




COMMUNICATION UPDATE

TO:	Mayor and Members City Council
DATE:	March 28, 2024
SUBJECT:	Annual Drinking Water Report (City Wide) HW2402
WARD(S) AFFECTED:	City Wide
SUBMITTED BY:	Nick Winters Director, Hamilton Water Public Works Department
SIGNATURE:	

Under the Safe Drinking Water Act, there are several annual reporting requirements related to the operation and management of the City of Hamilton’s (City) five Drinking Water Systems (as identified below).

Drinking Water System
Hamilton (Woodward and Fifty Road Subsystems)
Freelton
Greensville
Carlisle
Lynden

This Communication Update provides a summary of annual reporting requirements and highlights key information for the:

- *Safe Drinking Water Act, Ontario Regulation 170/03, Section 11, Drinking Water Reports,*
- *Safe Drinking Water Act, Ontario Regulation 170/03, Schedule 22, Summary Report for Municipalities, and*
- *Drinking Water Quality Management System - Summary Report.*

More detailed information is provided in Appendices “A” and “B” to Communication Update HW2402.

2023 Annual Drinking Water Quality Report is in Appendix “A” to Communication Update HW2402.

SUBJECT: Annual Drinking Water Report HW2402 (City Wide) - Page 2 of 7

As per the *Safe Drinking Water Act, Ontario Regulation, 170/03, Section 11*, the Owner of a Drinking Water System shall ensure that an annual report is prepared and made available to the public no later than February 28th of each year. The 2023 report has been prepared in accordance with the requirements as defined in Section 11, for each of the City's Drinking Water Systems and form part of Appendix "A" that is hyperlinked to Communication Update HW2402. The report is available on the City's website and upon request, free of charge.

2023 Annual Summary Report for Municipalities is in Appendix "A" to Communication Update HW2402:

As per the *Safe Drinking Water Act, Ontario Regulation, 170/03, Schedule 22*, Council must receive an annual drinking water summary report by March 31st of each year. This 2023 summary report has been prepared in accordance with the requirements as defined in Schedule 22, for each of the City's five Drinking Water Systems.

Highlights:

- There were no Provincial Officer's Orders issued in relation to any of the City's Drinking Water Systems.
- All Adverse Test Results and Reportable Incidents were reported to the Ontario Ministry of Environment, Conservation and Parks Spills Action Centre and Public Health Services and are summarized in Appendix "A" to Communication Update HW2402.
- All water taking quantities and flow rates were within approved rated capacities and water taking limits with the exception of the Freelon Drinking Water System in October 2023.
- Data related to the water quantities, flow rates and monthly average and maximum daily flows (in comparison to approved flow rates) for the five Drinking Water Systems is also provided in Appendix "A" to Communication Update HW2402.

The Ministry of Environment, Conservation and Parks Inspection Cycle spans two calendar years from April 1 to March 31. Ratings are given upon completion of the Inspection and the issuance of the Inspection Report. Ratings for the two Inspection Cycles that occurred in 2023 are as follows:

Table 1: 2022 - 2023 Inspection Cycle Ratings (Status as of December 31, 2023)

Drinking Water System	Inspection Status	Report Status	Inspection Rating (2022 - 2023)
Hamilton - Woodward	Complete	Complete	95.40%
Hamilton - Fifty Road	Complete	Complete	100%
Freelton	Complete	Complete	100%
Greenville	Complete	Complete	99.23%
Carlisle	Complete	Complete	100%
Lynden	Complete	Complete	100%

Table 2: 2023 - 2024 Inspection Cycle Ratings (Status as of December 31, 2023)

Drinking Water System	Inspection Status	Report Status	Inspection Rating (2023 - 2024)
Hamilton - Woodward	Commenced	Pending	Pending
Hamilton - Fifty Road	Complete	Complete	98.15%
Freelton	Commenced	Pending	Pending
Greenville	Pending	Pending	Pending
Carlisle	Complete	Complete	95.64%
Lynden	Pending	Pending	Pending

2023 Drinking Water Quality Management System Summary Report attached as Appendix “B” to Communication Update HW2402:

The submission of the Drinking Water Quality Management System Summary Report satisfies the requirements of the Provincial Drinking Water Quality Management System Standard V2.0.

