DW-PR-1214\)](#) consists of:

- Hazard identification;
- Risk assessment, based on severity, likelihood and detectability;
- Critical control point identification;
- Critical limit determination; and
- Establishment of procedures for deviations from critical control limits.

Members of Halton Region's Risk Assessment Team are outlined in the [Risk Assessment \(DW-PR-1214\)](#). Before a risk assessment is initiated, the Risk Assessment Team reviews the description of the subject system (see Section 6) in order to ensure that any specific or unique requirements are taken into account in completing the risk assessment.

The Risk Assessment Team examines the subject system for potential hazards that could compromise the performance of the system and/or the quality of the drinking water. Hazards identified by the MECP are also considered at this time. The Risk Assessment Team evaluates each identified hazard against the criteria outlined in the Risk Assessment Procedure and a Risk Rating is determined for each hazard. Hazards with Risk Ratings above a set threshold value are evaluated to determine whether a CCP can be established at the hazard location. Critical control limits and monitoring or response procedures are developed for those hazards whose risk ratings exceed the threshold value and for which applied controls will be effective in reducing or preventing the drinking water hazard. Regardless of Risk Rating, any hazards relating to disinfection processes are identified as CCPs.

The processes defined within the DWQMS Risk Assessments are verified once every calendar year and the risk ratings are assessed at least once every thirty-six months for each subject system. Equipment reliability and redundancy is also considered at this time. In the event that a new risk has been identified, [Risk Analysis \(DW-LI-1249\)](#) is reviewed and updated to include the newly identified risk as required.

8 RISK ASSESSMENT OUTCOMES

Potential hazards for each drinking water system have been identified, rated and assessed according to Section 7 of this Operational Plan. [Risk Analysis \(DW-LI-1249\)](#) includes:

- Identified potential hazardous events and associated hazard;
- Assessed risks associated with the occurrence of hazardous events;
- Ranked hazardous events;
- Identified control measures to address the potential hazards/ hazardous events;
- Identified critical control points and their respective critical control limits; and
- Procedures and/or processes to monitor the critical control limits and to respond to, report and record deviations from the critical control limits.

