Subject: Annual Water and Wastewater Quality Management System Update

Report to: Public Works Committee

Report date: Tuesday, December 8, 2020

Recommendations

1. That Report PW 50-2020 **BE RECEIVED** for information as the Annual Water and Wastewater Quality Management System Update; and
2. That the 2020 Water QMS Internal Audit Report, 2020 Water QMS External Audit Report, and 2020 Wastewater QMS Internal Audit Report **BE RECEIVED** for information.

Key Facts

- The purpose of this report is to provide a summary outlining the main processes and work performed internally to support the Water-Wastewater Division's Water QMS and Wastewater QMS.
- 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 QMS. Niagara Region has maintained accreditation of its Water QMS since 2009.
- Niagara Region is not legally mandated to implement a QMS for wastewater services, however, the division has elected to do so as a due diligence measure.
- The Water QMS and the Wastewater QMS Operational Plans were previously endorsed by Council on December 12, 2019 under PW 67-2019, Annual Water-Wastewater Quality Management System Update.
- Minor administrative changes have been made to the Water QMS and Wastewater QMS Operational Plans, and these have been 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.

Financial Considerations

A total of approximately $32,500 (including non-recoverable HST) has been expended in quality management system program costs in 2020 to-date; these routine costs include annual maintenance and support fees for software used in support of the QMS, as well as consulting fees for an on-site, third-party accreditation audit of the Water

QMS. These costs were included in the 2020 approved operating budget for Water Operations. An additional estimated $27,000 has been committed in 2020 for an upgrade to the Water-Wastewater Services Division's QMS software.

Expected expenses of $30,000 have been included in the proposed 2021 operating budget; these expenses include consulting fees for an offsite third-party Water QMS audit and an annual QMS software maintenance and support fee.

Analysis

This annual update summarizes the outcomes of significant quality management activities that are conducted in support of the Water QMS and Wastewater QMS, as well as internal and/or external changes that may impact either QMS.

Water QMS

The *Safe Drinking Water Act, 2002* mandates the development, implementation, and accreditation of a drinking water quality management system as 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; thus, we are legally required to maintain accreditation of our Water QMS.

Roles and Responsibilities – Water QMS

Key Water QMS roles are described in Table 1.

Table 1: Roles and Responsibilities – Water QMS

Role	Assignment
System Owner	Niagara Region (represented by Regional Council)
Operating Authority	Niagara Region (represented by staff of the Water and Wastewater Services Division)
Top Management	Commissioner of Public Works Director, Water and Wastewater Services Division Associate Director, Water Operations & Maintenance Associate Director, Water-Wastewater Engineering Associate Director, Water-Wastewater Integrated Systems Associate Director, Water-Wastewater Asset Management

Role	Assignment
QMS Representatives	Water-Wastewater Quality Management Specialist, reporting to Associate Director, Water Operations & Maintenance *(primary)* Water-Wastewater Quality Management Specialist, reporting to Manager, Wastewater Quality & Compliance *(backup)*

Owner Roles and Responsibilities – Water QMS

An owner endorsement of the Water QMS Operational Plan is a requirement of our Water QMS accreditation. The Water QMS Operational Plan was last endorsed by the current term of Regional Council on December 12, 2019 under PW 67-2019, 2019 Annual Water and Wastewater QMS Update.

As Owners of Niagara Region's drinking water systems, Regional Council has specific responsibilities as defined within the *Safe Drinking Water Act, 2002*. A significant one of these is the "Standard of Care" clause (section 19 of the *Act*); the clause 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".

Internal Audits of the Water QMS

The Water QMS is subject to annual internal audits by water and wastewater staff. All internal auditors have completed applicable training led by a qualified and competent trainer. Through the audit process, internal auditors assess conformance of the division's Water QMS with Ontario's *Drinking Water Quality Management Standard* and with divisional policies and procedures.

Three processes were selected for internal auditing in 2020:

- Competencies and training;
- Top Management communication;
- Capital project implementation and hand-off.

The division's internal audits are more rigorous and thorough than the external audit process, and the number and detail of audit findings demonstrates this. The internal audit findings include 10 non-conformances, 7 potential non-conformances/

opportunities for improvement, and 14 best practices. These findings are detailed in the Water QMS Internal Audit Report (Appendix 1 to this report).

External Audits of the Water QMS

The Water QMS is also subject to external auditing by a third-party auditor as a means to achieve and maintain accreditation to the *Standard*. Accreditation of the Water QMS is a condition of the Region's Municipal Drinking Water Licences: without continued accreditation, these licences would be revoked.

A third-party auditor conducted an off-site document review in May 2020 to confirm that Water QMS documents satisfy all requirements of the Standard. No non-conformances were identified during this document review; five minor opportunities for improvement were recorded and are being addressed through updates to QMS documentation.