The purpose of the Drinking Water Quality Management System Summary Report is to inform the Owner (Mayor and Council) of the performance and major milestones achieved in the City’s Drinking Water Quality Management System. Specifically, the

Operating Authority (Hamilton Water Division) is required to inform Top Management (General Manager of Public Works and Director of Hamilton Water Division) and the Owner of the outcomes of the Drinking Water Quality Management System audits, infrastructure and management reviews. The Drinking Water Quality Management System Summary Report exceeds these requirements and includes additional information relating to other milestones of the Drinking Water Quality Management System.

Risk Assessment and Review and Provision of Infrastructure

On an annual basis, Hamilton Water undertakes formal risk assessment and infrastructure review processes. While these processes satisfy the requirements of the Drinking Water Quality Management System Standard, more importantly they ensure that any potential hazards are identified, required control measures are in place and that risks to our drinking water system are considered as part of an overall determination of infrastructure adequacy.

The 2023 Risk Assessment and Review and Provision of Infrastructure processes concluded that our vertical and horizontal infrastructure is generally found to be adequate and available when needed. It was concluded that there is an increased demand on maintenance staff and resources as assets remain in operation beyond their intended life cycle.

Drinking Water Quality Management System Audits

The Drinking Water Quality Management System accreditation process requires both third Party (external) Accreditation Audits and annual internal audits by the Operating Authority. The cycle of external audits includes an on-site verification audit every three years and an off-site documentation review annually. In 2021, QMI-SAI Global provided re-accreditation of the City's Drinking Water Quality Management System. In 2023, QMI-SAI Global conducted an off-site documentation review. There were no non-conformances and two opportunities for improvement (in process).

The Operating Authority must conduct internal audits to evaluate the conformity of the Drinking Water Quality Management System with the requirements of the Drinking Water Quality Management System Standard and its procedures, at least annually. The results of the annual Drinking Water Quality Management System Internal Audits conducted in 2023 demonstrated that the City's Drinking Water Quality Management System is a mature system and that opportunities to improve the Drinking Water Quality Management System continue to be identified to ensure that the system is relevant and appropriate for Hamilton Water.

OUR Vision: To be the best place to raise a child and age successfully.

OUR Mission: To provide high quality cost conscious public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.

OUR Culture: Collective Ownership, Steadfast Integrity, Courageous Change, Sensational Service, Engaged Empowered Employees.

With the timely completion of the corrective actions issued as a result of this audit, the overall conformance to V2.0 of the Drinking Water Quality Management System Standard and the City's Drinking Water Quality Management System is ensured.

The Compliance Support Group of the Compliance and Regulations Section is developing an Audit Plan for the 2024 Drinking Water Quality Management System internal audits. The audit is to take place between September to November 2024. The plan will include a number of process and element audits. The Audit Plan will be reviewed by the Hamilton Water Senior Management Team and approved by the Systems Management Representative prior to implementation.

Management Review

The Drinking Water Quality Management System Standard requires that Top Management participate in a management review of the Drinking Water Quality Management System at least once annually. The Management Review is a formal presentation of compliance, operational, water quality, communication and infrastructure data.

In 2023, the Drinking Water Quality Management System Top Management Review was held on December 12, 2023. Attendees included Top Management (General Manager of Public Works and Director of Hamilton Water), Directors, Section Managers, Overall Responsible Operators (OROs) for treatment and distribution, the Systems Management Representative and staff from the Compliance Support Group.

Overall, Top Management, Directors and Section Managers concluded that the Drinking Water Quality Management System is suitable, adequate, and effective.

Standard of Care Training

Standard of Care requirements for Owners and Managers of municipal Drinking Water Systems came into effect as of January 1, 2013. Standard of Care is a statutory due diligence requirement identified in Section 19 of the Safe Drinking Water Act. All Owners (Mayor and Council) returning to the new Council had previously received Standard of Care training.

Standard of Care training was provided for the new and returning members of Council in February 2023. The City Manager and a Delegate for the General Manager of Public Works were also in attendance.