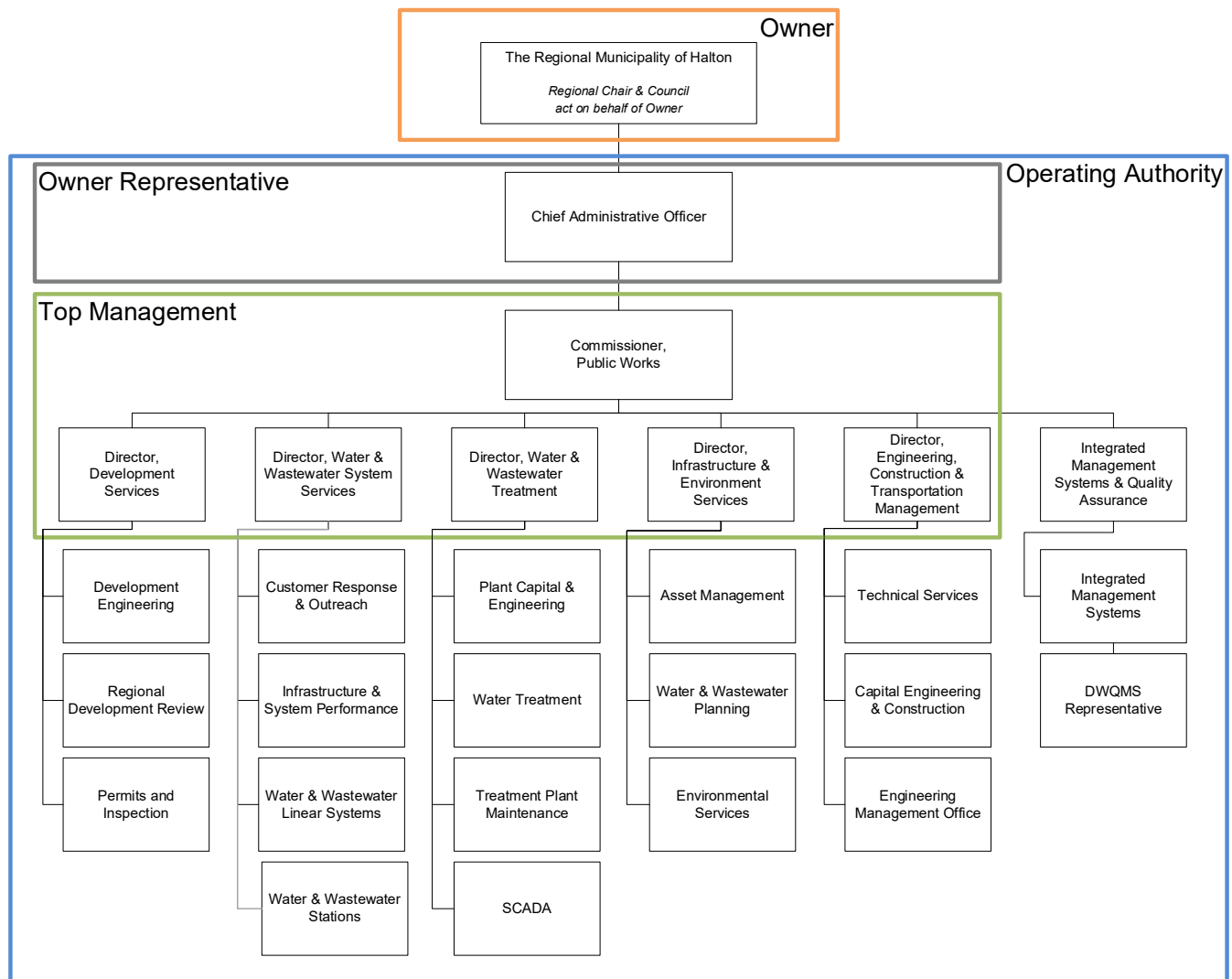
³ For the purposes of this Section, "hazard" is understood to mean "hazard and/or hazardous event".

9 ORGANIZATIONAL STRUCTURE, ROLES, RESPONSIBILITIES & AUTHORITIES

The DWQMS Organizational Structure is defined in Figure 9-1. Respective roles, responsibilities and authorities have been further defined and described in [Organizational Structure Roles Responsibilities and Authorities \(DW-PR-1215\)](#) include, but are not limited to, the:

- Owner;
- Owner Representative;
- Top Management;
- Operating Authority; and
- Drinking Water Quality Management System Representative.

Figure 9-1 DWQMS Organizational Structure



10 COMPETENCIES

Element 10 of the Standard requires that Owners/Operating Authorities document the knowledge, skills and abilities that personnel whose duties affect drinking water quality must have, and the activities necessary to ensure that competency requirements are met.

Halton Region has established, defined and documented competencies required for personnel performing duties directly affecting drinking water quality. [Competencies \(DW-PR-1216\)](#) describes minimum competency requirements for training and development for selected roles within the Operating Authority and outlines activities undertaken to develop and/or maintain competencies for these roles.

New employees undergo comprehensive on-the-job training to ensure that they achieve competency in all required work areas. This includes an Onboarding Program which communicates corporate policies and relevant legislation to all new employees. The Operating Authority encourages staff to maintain and upgrade required competencies by communicating training opportunities and offering training identified by Team Supervisors or Superintendents. Training opportunities include Director-Approved training, On-the-Job training, and Facility-or-Position-Specific training. Records of all types of training are maintained by Halton Region and are retained as per [Competencies \(DW-PR-1216\)](#).

11 PERSONNEL COVERAGE

[Personnel Coverage \(DW-PR-1217\)](#) describes the method that ensures how sufficient personnel who meet the identified competencies are available for duties that directly affect drinking water quality.