Following the document review, in July 2020, the third-party auditor conducted an on-site reaccreditation audit to confirm that the Water QMS adequately addresses the requirements of all 21 elements of the Standard. The Water QMS External Audit Reports (Appendix 2) provide details of the external auditor's findings. The auditor recommended that Niagara Region maintain its accreditation as a Drinking Water System Operating Authority, identifying one non-conformance and three opportunities for improvement to the QMS. The Water-Wastewater Services Division has resolved the identified non-conformance and is continuing to address the opportunities for improvement.

Water QMS Risk Assessment

An internal risk assessment is required every 36 months for each of Niagara Region's water systems, with complementary risk assessment reviews to be completed at 12 and 24 months between the assessments. The last full risk assessment for the Water QMS was completed in 2018, with reviews completed in 2019 and 2020.

The following high-scoring risks were identified during the 2020 review:

- *Failure of raw water intake (Rosehill Water Treatment Plant):* This was identified as a risk due to the age of the intake pipe, which was installed in 1960. The intake shows signs of age-related failure. An environmental assessment has been initiated to replace the intake, with plans to extend it further into Lake Erie.
- *Failure of filter backwash pumps (Rosehill Water Treatment Plant):* This was a temporary risk relating to the ongoing capital upgrade at the plant. The upgrade

included replacement of both of the plant's backwash pumps, and pumping redundancy was temporarily lost in order to complete each replacement. The new pumps are now in service, and it is expected that this risk score will be significantly reduced at the next risk assessment.

- *Function of sodium bisulphite systems (Decew Falls Water Treatment Plant and Grimsby Water Treatment Plant):* This was identified as a risk due to ongoing issues with the performance of the sodium bisulphite dosing systems at the two subject treatment plants. Sodium bisulphite is used to dechlorinate process waste streams before they are discharged to the environment. There is a potential for chlorinated water to be discharged to the environment if the dosing system fails; such an event could have environmental impacts in the receiving water body and/or compliance impacts for Niagara Region. It is important to note that the sodium bisulphite systems treat waste streams only; thus, they do not impact the safety of treated drinking water. Dechlorination processes were modified in Fall 2020 to allow for sodium bisulphite dosing based on laboratory testing; the new processes were implemented in late October, with review of results planned for late November.

The Region's "critical control points", representing critical process steps, remain unchanged following the 2020 risk assessment review. They include:

- Coagulant feed;
- Filter effluent turbidity;
- Disinfectant feed;
- Primary disinfection;
- Secondary disinfection.

Risks associated with these critical control points are all low-scoring, as they are well-controlled with existing preventive measures and monitoring/response procedures.

Water QMS Management Review

Water QMS Top Management and the QMS Representative meet twice per year to complete a QMS Management Review as required by the *Standard*. At these meetings, Top Management reviews the status of the QMS and identifies corrective actions and continual improvement opportunities to enhance the QMS and associated operations.

Part 1 of the 2020 Management Review was completed on May 28, 2020; Part 2 is scheduled to be completed on December 3, 2020.

Action items identified at the Management Review meetings are summarized in Table 2.

Table 2: Management Review Meetings and Results – Water QMS

Review Meeting	Date	Results
Part 1 – 2019	May 31, 2019	*Previously reported in 2019 QMS Update to PWC*
Part 2 – 2019	Dec. 2, 2019	Two new action items relating to: • Infrastructure review • Continual improvement
Part 1 – 2020	May 28, 2020	One new action item relating to: • Changes impacting QMS
Part 2 – 2019	Dec. 3, 2020	To be reported in 2021 QMS Update to PWC

Changes Impacting the Water QMS

No forthcoming changes have been identified that may impact the Water QMS.

Wastewater QMS

The Water-Wastewater Services Division has opted to develop and implement a Wastewater QMS as a due diligence exercise. The benefits of the Wastewater QMS are numerous and include documentation of policies and procedures, a formalized risk assessment program, incorporation of compliance requirements into standard operating procedures, and an audit program that promotes continual improvement of quality management practices.

Roles and Responsibilities – Wastewater QMS

Key wastewater QMS roles are described in Table 3.