Financial Plan

The need to prepare a Water Infrastructure Financial Plan is, in part, a regulatory compliance issue specific to the water licensing requirements defined within the

Drinking Water Quality Management System and more specifically detailed under Regulation 453/07 - Financial Plans made under the Safe Drinking Water Act, 2002. The required Financial Plan for water systems must address a minimum six-year timeframe and be approved by Council prior to submission to the Province of Ontario. The resulting plans must also be made freely available to the general public. Water Infrastructure Financial Plans for Hamilton have typically been developed to cover a 10-year period of time in order to reflect consistency with the current rate budget process.

The first Financial Plan was created in 2010 and revised in 2014 and 2018. The latest revision was approved by Council on September 8, 2023. This most current plan was sent to the Ministry of Municipal Affairs and Housing on October 20, 2023, and posted on the City of Hamilton's website.

Update and Going Forward

The outcomes from the internal Drinking Water Quality Management System audit and the Management Review concluded that the Drinking Water Quality Management System is adequate, suitable and effective and conforms to the requirements of the Drinking Water Quality Management System Standard. Corrective action plans from the audit and action items from the Management Review will be implemented to ensure continual improvement of the Drinking Water Quality Management System.

APPENDICES AND SCHEDULES ATTACHED

Appendix "A" to Communication Update HW2402 - [2023 City of Hamilton Drinking Water Systems Annual Water Quality and Summary Report](#)

Appendix "B" to Communication Update HW2402 as attached - 2023 Drinking Water Quality Management System Summary Report

CITY OF HAMILTON'S DRINKING WATER SYSTEMS DWQMS SUMMARY REPORT

Safe Drinking Water Act, DWQMS v2.0

2023

DRINKING WATER QUALITY MANAGEMENT SYSTEM POLICY



The City of Hamilton owns, maintains and operates various drinking water systems. The City is committed to:

S

Safe, high quality, consistent supply of drinking water

A

Always improving the Drinking Water Quality Management System

F

Following and complying with applicable legislation

E

Effective and open communication with the community concerning matters of drinking water quality



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1 INTRODUCTION

1.1 PURPOSE

This Drinking Water Quality Management System (DWQMS) Summary Report is being submitted to the Owner, (i.e., Mayor and Council) on behalf of Top Management (i.e. General Manager, Public Works and Director, Hamilton Water) for the City’s five Drinking Water Systems, as shown below.

Drinking Water Systems
Hamilton Drinking Water System (Woodward and Fifty Road Subsystems)
Freelton Drinking Water System
Greenville Drinking Water System
Carlisle Drinking Water System
Lynden Drinking Water System

The purpose of this Summary Report is to keep the Owner of the City’s Drinking Water Systems informed about the ongoing performance of the accredited DWQMS, including major milestones achieved in 2023. This report also assists the Owner in meeting their Standard of Care responsibilities under the Safe Drinking Water Act.

The Summary Report is a key communication tool from Top Management to the Owner as referenced in Element 12 Communications of the DWQMS Standard. It also meets the communication requirements of Element 14 Review and Provision of Infrastructure and Element 20 Management Review of the DWQMS Standard as identified in Sections 3 and 5 of this report, respectively.

1.2 SCOPE

The DWQMS Standard requires that the Operating Authority report on certain aspects of the DWQMS to the Owner, specifically the outcomes of Element 14 Review and Provision of Infrastructure and Element 20 Management Review. This report fulfills the communication requirements of these elements and exceeds the Standard’s requirements by providing information on external and internal DWQMS Audits, Risk Assessment and other major milestones of the DWQMS in 2023.

