

**To: Warden and Members of County Council**

**From: Director of Public Works**

## 2021 Drinking Water Quality Management System Update

### RECOMMENDATION

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1. That County Council receive Report No. PW 2022-11 entitled “2021 Drinking Water Quality Management System Update.”

### REPORT HIGHLIGHTS

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- The purpose of this report is to provide an annual summary outlining the main processes and work performed by Oxford County’s Water Services Division in 2021 to support its drinking water Quality Management Systems (QMS).
- As required by provincial legislation, this report also provides County Council, as Owner of the municipal drinking water systems in Oxford County, with an annual summary of the water QMS Management Review (2021) which evaluated the continuing suitability, adequacy and effectiveness of the QMS for all three of the County’s water system Operating Authorities (Oxford County, City of Woodstock and Town of Tillsonburg) against the provincial Drinking Water Quality Management Standard (DWQMS).
- All three Operating Authorities maintained full accreditation as their respective water QMS were determined to successfully meet the DWQMS requirements following third-party external audits in 2021. The maintenance of the respective drinking water QMS accreditation serves to satisfy a condition within the County’s Municipal Drinking Water Licences.

### Implementation Points

Operating Authority staff will continue to implement Operational Plan water QMS policies to meet the requirements of the DWQMS (V2.0, February 2017) and to comply with the requirements of subsection 16(2) of the *Safe Drinking Water Act, 2002*.

The County’s Drinking Water Quality Management System Coordinator is responsible for communicating the Annual Management Review action items to those accountable, ensuring implementation of changes to water QMS documentation and following up with each Operating Authority. All three Operating Authorities will continue to implement the corrective actions identified through the risk assessment process, Annual Management Review, emergency response testing, and internal and external audits to facilitate continual improvement of processes and programs.

## Financial Impact

The total County water QMS 2021 operating budget included expenses of \$125,000 in 2021 related to the development and ongoing maintenance of the water QMS for all municipal residential drinking water systems in the County which included each Operating Authority. This also included expenses related to the external auditors of the water QMS (approximately \$18,500).







Any required water QMS actions that will result in expenditures have been accounted for in the 2022 Operating or Capital Budget of the respective municipal drinking water systems.

## Communications

Report No. PW 2022-11 and Report No. [PW 2022-05](#) (2021 Drinking Water System Performance), which was presented to County Council on February 23, 2022, serve to meet the DWQMS requirements of reporting the results of the water QMS Annual Management Review to the drinking water system Owner representatives (Oxford County Council/Chief Administrative Officer (CAO)).

The Annual Management Review process ensures that all levels of the organization (Owner, Top Management and Operating Authorities) are kept informed and aware of the water QMS as it relates to the performance of each municipal drinking water system. As an outcome of the Annual Management Review, Top Management provide recommendations for continuous improvement of the water QMS for all three Operating Authorities.

## Strategic Plan (2020-2022)

					
<b>WORKS WELL TOGETHER</b>	<b>WELL CONNECTED</b>	<b>SHAPES THE FUTURE</b>	<b>INFORMS &amp; ENGAGES</b>	<b>PERFORMS &amp; DELIVERS</b>	<b>POSITIVE IMPACT</b>
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## DISCUSSION

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### Background

The *Safe Drinking Water Act, 2002* mandates the development, implementation, and accreditation of a QMS as a condition of issuance of a Municipal Drinking Water Licence. The water QMS contains elements of both the ISO 9001 standard with respect to management systems and the hazard analysis and critical control points (HACCP) standard with respect to product safety. The water QMS also incorporates the HACCP approach to risk assessment and reflects the multi-barrier approach for municipal drinking water system safety.

As noted, the Municipal Drinking Water Licensing Program implemented by the Ministry of the Environment, Conservation and Parks (MECP) requires all municipal drinking water systems to be operated by accredited Operating Authorities. In order to become accredited, each Operating Authority must establish and maintain a QMS. Minimum requirements for the QMS are specified in the DWQMS (V2.0, February 2017). Operating Authorities are accredited by a third party Accreditation Body against the requirements of this Standard.

Oxford County has three separate accredited Operating Authorities as shown below:

Operating Authority	Responsibility
Oxford County Public Works	Water treatment, supply, pumping and storage in all systems. Distribution in all systems except Woodstock and Tillsonburg.
City of Woodstock	Partial water distribution in the City of Woodstock (no storage or pumping) as per current contract service agreement.
Town of Tillsonburg	Partial water distribution in the Town of Tillsonburg (no storage or pumping) as per current contract service agreement.