Halton Region employs licensed operators, all of whom are required to hold operator certification for water treatment and/or water distribution. Halton Region's personnel coverage measures are documented in [Personnel Coverage \(DW-PR-1217\)](#).

Halton Region has appointed each system's Team Supervisor/Superintendent as the Overall Responsible Operator (ORO) for that drinking water treatment facility or distribution system. Coverage during off-hours is provided by a rotating on-call system for Team Supervisors and Superintendents.

Operators-in-Charge (OICs) are on duty in each system each day. Every certified operator (Level 1 to 4) is considered to be an Operator-in-Charge while on shift.

Halton Region ensures that competent employees are available for coverage as needed through its collective agreement with the Canadian Union of Public Employees (CUPE), Local 2620. The Collective Agreement addresses shift coverage requirements, staff licensing requirements, response times to call-out emergency operations, on-call rotations and other measures taken by Halton Region and its unionized staff to ensure that personnel coverage is maintained.

Halton Region has a [Overtime & Standby Procedure](#) to ensure that qualified personnel are called for overtime in accordance with the Collective Agreement and is kept up-to-date by administrative staff. Access Halton serves as the point of contact for on-call standby coverage and will direct calls to the appropriate individual..

Halton Region's Burlington, Burloak and Oakville WTPs are staffed by certified operators 24 hours per day, 7 days per week with alternating 12-hour shifts. North Halton's water treatment operations (Milton, Georgetown, Acton and Campbellville) are staffed by certified operators from 7:00am to 3:30pm, Monday to Friday. A standby operator is assigned to cover operational duties outside of regular business hours. Regional treatment plants are equipped with SCADA systems to monitor treatment processes. SCADA systems can be accessed remotely by staff and critical alarms will contact a designated member of staff in the event of an emergency.

Distribution staff includes certified distribution operators that are available on an on-call basis during off-hours.

Maintenance of the water systems (treatment and distribution systems) is provided a full complement of trade disciplines (i.e., millwrights, electricians, instrument technicians). These personnel provide support to all facilities/systems during regular hours and on an on-call basis during off-hours.

Halton Region has developed and maintains a contingency plan that documents measures to be taken by the Operating Authority in the event of a labour disruption affecting drinking water system operation. This is a confidential document.

12 COMMUNICATIONS

[Communications \(DW-PR-1218\)](#) describes the process of how relevant aspects of the QMS are communicated between Top Management, the Owner, Operating Authority personnel, external service providers and suppliers, and the public.

Halton Region communicates its DWQMS Policy in several ways, including but not limited to:

- Reports and/or Memos to Council;
- Posting on the Halton Region website/intranet;
- Posting within Halton Region facilities; and
- DWQMS Awareness Training.

The Operating Authority communicates with the Owner via Regional Council meetings and the preparation of associated reports. In turn, Council communicates with the Operating Authority through the approval of Reports to Council. Council can also communicate through inquiries to Top Management.

Top Management of the Operating Authority communicates with staff on a regular basis. The task of communicating DWQMS-related information may be delegated to other members of management or the DWQMS representative. Methods of communication include memos, emails, tailgate meetings, internal staff newsletters, etc. In turn, Operating Authority staff is encouraged to voice any questions or concerns to Top Management within these forums.

The Operating Authority communicates with external service providers and suppliers. This may be accomplished through provision of tender documents, mail-outs to vendors, purchase order specifications or through other means. [Essential Supplies and Services \(DW-Water-PR-DWQMS-1219\)](#) provides the details of this program.

Public Works communicates to the Emergency Management Office primarily through email whenever there is a notification to Access Halton, media attention, health impacts, or disruption to Regionally provided services.

The Operating Authority communicates relevant aspects of the DWQMS to the public through Council Reports and the Halton Region website. Members of the public can contact Access Halton to request information or provide comments, feedback or complaints. Customer complaints and inquiries are handled as per [822 Water Quality Monitoring Investigation Work Instruction \(DW-WI-342\)](#). Halton Region also publicizes its [Drinking Water System Annual Water Quality Reports](#) and its [Annual Flow Report](#) following [O. Reg. 170/03](#) requirements on the Halton Region website.