1.3 OVERVIEW OF KEY MILESTONES

Drinking Water Quality Management System (DWQMS) milestones related to the accreditation of Hamilton Water, the City of Hamilton’s Operating Authority are:

- **April (off-site document review) and May (on-site audit) 2018** – Re-accreditation of the DWQMS by external registrar, SAI-Global.
- **February to April 2019** - Standard of Care Training for new Councillors and Legal Counsel
- **May 2019** – Received renewed Municipal Drinking Water System Licences and Permits for each of the City’s five Drinking Water Systems
- **May 2019** – Re-endorsement of the DWQMS Operational Plan by Owners
- **May 2019** – External Systems Audit (off-site document review)
- **April 2020** – External Systems Audit (off-site document review)
- **April 2021 (off-site document review) and May 2021 (on-site virtual)** – Re-accreditation of the DWQMS by external registrar, SAI-Global.
- **June 2022** – External Systems Audit (off-site document review)
- **February 2023** – Standard of Care Training for Mayor and Council
- **May 2023** – External Systems Audit (off-site document review)

FIGURE 1: PROJECT PIPELINE - 2023 (KEY DWQMS MILESTONES WHICH OCCURRED IN 2023)



1.4 DWQMS OPERATIONAL SUMMARY

Figure 2 illustrates the Plan, Do, Check and Act elements of the DWQMS Standard. The following sections of this report include an overview of milestones related to the following elements of the DWQMS:

- Section 2 - Element 8 Risk Assessment Outcomes
- Section 3 - Element 14 Review and Provision of Infrastructure
- Section 4 - Element 19 Internal Audits
- Section 5 - Element 20 Management Review

1.5 DRINKING WATER SYSTEM LICENCES & PERMITS APPROVALS

On October 6, 2023, the Municipal Drinking Water Licence for the Hamilton Drinking Water System was amended to allow regulatory relief from reporting an adverse water quality incident regarding chloramines. Specifically, the maximum concentration of chloramines permitted in the Drinking Water System was increased to 3.5 mg/L from 3.0 mg/L as per the requirements of O. Reg. 170/03, Section 16-3(1) Schedule 16. While total chlorine residual of 2.8 mg/L is our target and we strive to remain below a combined residual of 3.0 mg/L. This amendment allows flexibility during warm temperatures in the summer and fall.

Also in 2023, the Municipal Drinking Water Licence renewal applications were submitted for each of our Drinking Water Systems. The Municipal Drinking Water Licences will be renewed in 2024.

In addition, there were 11 approvals for extensions or replacements to the distribution system (i.e. Form 1), four minor modifications to the Drinking Water System (i.e. Form 2) and one Schedule C amendment.

FIGURE 2: DWQMS STANDARD ELEMENTS



2 RISK ASSESSMENT

2.1 OVERVIEW

The Drinking Water Quality Management System (DWQMS) Standard requires that a Risk Assessment be conducted in its entirety every three years and reviewed on an annual basis, to verify the currency and validity of the information. In 2022, there was an interim review of the Risk Assessment followed by a full review in 2023 in accordance with the Standard.

Staff from across Hamilton Water and select staff from Engineering Services collaborated on updating the existing information considering the following key questions:

- Are identified control measures still valid and if so, are they still in place?
- Have additional controls been implemented?
- How has equipment condition, raw water quality, operational controls, etc. changed?
- Are any modified “Risk Factors” now considered to be Critical Control Risks?

Similar to previous years, there were no significant risks identified through the 2023 process, which were not already captured through an existing Hamilton Water initiative or project.

2.2 KEY UPDATES

As part of the Risk Assessment, process changes, including capital upgrades in the Drinking Water Systems, are considered and the associated risk scores (i.e. likelihood of occurrence) are updated as needed. The following includes a list of materials that were considered in the 2023 Risk Assessment:

- Capital Delivery - water projects recently completed and upcoming
- 2022 DWQMS Infrastructure Review outcomes
- Outcomes updated from previous DWQMS Risk Assessment
- Review of Adverse Water Quality Incident Notifications
- BCOS Database Quality Non-conformance Module (audits and inspections)
- Items from recent DWQMS Top Management Review Meeting

Hamilton Water staff continue to work to integrate the DWQMS Risk Assessment with the City’s Asset Management risk assessment in accordance with Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure that came into effect on January 1, 2018. The DWQMS Risk Assessment and Infrastructure Review will be updated to incorporate any new related processes or requirements.

