

Subject: Annual Water Quality Management System Update

Report to: Public Works Committee

Report date: Tuesday, December 3, 2024

Recommendations

1. That Report PW 34-2024 **BE RECEIVED** for information as the Annual Water Quality Management System Update.

Purpose

The Annual Water Quality Management System (QMS) Update is being submitted to Regional Council to provide an annual update regarding the ongoing performance of the Water QMS which includes key QMS milestones achieved throughout 2024. These milestones support the Water-Wastewater Division's Water QMS as required by the *Drinking Water Quality Management Standard* and our own internal procedures. This Annual Water QMS Update is a key communication tool from Top Management to the Owner (Council) as referenced in Element 12 Communications of the *Drinking Water Quality Management Standard*.

Key Facts

- The *Drinking Water Quality Management Standard* was created under the *Safe Drinking Water Act, 2002* and requires Drinking Water System Owners to implement and maintain an accredited Water Quality Management System (QMS).
- The Region's Water QMS is a structured system designed to ensure compliance with consumer and regulatory standards, emphasizing best practices, continual improvement, and corrective actions to enhance drinking water quality and operational performance.
- The Annual Water QMS Update is submitted to Regional Council to report on the performance of the Water QMS and key milestones achieved in 2024, as required by the *Drinking Water Quality Management Standard* and internal procedures.
- As Owners of Niagara Region's drinking water systems, Regional Council must act in good faith, make informed decisions, and provide necessary financial resources to ensure the systems' sustainable future, as outlined in the *Safe Drinking Water Act, 2002*.

Financial Considerations

No new direct financial implications result from this report; approximately \$32,000 has been expended to date in 2024 to manage the quality management system.

There are no new direct financial implications as a result of this report. All related costs were included in the 2024 operating budget for Water and Wastewater Operations. In total, approximately \$32,000 (including non-recoverable HST) has been expended to manage the quality management system program in 2024 to-date; this includes annual maintenance and support fees for EtQ Reliance, the software used in support of the QMS, as well as fees for a third-party accreditation audit of the Water QMS. EtQ Reliance software manages elements of the Water QMS, including document management, corrective action reporting and resolution, records management, and capital project management. This ensures that the Water QMS continues to meet the requirements of the *Drinking Water Quality Management Standard*.

Analysis

Background

Niagara Region has implemented an accredited Water Quality Management System as per the *Safe Drinking Water Act, 2002*.

The *Safe Drinking Water Act, 2002* mandates the development, implementation, and accreditation of a Water QMS that conforms to the *Drinking Water Quality Management Standard (DWQMS)*.

A Water QMS is a business process that outlines a structured approach to managing and improving how we operate our water system to ensure we meet consumer and regulatory requirements. It emphasizes best management practices, continual improvement, and implementing corrective actions to enhance operational performance and produce high quality drinking water.

An accredited Water QMS is also a condition of issuance of a municipal drinking water licence. Niagara Region holds five municipal drinking water licences, one for each of its drinking water systems.

The Water QMS looks to Top Management and the Owner (Regional Council) to provide guidance and endorsement.

Top Management, including the Commissioner of Public Works, Director of Water and Wastewater, and related Associate Directors, are designated as the Top Management level within our operating authority. They are accountable for day-to-day operating decisions respecting the QMS and make recommendations to the owner (Council), as necessary, regarding Niagara Region's drinking water systems.

Owner (Regional Council) endorsement of the Water QMS is required to keeping the accreditation of the QMS. Niagara's Water QMS was endorsed by Regional Council on March 23, 2023 under PW 5-2023, Drinking Water Compliance and Water Wastewater Quality Management System Endorsement. Re-endorsement of the Water QMS Operational Plan is required upon each new term of Council or if significant modifications are made to its content.

Niagara Region Councillors are responsible for ensuring the safety and integrity of municipal drinking water systems, adhering to the "Standard of Care" requirement in section 19 of the *Safe Drinking Water Act, 2002*

As Owners of the Niagara Region's drinking water systems, Regional Councillors have specific responsibilities as defined within the *Safe Drinking Water Act, 2002*. One such responsibility is the "Standard of Care" clause (section 19); that requires Councillors to "exercise the level of care, diligence and skill in respect of a municipal drinking water system that a reasonably prudent person would be expected to exercise in a similar situation" and to "act honestly, competently and with integrity, with a view to ensuring the protection and safety of the users of the municipal drinking water system."