Table 3: Roles and Responsibilities – Wastewater QMS

Role	Assignment
System Owner	Niagara Region (represented by Regional Council)
Operating Authority	Niagara Region (represented by staff of the Water and Wastewater Services Division)

Role	Assignment
Top Management	Commissioner of Public Works Director, Water and Wastewater Services Division Associate Director, Wastewater Operations & Maintenance Associate Director, Water-Wastewater Engineering Associate Director, Water-Wastewater Integrated Systems Associate Director, Water-Wastewater Asset Management
QMS Representatives	Water-Wastewater Quality Management Specialist, reporting to Manager, Wastewater Quality & Compliance *(primary)* Water-Wastewater Quality Management Specialist, reporting to Associate Director, Water Operations & Maintenance *(backup)*

Internal Audits of the Wastewater QMS

Like the Water QMS, annual internal audits of the Wastewater QMS are also undertaken by water and wastewater staff. All internal auditors have completed applicable training led by a qualified and competent trainer. Through the audit process, internal auditors assess conformance of the division's Water QMS with Ontario's *Drinking Water Quality Management Standard* (as modified to suit wastewater operations) and with divisional policies and procedures. As Niagara Region is not legally required to implement a Wastewater QMS, internal audits of the QMS are undertaken strictly as a best practice.

The approach to the Wastewater QMS internal audit was modified this year in response to the ongoing challenges posed by the COVID-19 pandemic. In an attempt to maintain physical distancing and limit treatment plant access to only the most essential of staff and visitors, the audit has been reduced in scope. It is being conducted as a remote desktop audit that examines a subset of the QMS elements and favours online meetings over in-person visits to treatment facilities. This approach respects the seriousness of COVID-19 while allowing the division to maintain conformance with the requirements of the Wastewater QMS.

The internal audit findings include 9 non-conformances and 9 opportunities for improvement. These findings are detailed in the Wastewater QMS Internal Audit Report (Appendix 3 to this report).

External Audits of the Wastewater QMS

There is no requirement for the Wastewater QMS to be audited and accredited by an external body. Therefore, no external audits are performed.

Wastewater QMS Risk Assessment

An internal risk assessment is completed every 36 months for each of Niagara Region's wastewater systems, with complementary risk assessment reviews to be completed at approximately 12 and 24 months between the assessments. The last full risk assessment for the Wastewater QMS was completed in fall 2018, with reviews initiated in November 2019 and September 2020.

91 high-risk items were identified during the 2019 review; this list was reduced to 86 high-risk items during the 2020 review. The significant number of high-scoring risks is reflective of the region's massive inventory of wastewater assets (12 treatment facilities, a bio-solids treatment facility, and 112 sewage pumping stations) and the critical need for infrastructure improvement in wastewater operations. 58 of the 86 high-scoring items from the 2020 risk assessment will be mitigated through ongoing or planned capital projects, further highlighting the need for capital improvements to wastewater system infrastructure.

Wastewater QMS Management Review

Wastewater QMS Top Management and the QMS Representative meet twice per year to complete a QMS Management Review as required by the Standard. At these meetings, Top Management reviews the status of the QMS and identifies corrective actions and continual improvement opportunities to enhance the QMS and associated operations.

Part 1 of the 2020 Management Review was completed on June 22, 2020; Part 2 is scheduled to be completed on November 12, 2020.

Action items identified at the Management Review meetings are summarized in Table 4 (next page).

Table 4: Management Review Meetings and Results – Wastewater QMS

Review Meeting	Date	Results
Part 1 – 2019	Mar. 27, 2019	*Previously reported in 2019 QMS Update to PWC*
Part 2 – 2019	Nov. 12, 2019	Four new action items relating to: • Infrastructure review (2) • Wastewater compliance (2)
Part 1 – 2020	Jun. 22, 2020	No new action items identified.
Part 2 – 2020	Nov. 12, 2020	*To be reported in 2020 QMS Update to PWC*

Changes Impacting the Wastewater QMS

The Ministry of the Environment, Conservation, and Parks (MECP) has indicated that a quality management standard will be developed for wastewater systems. Unlike the *Drinking Water Quality Management Standard*, conformance and accreditation to the Wastewater Management Standard will be voluntary. Development of the Wastewater Management Standard is industry-driven and is still in very early stages; as such, there is no forecasted date for its publication.

Governmental Partners

Drinking water system Operating Authority staff work closely with the MECP to ensure that comments and concerns related to current and future drafts of the Drinking Water Quality Management Standard have been considered. When changes are made to the Standard, they are incorporated into the Region's Water QMS and are also considered for incorporation into the Wastewater QMS as relevant and/or feasible.

Water and Wastewater Operating Authority staff meet quarterly with Area Municipal counterparts to share resources, experiences, and best practices pertaining to water and wastewater quality management and compliance.

Public and/or Service Users

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

The most current approved versions of Operational Plans are available upon request to a Water-Wastewater Quality Management Specialist (rachel.whyte@niagararegion.ca or michelle.max@niagararegion.ca).