13 ESSENTIAL SUPPLIES AND SERVICES

Supplies and services, both goods and people, coming from outside of the drinking water system can introduce risks. Supplies and services essential to the production and delivery of safe drinking water must be identified and means to procure them at all times documented. Methods to ensure quality must also be documented. Documenting the quality expectations and continuing to assess whether the products meet the requirements, helps to minimize the risk to the drinking water system.

Halton Region subscribes to strict purchasing policies, procedures, and bylaws. These must be followed by all parts of the organization including those related to the delivery of safe drinking water. [Essential Supplies and Services \(DW-PR-1219\)](#) describes the methods used by Halton Region in identifying supplies and services that are essential for the delivery of safe drinking water and provides details of the methods in place for ensuring their procurement and quality requirements.

Essential supplies and services are identified in the Essential Supplies and Services Lists. These lists are compiled and maintained. Essential supplies and services can include, but are not limited to, the following:

- Treatment chemicals;
- Proprietary process equipment; and
- Fuel.

[Essential Supplies and Services \(DW-PR-1219\)](#) provides details of relevant procurement processes. All quality, delivery and procurement expectations are communicated to vendors and service providers on tender documents, purchasing agreements, purchase orders or blanket orders. For equipment and calibration items,

the appropriate personnel determine quality requirements for the good or service. Vendor evaluations are completed periodically to ensure that goods and services comply with quality requirements.

14 REVIEW AND PROVISION OF INFRASTRUCTURE

Halton Region reviews infrastructure requirements annually utilizing the Halton Region Asset Management Framework. This process ensures that the infrastructure needed to operate and maintain the subject systems is in place. [Review and Provision of Infrastructure \(DW-PR-1220\)](#) provides details of this practice.

The Infrastructure Review evaluates current drinking water system infrastructure and helps in the formulation of recommendations and action plans for renewal projects, rehabilitation efforts or installation of new infrastructure. Within this review process, staff examine all infrastructure required to operate the drinking water systems; this includes intake, treatment and distribution infrastructure as well as supporting infrastructure such as buildings, workspaces and associated equipment. The outputs of the DWQMS Risk Assessment documented under Element 8 are also considered at this time.

Operating Authority staff complete an assessment of infrastructure to develop a summary of recommendations for renewal, rehabilitation and/or provision projects. Applicable staff from Water and Wastewater Treatment, Water and Wastewater System Services and Infrastructure and Environmental Services within Public Works may participate to communicate infrastructure needs.

Critical inputs to the Infrastructure Review include (but are not limited to) water quality data, operations and maintenance data (i.e., fire flow testing, water main break data), facility assessment studies, Master Servicing Plan updates, hydraulic modelling data, etc. Previous results of Infrastructure Reviews are also considered.

The cross-departmental team reviews these inputs and generates a list of infrastructure needs. Needs are prioritized according to Regional growth projections, regulatory requirements and alignment of initiatives with other departmental areas (i.e., sewer improvement initiatives) or lower-tier municipal initiatives (i.e., roads projects) including application of asset management principals.

Results of the Infrastructure Review are discussed with Top Management, Finance Department (Financial Planning and Budgets) representatives and relevant Operating Authority managers and are used to update the Halton Region's Infrastructure requirements and, in turn, the on-going 10-Year Capital Budget. Infrastructure Review results are communicated to Council via the Asset Management Reports and the Annual Budget and Business Plan.

15 INFRASTRUCTURE MAINTENANCE, REHABILITATION AND RENEWAL

A summary of the methods in place to maintain, rehabilitate and renew infrastructure are documented in the DWQMS. Maintenance includes both preventive and reactive maintenance activities and the program is monitored for effectiveness. [Infrastructure Maintenance, Rehabilitation and Renewal \(DW-PR-1221\)](#) outlines the preventative and reactive maintenance activities.