In summary, Council's duty is to act in good faith and with a commitment to making informed decisions to ensure the sustainable future of our drinking water systems in Niagara Region. CWCD 2024-172, dated October 18, 2024, provided further information to Council in this regard.

The Water QMS supports Regional Council with meeting Standard of Care, providing confidence that water services are delivered in accordance with Regional policies and procedures.

The Water QMS accreditation process involves annual internal and third-party audits to assess compliance with the DWQMS and identify opportunities for improvement.

The Water QMS accreditation process requires both third party accreditation audits and annual internal audits. Audits serve critical functions in Niagara Region’s Water QMS, they confirm the effectiveness of the Water QMS by assessing conformance with Ontario’s *Drinking Water Quality Management Standard* (DWQMS) and strengthen system performance through identification of continual improvement opportunities. Facilities and programs are audited annually via internal and external audits and each year audit findings identify internal process improvements and system enhancements.

An External Audit was conducted in early 2024 and confirmed that the Water QMS documents satisfy all requirements of the Standard.

As a means to achieve and maintain accreditation to the Standard, Niagara Region utilizes the services of QMI-SAI Global as the accreditation body for the Water QMS. Accreditation of the Water QMS is a condition of the Region’s Municipal Drinking Water Licences; without continued accreditation, these licences would be revoked. QMI-SAI Global conducted a thorough off-site document review in March 2024 to confirm that Water QMS documents satisfy all requirements of the Standard.

Audit findings are included in Table 1 and indicate the maturity of the Water QMS and diligent operational practices.

Table 1: External Audit Results

Finding Type	Number of Findings
Non-Conformance	0
Potential Non-Conformance	0
Best Practice for Evaluation	1

QMI-SAI Global confirmed that the Water QMS is effectively implemented and maintained and meets the requirements of Ontario’s *Drinking Water Quality Management Standard*.

The 2024 Internal Audit identified 10 non-conformances and additional ongoing improvements.

Internal audits are completed by qualified water and wastewater personnel to confirm conformance of the division's Water QMS with Ontario's *Drinking Water Quality Management Standard* and with divisional policies and procedures.

The division's internal audits are typically more rigorous and thorough than external accreditation audits, and the number and detail of audit findings demonstrates this. The internal audit findings are included in Table 2. Corrective actions are put in place to address each audit finding and opportunities to improve continue to be identified to ensure that the system is relevant and appropriate.

Table 2: Internal Audit Results

Finding Type	Number of Findings
Non-Conformance	10
Potential Non-Conformance	2
Best Practice for Evaluation	19

The 2024 Risk Assessment, required by Ontario's DWQMS, identified improvement opportunities and resulted in action plans.

The *Drinking Water Quality Management Standard* requires that a Risk Assessment be conducted every three years and reviewed on an annual basis. A full Risk Assessment was completed between February and April 2024. The risk assessment process draws the experience from a cross-functional group of staff to identify potential service delivery challenges, practical preventative measures, and improvement opportunities. The outcome of each assessment results in action plans that help to support delivery of reliable water services. The risks identified during the 2024 risk assessment can be found in Appendix 1. While new risks were added during 2024, existing control measures and/or risk action plans adequately address these risks and minimize their potential effect on service delivery. Further condition assessments are planned considering the current state of assets which will help inform future risk assessments and capital budget recommendations.

Top Management meeting occurred in May 2024 to review and evaluate the Water QMS for compliance, performance, and improvement opportunities.

Members of Water QMS Top Management and the QMS Representative meet twice per year to formally review the complete management system including regulatory compliance, water quality, risk assessment, audit results, emergency response, operational performance, and action items to ensure effective quality management as required by the *Drinking Water Quality Management Standard*. During these meetings, Top Management evaluate the continuing suitability, adequacy, and effectiveness of the Water QMS and identifies corrective actions and continual improvement opportunities to enhance the QMS and associated operations.

Minor administrative changes to the Water QMS Operational Plan were approved in 2022 and re-endorsed by Regional Council in 2023.

Minor administrative changes were made to the Water QMS Operational Plan in June 2022 and these revisions were submitted to the Commissioner of Public Works for approval on behalf of Council as per the delegated authority granted to the Commissioner under Report PW 109-2008. Since that time, there have been no additional updates, the Water QMS Operational Plan was re-endorsed by the new term of Regional Council on March 23, 2023 under PW 5-2023, Drinking Water Compliance and Water Wastewater Quality Management System Endorsement.