The County's water QMS is documented in the Operating Authority's water system Operational Plans, in accordance with the 21 best practice elements of the DWQMS. Accreditation of the Operating Authorities also requires that the Operational Plans be endorsed by the water system Owner representatives (Oxford County Council and CAO). County Council last endorsed the Operational Plans for each Operating Authority in September 2020 (refer to [PW 2020-41](#)).

The Operational Plans reflect a fully implemented water QMS with a focus on continual improvement and are made available to the public upon request. Each Operating Authority must maintain accreditation and have their Operational Plans accepted on a five-year cycle by the MECP as part of the Municipal Drinking Water Licence renewal process.

### Drinking Water QMS Roles and Responsibilities

The *Safe Drinking Water Act, 2002* requires that proper authorities are established to ensure that municipal drinking water systems have qualified oversight, management support, identified ownership and financial resources. For the County's 17 licenced drinking water systems, the key organizational roles involved with the respective water system's QMS is as follows:

#### *System Owner:*

- Oxford County, represented by County Council/CAO

#### *Operating Authorities:*

- Oxford County Public Works
- Town of Tillsonburg
- City of Woodstock

*Top Management:*

- Director of Public Works (Oxford County)
- Manager of Water and Wastewater Services (Oxford County)
- Director of Operations and Development (Town of Tillsonburg)
- Manager of Engineering (Town of Tillsonburg)
- Manager of Public Works (Town of Tillsonburg)
- Water/Wastewater Supervisor (Town of Tillsonburg)
- Director of Public Works (City of Woodstock)
- City Engineer (City of Woodstock)
- Deputy City Engineer (City of Woodstock)

*Water QMS Representatives:*

- Drinking Water Quality Management System Coordinator (Oxford County)
- Manager of Water and Wastewater Services (Coordinator designate)
- Supervisor of Water and Wastewater Technical Services (Coordinator designate)

The responsibilities and authorities of Top Management and water QMS staff is detailed in the County's Operational Plans as endorsed within Report No. PW 2020-41.

### Standard of Care

The Statutory Standard of Care provisions of the *Safe Drinking Water Act, 2002* make individuals with oversight responsibilities for municipal drinking water systems legally responsible for decisions made regarding the system. The water QMS designates the roles and responsibilities of various positions within each Operating Authority.

The intent of this Standard of Care is to ensure that Owner representatives (County Council and CAO) and various levels of decision makers of the municipal drinking water systems are acting diligently and making informed decisions when required. These decisions can affect the quality and safety of the municipal drinking water provided to all customers.

Decision making authority over the County's drinking water systems includes, but is not limited to, members of municipal Council. All persons who oversee the Operating Authority or exercise decision-making authority must:

- Exercise the level of care, diligence and skill that a reasonably prudent person would be expected to exercise in a similar situation; and
- Act honestly, competently and with integrity, with a view of ensuring the protection and safety of the users of the municipal drinking water system.

Some of the ways members of Council can provide diligent oversight under the Standard of Care requirements is to have awareness of governing drinking water legislation and regulations, County's Operational Plans and the drinking water annual reporting.

Of note, the annual Drinking Water System Performance Report (Report No. PW 2022-05) and the Drinking Water Quality Management System Update (Report No. PW 2022-11) are the primary method in which Senior Management and County Council demonstrate due diligence in providing oversight of the County's municipal drinking water systems and meeting their Standard of Care legal requirement.

## Comments

### Water QMS Management Review

Under legislation, the DWQMS requires that a Management Review meeting be held annually by each Operating Authority to review the drinking water QMS performance and identify necessary actions to ensure continual improvement and compliance with the regulations. The Annual Management Reviews for all three Operating Authorities were conducted in February 2022.

The DWQMS lists 16 specific information items that must be part of the Annual Management Review including, but not limited to, incidents of regulatory non-compliance, incidents of adverse drinking water tests, raw water supply and drinking water quality trends, operational performance and results of the infrastructure review. These items were reviewed and reported in Report No. PW 2022-05, which was received by County Council on February 23, 2022, and documents the performance of each of the County's 17 municipal drinking water systems.

Additionally, the following QMS items were reviewed during the Annual Management Review:

- Discussion and follow up on action items from previous management reviews as well as any new items identified since the last review;
- Operational considerations and challenges as part of operational performance;
- Effectiveness of the risk assessment process and deviations from critical control points and responses;
- Results of internal and external audits;
- Results of emergency response testing and training;
- Changes that could affect the QMS;
- Resources needed to maintain the QMS;
- Customer feedback; and,
- Suggestions brought forward by Operating Authority operations staff.

As noted in the following sections, key discussion points, findings and action items from the Annual Management Review of the water QMS are key outcomes of this review process.