3 REVIEW AND PROVISION OF INFRASTRUCTURE

3.1 PURPOSE

The Operating Authority must ensure and verify, on an annual basis, the adequacy of water infrastructure. In order to satisfy the requirements of the Drinking Water Quality Management System (DWQMS) Standard, the Operating Authority conducted a formal review of its vertical (water treatment, storage and pumping) and horizontal (watermains) infrastructure. The scope of the review also considered the operation, maintenance and replacement of existing infrastructure assets as well as new infrastructure planned for the immediate and long-term future. An Infrastructure Review (Combined) meeting was held with the Management Team of Hamilton Water to discuss the outcomes of both the horizontal and vertical infrastructure reviews. This DWQMS Summary Report (2023) includes a brief summary of the results of the DWQMS Infrastructure Review.

3.2 PROCESS

Teams were assembled from across relevant sections of Hamilton Water, Engineering Services and Planning and Economic Development to conduct the review of water infrastructure. A coordination meeting was held on August 9, 2023 to discuss vertical and horizontal infrastructure.

The teams collected and examined input data related to various asset management, maintenance and capital programs. A summary of the type of “indicator” data examined is provided in Table 1.

3.3 OVERVIEW OF RESULTS

The outcomes and recommendations from the Infrastructure Review Meeting were documented in meeting minutes for the 2023 review. Attendees at the Infrastructure Review Meeting utilized the outcomes from the meeting as input to capital planning and budget preparation. Hamilton Water discussed the 2023 Infrastructure Review at the Top Management Review Meeting on December 12, 2023.

The 2023 Infrastructure Review process concluded that our vertical and horizontal infrastructure is generally found to be adequate and available when needed. It was concluded that there is an increased demand on maintenance staff and resources as assets remain in operation beyond their intended life cycle.

3.3 OVERVIEW OF RESULTS (CONTINUED)

TABLE 1: INFRASTRUCTURE REVIEW DATA

Infrastructure Type	Input Data
Horizontal Infrastructure – Maintenance	<ul style="list-style-type: none"> • Watermain Repairs • Hydrant and Valve Inspections • Valve and Meter Replacement • Substandard Service Replacement • Preventative Maintenance • Emergency Repairs • Customer Complaints
Horizontal Infrastructure – Large Capital	<ul style="list-style-type: none"> • Replaced, Rehabilitated and New Watermains • Condition Assessments • Capital Upgrades • Master Plan Schedule • Corrosion Control Program and Corrosion Control Building • Asset Management – Critical Watermain Age Profiles and Inspections
Vertical Infrastructure – Maintenance	<ul style="list-style-type: none"> • Preventative Maintenance Program Status • Breakdowns and Emergency Repairs • Capital Upgrades - Coordination and Scheduling • Life Cycle Best Practices • Critical Projects
Vertical Infrastructure – Large Capital	<ul style="list-style-type: none"> • Condition Assessments • Master Plan Update • Source Water Protection Projects, Well Studies and Investigations • Water Capital Projects Lists

4 DWQMS AUDITS

The Drinking Water Quality Management System (DWQMS) accreditation process requires both third party accreditation audits and annual internal audits by the Operating Authority. The cycle of external audits includes an on-site verification audit every three years and an off-site documentation review annually.

4.1 EXTERNAL DWQMS AUDITS

Hamilton Water utilizes the services of QMI-SAI Global as the accreditation body for the Drinking Water Quality Management System (DWQMS). In 2023, QMI-SAI Global conducted an off-site documentation review. There were no non-conformances and two opportunities for improvement (in process).

4.2 INTERNAL DWQMS AUDITS

The Operating Authority must conduct internal audits to evaluate the conformity of the DWQMS with the requirements of the DWQMS Standard and its procedures, at least annually.

The internal DWQMS audit conducted in 2023 covered all the required Elements of DWQMS and included the following process audits:

- Water shut-off process
- Watermain approvals (Form 1s)
- Backflow Prevention Program
- Asset management and condition assessments

The results of the annual DWQMS Internal Audits conducted in 2023 demonstrated that the City of Hamilton’s DWQMS is a mature system and that opportunities to improve the DWQMS continue to be identified to ensure that the system is relevant and appropriate. The Hamilton Water DWQMS contains the required procedures and records to illustrate the establishment and continual improvement of the management system.