Staff meet quarterly with municipal counterparts to share best practices and improve service delivery.

Water Operating Authority Staff meet quarterly with Area Municipal counterparts to address challenges, share best practices, evaluate operating procedures, and develop common approaches for efficient and effective service delivery.

Public and/or Service Users

The Water QMS Policy and Water QMS accreditation information, are available to the public and service users via the Niagara Region's external website.

The most current approved version of the Operational Plan or any Water QMS supplementary documents are available upon request to Water-Wastewater Quality Management Specialist, holly.philbrick@niagararegion.ca.

Alternatives Reviewed

The implementation of the DWQMS is required under the *Safe Drinking Water Act, 2002*, therefore the Operating Authority must develop and sustain a QMS that meets the minimum standards outlined in the DWQMS. Accreditation is conducted by a third-party body, QMI-SAI Global. The alternative of not undergoing accreditation has not been explored as a viable alternative for the Niagara Region, as accreditation is a legal requirement for water system owners.

Relationship to Council Strategic Priorities

Effective Region - Niagara Region's Water Quality Management System and its associated audit processes supports Effective Region by delivering fiscally responsible and sustainable core service while implementing continuous improvement and modernized processes in regional services and programs. The Water QMS drives continual improvement within the Water Services Division by defining clear roles and responsibilities, increasing accountability, and improving data accessibility through documented standard operating procedures and robust record-keeping practices.

Other Pertinent Reports

[CWCD 2024-172 Councillor Information Request Related to Legal Obligations of Council regarding the Safe Drinking Water Act \(October 18, 2024\)](https://www.niagararegion.ca/council/Council%20Documents/2024/council-correspondence-oct-18-2024.pdf)

(<https://www.niagararegion.ca/council/Council%20Documents/2024/council-correspondence-oct-18-2024.pdf>) - see page 5-7.

[PW 5-2023 Drinking Water Compliance and Water Wastewater Quality Management System Endorsement](https://pub-niagararegion.escribemeetings.com/Meeting.aspx?Id=4ba16d6b-1c45-4514-8372-f02f6bd2e6c5&Agenda=Merged&lang=English&Item=15&Tab=attachments)

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PWA 109-2008 DWQMS Update (October 29, 2008)

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Appendices

Appendix 1 Water QMS Risk Assessment

Appendix 1 - Water QMS Risk Assessment

There were fourteen new risks and 8 newly high scoring risks identified during the 2024 Water QMS risk assessment. Risks added in 2024 are listed below in Table 1. Risks that have been newly classified as high scoring in 2024 are listed below in Table 2.

Table 1: Risks added to Water QMS Risk Assessment

Hazardous Event	Plant Location
Public trespassing on Niagara Region property.	Decew Falls Port Colborne
Catastrophic failure of intake structure.	Welland
Failure of aluminum sulfate pump.	All
Catastrophic failure of sedimentation area structure or settling tank.	Welland
PLC (Programmable Logic Controller) breakdown with no parts left to repair.	Welland
Catastrophic failure of Clearwell 3.	Welland
Failure to revise documents following upgrades/changes i.e. drawings, Operations and Maintenance Manuals etc.	All
Inaccurate or outdated general maintenance and asset management information or drawings used for general internal purposes.	All
Inaccurate or outdated general maintenance and asset management information or drawings used for design purposes.	All
Insufficient standardization of preventative asset maintenance, reporting, and communication.	All
Insufficient funding to maintain asset sustainability.	All
Failure of 24" watermain running under lake Moodie.	Decew Falls
Failure of 54" watermain running under lake Moodie.	Decew Falls
Break of two cast irons (42") crossing the Welland Canal.	Welland

Table 2: Risks newly classified as high scoring in Water QMS Risk Assessment

Hazardous Event	Plant Location
Accidental chemical spill impacting source water. Region notified.	Decew Falls
Accidental chemical spill impacting source water. Region notified.	Port Colborne
Public trespassing on Niagara Region property.	Port Colborne
Failure of all low lift pumps due to electrical issue, mechanical issue, fire, etc..	Welland
Inaccurate or outdated general maintenance and asset management information or drawings used for design purposes.	All
Insufficient standardization of preventative asset maintenance, reporting, and communication.	All
Insufficient funding to maintain asset sustainability.	All
Failure of 24" watermain running under lake Moodie.	Decew Falls