15.1 Maintenance – Treatment Facilities

Preventive Maintenance (PM) at treatment facilities, including activities relating to process equipment, emergency generators and building maintenance, is completed by staff within the Treatment Plant Maintenance section of the Water and Wastewater Treatment division. Maintenance Planners develop a PM Plan on an annual basis that consists of electrical, mechanical, instrumentation, SCADA and other types of PM activities. Maintenance tasks are generated on a per-asset basis and are stored and managed in SAP. The Operations and Maintenance Superintendent /Sub Forepersons are responsible for the assignment of these maintenance tasks and may distribute these to internal staff or acquire contractor assistance for specialized tasks. Any records of maintenance activities completed by an operator are provided to maintenance staff for updating in SAP.

Reactive maintenance activities may arise as a result of unplanned equipment stops or process equipment inspections by operations staff. When deficiencies are noted, the Team Supervisor, Water Treatment (or designate) is informed and delegates the initial diagnoses to an operator if minor in nature. If the issue cannot be addressed by treatment operations staff, a notification is issued to maintenance staff by means of the SAP system, who will incorporate the work and provide status updates.

The effectiveness of facility maintenance activities is tracked using Service Reports, Deficiency Reports and



Recommendations that are generated by maintenance personnel in the completion of maintenance tasks. Maintenance Planners use established key performance indicators to measure performance, make informed changes to PM programs, and initiate continual improvements based trends.

15.2 Maintenance – Linear Distribution Systems

Preventative Maintenance in the Linear Distribution Systems is managed by Water and Wastewater Linear Systems staff. PM activities include a valve exercising program, water main flushing, and hydrant maintenance.

When system deficiencies are identified, Operations and Maintenance Superintendent of Water and Wastewater Linear Systems (or designate) are informed, and he/she delegates follow up to a member of Water and Wastewater Linear Systems staff. If the issue cannot be addressed by Water and Wastewater Linear Systems staff, the work may be outsourced as described in [Essential Supplies and Services \(DW-PR-1219\)](#). The Computerized Maintenance Management System (CMMS) is used to assign, track and manage work orders and maintenance activities relating to distribution system maintenance. CMMS data is reviewed annually to assess the effectiveness of PM programs for the Linear Distribution Systems.

15.3 Maintenance – Outlying Stations

Preventive Maintenance at Outlying Stations, including booster pumping stations and reservoirs, is managed by Water and Wastewater Stations staff. This includes activities relating to process equipment, emergency generators and building maintenance. Maintenance Planners develop an annual PM Plan that consists of electrical, mechanical, instrumentation, SCADA and other types of PM activities. Maintenance tasks are generated on a per-asset basis and are stored and managed in SAP. Operations and Maintenance Superintendent is responsible for the assignment of these maintenance tasks and may distribute these to internal staff or may acquire contractor assistance for specialized tasks. Any record of maintenance activities completed by an operator are provided to maintenance staff for updating in SAP.

Reactive maintenance activities may arise as a result of process equipment inspections by operations staff. If the issue cannot be addressed by operations staff, the Operations and Maintenance Superintendent is informed, and a notification is issued to maintenance staff by means of the SAP system.

The effectiveness of facility maintenance activities is tracked using Service Reports, Deficiency Reports and Recommendations that are generated by maintenance personnel in the completion of maintenance tasks. The SAP system also monitors and reports equipment performance trends; changes to PM programs may be made based on these trends.

16 SAMPLING, TESTING AND MONITORING

The focus of this element is to monitor conditions within the drinking water systems, maintain control and confirm the quality of the treated drinking water.

Halton Region conducts sampling, testing and monitoring activities on its processes and drinking water at raw water source/intake points, throughout its treatment processes, and within its distribution systems. Raw, process and treated water are all sampled, tested and monitored at various intervals and locations.