With the timely completion of the corrective actions issued as a result of this audit, the overall conformance to V2.0 of the DWQMS Standard and the City of Hamilton’s DWQMS is suitable, the audit process is adequate, and the implementation and maintenance effective.

4.3 2024 DWQMS AUDIT PLAN

The Compliance Support Group of the Compliance & Regulations Section is developing an Audit Plan for the 2024 DWQMS internal audits. The audit is to take place between September to November 2024. The plan will include a number of process and element audits. The Audit Plan will be reviewed by the Hamilton Water Senior Management Team and approved by the Systems Management Representative prior to implementation.

5 MANAGEMENT REVIEW

The “Plan” component of Element 20 Management Review of the Drinking Water Quality Management System (DWQMS) Standard requires a documented procedure to describe how the Operating Authority reviews the suitability, adequacy and effectiveness of the DWQMS. The “Check” component of the element requires that Top Management participate in a management review at least once per year to review the DWQMS and consider recommendations for continual improvement. Required outputs of the meeting are:

- Consideration of the results of the management review and identifying deficiencies and action items to address deficiencies.
- Provide a record of decisions and actions items including responsibilities and timelines.
- Report the results of the management review to the Owner.

In 2023, the DWQMS Top Management Review was held on December 12, 2023. Attendees included Top Management (General Manager of Public Works and Director of Hamilton Water), Directors, Section Managers, Overall Responsible Operators (OROs) for treatment and distribution, the System Management Representative (i.e., Manager of Compliance and Regulations) and staff from the Compliance Support Group.

Overall, Top Management, Directors and Section Managers concluded that the DWQMS is suitable, adequate and effective.

Assigned action items from the 2023 DWQMS Top Management Review will result in operational improvements, improved communication and better coordination between Hamilton Water and other City departments.

5.1 FINANCIAL PLAN

The need to prepare a Water Infrastructure Financial Plan is, in part, a regulatory compliance issue specific to the water licensing requirements defined within the DWQMS and more specifically detailed under Regulation 453/07 - Financial Plans made under the Safe Drinking Water Act, 2002. The required Financial Plan for water systems must address a minimum six-year time-frame and be approved by council prior to submission to the Province of Ontario. The resulting plans must also be made freely available to the general public and can be found on www.hamilton.ca/DWQMS. Water Infrastructure Financial Plans for Hamilton have typically been developed to cover a 10-year period of time in order to reflect consistency with the current Water, Wastewater and Stormwater Rate budget process.

The first Financial Plan was created in 2010 and revised in 2014 and 2018. The latest revision was approved by Council on September 8, 2023. This most current plan was sent to the Ministry of Municipal Affairs and Housing on October 20, 2023.

6 CONCLUSIONS

The outcomes from the internal Drinking Water Quality Management System (DWQMS) audit and the Management Review concluded that the DWQMS is adequate, suitable and effective and conforms to the requirements of the DWQMS Standard. Corrective action plans from the audit and action items from the Management Review will be implemented to ensure continual improvement of the DWQMS.

7 NEXT STEPS – TIMELINE

The management system requires ongoing commitment by staff and management. Maintenance and improvement of the system continues to be a high priority of the Operating Authority. Major next steps related to the maintenance of the DWQMS in 2024 are detailed in Table 2:

TABLE 2: MAJOR NEXT STEPS

Month of 2024	Scheduled DWQMS Milestones
February	<ul style="list-style-type: none"> Annual O.Reg. 170 Schedule 22 Report and DWQMS Summary Report to Council
April	<ul style="list-style-type: none"> External Systems Audit (off-site document review and on-site re-accreditation audit)
May	<ul style="list-style-type: none"> Re-accreditation of the DWQMS by external registrar, Intertek - SAI Global
June	<ul style="list-style-type: none"> DWQMS Risk Assessment Meetings DWQMS Top Management Review
July	<ul style="list-style-type: none"> Infrastructure Review Meeting
September to November	<ul style="list-style-type: none"> DWQMS Internal Audits
November	<ul style="list-style-type: none"> Emergency Response Drill