### Ongoing Management Review Action Items

The following action items continue to be addressed by Operating Authority staff:

- The County Operating Authority will continue to work with a local business to discuss operational solutions regarding the impacts of pressure fluctuations in the Tavistock drinking water system.
- The County, as Owner, expects that contracted Woodstock and Tillsonburg service providers will provide complete and detailed annual water system level of service and key performance indicator metrics in a timely manner.
- The Tillsonburg Operating Authority will do a business case needs and cost analysis of the potential fleet purchase of a hydro vac truck. Business cases will be prepared and reviewed with County staff in advance of the 2023 Capital Budget submission. This item was deferred from the previous 2020 Management Review meeting.

- The Woodstock Operating Authority will continue to investigate a solution for the electronic entry of customer service field data (with consideration of a work order management system that can be ultimately implemented) and provide information to County staff in advance of 2023 County Budget submission. This item was deferred from the previous 2020 Management Review meeting.

### Operational Considerations and Challenges

The water QMS is continually improving and integration with regular operational practices is routine. Operational considerations and challenges were reviewed with the following action items to be addressed:

- The County will coordinate with Tillsonburg and Woodstock Operating Authorities to ensure preventative maintenance work orders and information is integrated with the County Asset Management Plan (AMP), CityWide financial system, and the County's digital asset work order management system (Cartegraph) and asset registry (GIS). The County has offered to provide Tillsonburg and Woodstock Operating Authorities with access to Cartegraph in this regard.
- The Woodstock Operating Authority will need to document and report on annual water quality related customer inquiries and/or received complaints.
- The importance of consistent compliance with, and application of, the County Fees and Charges By-Law No. 4889-2007 has been discussed with Woodstock and Tillsonburg Operating Authorities.

### Water QMS Risk Assessment

The water QMS Risk Assessment Process ensures all potential hazards, associated hazards or hazardous events associated with drinking water quality are properly identified, ranked and assessed. Assessment results provide Operating Authorities with guidance to identify critical events, control measures, critical control points and procedures to adequately manage risk while safeguarding the municipal drinking water quality and performance. The Risk Assessment Process is required every 36 months for each of the County's drinking water systems, with complementary risk assessment reviews to be completed at 12 and 24 months between the assessments to verify the currency of the information and the validity of the assumptions used in the risk assessment.

A full Risk Assessment for the water QMS was completed in 2020 and was re-validated during the 2021 review. During the 2021 Risk Assessment review, each Operating Authority confirmed that any previously identified high-scoring risks had been mitigated through completed capital projects, operational adjustments or through continual improvement initiatives. As well, the risk ranking threshold for determination of critical events was slightly lowered (from a score of 9 to 8) in order to provide a lower response tolerance to risk. Risks associated with the drinking water system critical control points (which represent critical process steps) are well controlled with existing preventive measures and monitoring/response procedures.



During the 2021 review, the following water QMS Risk Assessment updates were undertaken and appended to the appropriate Operating Authorities Operational Plans:

- Installation of a new catalytic media filtration process (Dereham Centre) to reduce naturally occurring arsenic (and iron) levels in the raw water supply;
- Modifications to Embro water treatment system components, including changes to the filtration and filter media;
- Commissioning of the Graydon Water Treatment Facility in Mount Elgin;
- Enhancements to raw water sampling to allow for improved water quality trending and analysis; and
- Ongoing consideration of enhanced water treatment options for various raw water parameters (i.e. Strontium, Iron, Manganese, Arsenic).

### Internal and External Audit Findings

All three Operating Authorities must undergo annual internal auditing and third-party (external) auditing of their water QMS in order to achieve and maintain accreditation to the DWQMS. The audits are conducted to assess the conformance of the Operating Authority's individual Operational Plans and associated QMS processes/procedures against the DWQMS (V2, Feb. 2017), under the *Safe Drinking Water Act, 2002*. The three Operating Authorities work together due to the interdependence between each municipality and share a County resource in the form of a Drinking Water Quality Management System Coordinator.

#### *i) 2021 External Audits*

External Audits are a systematic and documented verification process that involves objectively obtaining and evaluating documents, records and processes to determine whether the Operating Authority's water QMS conforms to DWQMS requirements. All 21 elements of the DWQMS are included in the scope of these water QMS audits.

External audits are conducted once every calendar year for each Operating Authority and involve either onsite re-accreditation audits (every third year) or off-site desktop audits of QMS documents and records (intervening years). For 2021, conducted third-party external verification audits (SAI Global Limited) of each Operating Authority were conducted as shown in the table below.