[Sampling Testing & Monitoring \(DW-Water-PR-DSAMP-1314\)](#) outlines Halton Region's drinking water sampling, testing and monitoring programs for each of its drinking water systems. The drinking water systems are monitored through regulatory programs under the guidance of Halton Region's Laboratory and also through process monitoring and sampling programs at each facility to control the treatment processes.

Halton Region's Laboratory is an accredited and MECP Licensed facility with its own QMS. Under its QMS, the Lab has developed sampling, testing and monitoring procedures governing various aspects of Halton Region's sampling program. While these procedures fall outside of the scope of the DWQMS, references to the procedures may be included in the [Sampling Testing & Monitoring \(DW-PR-1314\)](#).

Sampling schedules for all regulatory parameters and locations are developed by the Halton Region's Laboratory in consultation with the WTP Team Supervisors/Superintendents and the Operations and Maintenance Superintendents to ensure the sampling points are representative of the assortment of conditions observed throughout the drinking water systems including challenging conditions. The Laboratory staff review the sampling points with the WTP Team Supervisors/Superintendents and Operations and Maintenance Superintendents as required to ensure that the sampling program continues to be representative of all drinking water system conditions.



Results of sampling, testing and monitoring programs are summarized in the [Annual Water Quality Reports](#) which are posted on Halton Region's website. As required by [O. Reg. 170/03](#), adverse water quality incidents (AWQIs) are reported to the Owner and presented in summary within the [Annual Flow Report](#).

17 MEASUREMENT & RECORDING EQUIPMENT CALIBRATION, VERIFICATION & MAINTENANCE

Closely linked to Section 16, this element documents the calibration, verification and maintenance of equipment used in sampling, testing and monitoring of treatment processes and treated water quality.

Halton Region calibrates and maintains all of its measurement and recording equipment associated with its drinking water systems. [Measurement Recording Equipment Calibration, Verification and Maintenance \(DW-PR-DWQMS-1223\)](#) outlines requirements for the calibration and verification of measurement and recording equipment used for sampling, testing and monitoring of the drinking water systems.

Measurement and recording equipment governed by this procedure may include, but is not limited to:

- Chlorine analyzers;
- pH meters;
- Turbidimeters;
- Thermometers;
- Flow meters; and
- Data recorders.

Calibration and maintenance processes are documented for each piece of measurement and recording equipment. The [Measurement Recording Equipment Calibration, Verification and Maintenance \(DW-PR-1223\)](#) provides a summary of the relevant equipment and instrumentation and outlines the responsibility for calibration, the frequency required, the methods to be used and provisions for the storage of results & records.

18 EMERGENCY MANAGEMENT

Emergency preparedness means identifying what could happen in a drinking water system to cause an emergency and having processes and procedures in place to prepare for and respond to those emergencies. The DWQMS includes emergency procedures for communication, response and recovery, emergency training and testing of procedures, documented responsibilities for Owner and Operating Authority personnel, links to municipal emergency planning measures and up-to-date contact lists.

The [Halton Emergency Program & Plan By-Law No. 36-24](#) supports Halton Region's Health, Human Resources and Emergency Evacuation Centre plans. The [Public Works Emergency Response Plan](#) is a sub-plan to the [Halton Emergency Program & Plan](#). It outlines the duties and responsibilities of Halton Region Public Works Department staff during an event that impacts either Halton Region's ability to deliver Regional services and programs or to execute response and recovery efforts during a potential, imminent or actual emergency.

[Emergency Management \(DW-PR-1224\)](#) has been developed as a guidance tool for response, management and recovery in emergencies affecting any or all of Halton Region's drinking water systems. The document includes a list of potential emergency situations or service interruptions and corresponding procedures for response and recovery in the event of one of these emergencies, including linkages with lower-tier Municipal Response Procedures where required. Emergency events or conditions in the manual may include, but are not limited to:

- Contamination of the raw water supply;
- Structural damage to a water treatment facility;
- Contamination of a water distribution system; and
- Major watermain break resulting in loss of supply for an extended period.

[Emergency Management \(DW-PR-1224\)](#) also includes a summary of relevant roles and responsibilities in emergency situations, including those of the Owner and of key Operating Authority staff. Emergency contacts can be found in the following documents, [Emergency Contact List - Water Treatment \(DW-LI-1207\)](#) and [Emergency Contact List - Distribution North and South \(DW-LI-1206\)](#) and are linked in the procedure. These contact lists are updated as required.



It is possible that an emergency situation can initiate at the Operating Authority level but expand or increase in severity thus requiring the assistance of other departments. Where the potential for this condition exists, the emergency response procedures include references to the other Emergency Response Plans. The Emergency Management Office is notified by email when there is a notification to Access Halton, media attention, health impacts, or disruption to Regionally provided services.

19 INTERNAL AUDITS

Internal audits are required by the Standard to ensure conformity of the QMS. Internal audits, as well as third-party audits, are mechanisms used to fulfill the “check” and “improve” imperatives of the quality management system. [Internal Audit \(DW-PR-1225\)](#) describes audit criteria, frequency, scope, methodology and record-keeping. It also includes consideration of previous audit results.

Internal audits are used to evaluate two types of conformances:

- conformance of documented DWQMS procedures with the requirements of the Standard; and
- conformance of implemented processes with documented DWQMS procedures and work instructions.

[Internal Audit \(DW-PR-1225\)](#) outlines requirements for the scheduling, execution and documentation of internal audits including the development of an internal audit schedule, the definition of an audit scope, and the creation of an Internal Audit Report. Internal auditors must be provided with appropriate auditor training.

A summary of internal audit results is presented to Top Management as an input to Management Review (see Section 20 of this Operational Plan). The finalized audit report will be maintained as per the [Record Retention Matrix \(DW-LI-1192\)](#).

20 MANAGEMENT REVIEW

Management Reviews are conducted to determine the suitability, adequacy and effectiveness of the DWQMS and to explore opportunities for improvement. Management Reviews are an additional mechanism used to fulfill the “check” and “improve” imperatives of the quality management system. [Management Review \(DW-PR-1226\)](#) includes a summary of required inputs to this review.

A Management Review meeting is conducted at least once every calendar year. Management Review participants include; Top Management, the DWQMS Representative and other participants as required.

The DWQMS Representative is responsible for scheduling and facilitating this review and for ensuring all required input data is compiled and prepared for presentation at the meeting. At the meeting, Top Management reviews the information provided and identifies any deficiencies requiring further action. Minutes are kept of these meetings and the deficiencies and action items are documented as per [Management Review \(DW-PR-1226\)](#).

On completion of the Management Review meeting, the DWQMS Representatives compiles and summarizes the results and findings in meeting notes and prepares an annual Report to Council. The annual report

includes a summary of the identified deficiencies, decisions and action items to address the deficiencies. The results and findings are also shared with affected members of the Operating Authority.

21 CONTINUAL IMPROVEMENT

[Continual Improvement \(DW-PR-1227\)](#) outlines a process for the identification, documentation and resolution of non-conformities related to the DWQMS. This procedure addresses the ‘improve’ requirement of the Standard.

Best Management Practices including any published by the Ministry of the Environment, Conservation and Parks are reviewed and considered for implementation at least once every thirty-six months. The review is completed by the DWQMS Representative and is documented on the [DWQMS BMP Review Tracking Sheet \(DW-RD-2093\)](#). Halton Region has developed a corrective action process to address non-conformities that occur in the operation of its drinking water systems. Non-conformities can be identified by any staff member as a part of daily operations, through internal audits, or through management reviews. When a non-conformity is identified, it is documented through QApp in QCAR and analyzed to identify its root cause. Corrective action

measures are developed and implemented, and verification activities are completed to ensure that the root cause has been effectively eliminated or controlled. The Corrective and Preventative Action Process is identified within [Corrective and Preventative Action \(DW-WI-1182\)](#). Corrective actions issued to Halton Suppliers are documented as per [Essential Supplies and Services \(DW- PR-1219\)](#).