<b>Operating Authority</b>	<b>System Audit (off-site)</b>	<b>Re-accreditation Audit (on-site)</b>
Oxford County Public Works	September 6-7, 2021	September 29 – October 1, 2021 (virtual, including virtual facility tours)*
City of Woodstock	August 16, 2021	September 14, 2021 (on-site)
Town of Tillsonburg	August 17, 2021	September 15, 2021 (on-site)

\* held virtually due to County vaccination policy

All three Operating Authorities maintained full accreditation as their respective water QMS were determined to have successfully met the DWQMS requirements following third-party external audits in 2021. This water QMS accreditation served to satisfy a condition within the County's Municipal Drinking Water Licence. The external third-party auditor findings for each of the three Operating Authorities were minor in nature as listed below:

- One minor non-conformance affecting the County Operating Authority was identified concerning measurement and recording equipment calibration and maintenance. Corrective actions were completed to prevent another occurrence and the non-conformance was promptly resolved within the auditor's required timeline.
- Four opportunities for improvement (OFIs) were noted, mainly related to clarification of procedures and record keeping for both the Tillsonburg and the County Operating Authorities.
- Five OFIs were noted, also mainly related to further clarification of procedures and record keeping for the Woodstock Operating Authority.

All OFIs are being addressed through the water QMS Continual Improvement Process.

*ii) 2021 Internal Audits*

Internal audits are conducted at least once every calendar year for each Operating Authority as required by the DWQMS. In December 2021, internal water QMS audits against the DWQMS were conducted for all three Operating Authorities. Through the audit process, internal auditors assess conformance of the respective water QMS with Ontario's DWQMS requirements. All internal auditors have completed applicable training led by a qualified and competent trainer.

Internal Audits may be scheduled as complete system audits or broken out into process audits or audits of specific DWQMS elements over several months, such that each element is audited and an audit cycle is completed once every 36 months for each Operating Authority. The processes/programs chosen for auditing in 2021 included the review of historical valve maintenance procedures and Top Management commitment/involvement in maintaining the water QMS. One process or program may cover multiple elements of the DWQMS. Site audits were also conducted at eight different water treatment facilities.

The internal auditor findings for each of the three Operating Authorities were minor in nature as listed below:

- There were no non-conformance findings for the three Operating Authorities.
- One OFI was noted related to formal documentation of an operational procedure for valve maintenance and record keeping for both the Tillsonburg and Woodstock Operating Authorities.
- Three OFIs were noted, mainly related to clarification of procedures and record keeping for the County Operating Authority.

The findings were positive overall and OFIs are being addressed through the water QMS Continual Improvement Process.



## 2021 Emergency Response Plan Testing

Annual testing of the Emergency Response Plan can take the form of training sessions, mock incident or the response to an actual emergency. In the last case, an incident debrief is recommended to point out opportunities for improvement.

For each of the Operating Authorities, Emergency Response Plan training was conducted in September 2021. No OFIs were recommended as a result of this training review.

## Customer Feedback

The County and Town of Tillsonburg Operational staff responded to 61 and 25 customer water complaints respectively. Based on the review of the complaints that were documented in the work order management systems, there were no concerning patterns in the customer complaints for these Operating Authorities.

Woodstock Operational staff responded to 394 customer water complaints but does not maintain electronic documentation of the same for review. The Operating Authority has been requested to investigate a solution for the electronic entry of customer service field data (with consideration of a work order management system that can be ultimately implemented) in order to evaluate and trend any concerning patterns within the water system.

## Drinking Water QMS Changes/Resources

There were no significant changes to the Operational Plans for each Operating Authority since last reported to County Council in September 2020 (refer to Report No. PW 2020-41). Operational Plans will be presented to County Council in 2023, as the County's water QMS requires that endorsement of the QMS shall be updated within six months after the election of a new County Council and/or if the Operating Authority for the municipal drinking water system changes. This is done to ensure that all members of the County Council are informed about the municipal drinking water systems and their oversight responsibilities.

No additional resources were identified by Top Management of the three Operating Authorities as being necessary to maintain the water QMS at this time.

## **Conclusions**

The results of the Annual Management Reviews of the County's water QMS demonstrate continued compliance with drinking water regulations and the County's commitment to continual improvement in the provision of safe, reliable and sustainable supply of municipal drinking water for its residents and businesses.

All three Operating Authorities maintained full accreditation as their respective water QMS were determined to have successfully met the DWQMS requirements following third-party external audits in 2021. This water QMS accreditation served to satisfy a condition within the County's Municipal Drinking Water Licence.

## **SIGNATURES**

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### **Report Author:**

Original signed by

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Jessica Happel, A.Sc.T.  
Drinking Water QMS Coordinator

### **Departmental Approval:**

Original signed by

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David Simpson, P.Eng., PMP  
Director of Public Works

### **Approved for submission:**

Original signed by

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Michael Duben, B.A., LL.B.  
Chief Administrative Officer