Updates to the Water and Wastewater QMS Operational Plans

The Water QMS Operational Plan and Wastewater QMS Operational Plan were revised in late 2019 and were re-endorsed by Regional Council on December 12, 2019 under Report PW 67-2019, Drinking Water Compliance and Water-Wastewater Quality Management System Endorsement. Since that time, there have been administrative updates to both Operational Plans that capture minor changes to the division's organizational structure as well as recommendations for improvement received during the 2020 external accreditation audit of the Water QMS. These changes have been submitted to the Commissioner of Public Works for approval via delegated authority previously granted to the Commissioner under Report PW 109-2008.

Alternatives Reviewed

The Ministry of the Environment, Conservation, and Parks has appointed two accreditation bodies who are authorized to conduct external audits of Drinking Water Quality Management Systems under Part IV of the Safe Drinking Water Act, 2002. Niagara Region appointed QMI-SAI Global for Water QMS accreditation services in 2013. QMI-SAI continues to act as the Region's external auditor for the Water QMS.

Relationship to Council Strategic Priorities

Niagara Region's Water and Wastewater Quality Management Systems, and associated audit processes, relate directly to Council's Strategic Priority 4.1 of committing to "high quality, efficient and coordinated core services". The Water QMS and Wastewater QMS are used to drive continual improvement within the Water and Wastewater Services Division; they increase accountability by defining clear roles and responsibilities for divisional staff, and they increase data accessibility through documented standard operating procedures and associated record-keeping practices.

The Water QMS and Wastewater QMS also relate to Council's Strategic Priority 4.2 of committing to "enhanced communication". The continued accreditation of the Region's Water QMS, and the due diligence established through the Region's Wastewater QMS, provide residents with assurance that their drinking water is safe and that the associated systems are competently managed.

Other Pertinent Reports

- PWA 109-2008, DWQMS Update (October 29, 2008).
- PW 67-2019, 2019 Annual Water and Wastewater Quality Management System Update (December 3, 2019).

Prepared by:
Rachel Whyte, P.Eng.
W-WW Quality Management Specialist
Public Works Department

Recommended by:
Bruce Zvaniga, P. Eng.
Commissioner of Public Works (Interim)
Public Works Department

Submitted by:
Ron Tripp, P.Eng.
Acting Chief Administrative Officer

This report was prepared in consultation with Michelle Max, B. Sc., C. Tech., W-WW Quality Management Specialist, and Pamela Hamilton, Program Financial Specialist. It was reviewed by Jason Oatley, B.Sc., C. Chem., Manager, Wastewater Quality and Compliance; John Brunet, Associate Director, Water Operations and Maintenance; Doug Johnson, Associate Director, Wastewater Operations and Maintenance; and Joe Tonellato, P. Eng., Director of Water & Wastewater Services.

Appendices

Appendix 1	Water QMS Internal Audit Report
Appendix 2	Water QMS External Audit Reports
Appendix 3	Wastewater QMS Internal Audit Report

INTERNAL AUDIT REPORT

Competencies and Training

Top Management Communication

Capital Project Implementation and Hand-Off

General

Niagara Region

All Drinking Water Systems

Internal Audit

Operations
Top Management
Maintenance
QMS Representative
Support Staff

March 2 – 12, 2020

1.0 INTRODUCTION

1.1 Purpose

The 2020 internal audit was undertaken:

- To verify the continued conformance of the Water-Wastewater (W-WW) Division's Water QMS (Quality Management System) with the requirements of the DWQMS (Drinking Water Quality Management Standard) and the Water QMS Operational Plan; and
- To verify the effective implementation and maintenance of the Water QMS for all five of Niagara Region's drinking water systems.

Audits were completed between March 2nd and 12th, 2020; an additional remote audit was conducted in June 2020. Audits were conducted at four water treatment plants (WTPs), including the Niagara Falls WTP (Area 1), the Welland WTP (Area 2), and the DeCew Falls and Grimsby WTPs (Area 3). Internal audits were also conducted with members of Top Management and with staff of the W-WW Integrated Systems, W-WW Engineering, and W-WW Asset Management groups.

NOTE: This audit report was amended in July 2020 to capture an additional audit conducted for Element 8 – Risk Assessment Outcomes. The amendments are identified in red font throughout the report.

1.2 Scope

The 2020 internal audit was conducted as a process audit; in this type of audit, auditors examine the elements of the DWQMS as they relate to a selected process. The processes selected to be audited included:

- Competencies and training;
- Top Management communication;
- Capital project implementation and hand-off; and
- General elements not otherwise covered.

The following elements were examined as part of this internal audit:

- Element 1 – Quality Management System
- Element 2 – Quality Management Policy

- Element 4 – QMS Representative
- Element 5 – Documents and Records Control
- Element 6 – Drinking Water System
- Element 8 – Risk Assessment Outcomes (audited June 2020)
- 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 & Recording Equipment Calibration and Maintenance
- Element 20 – Management Review
- Element 21 – Continual Improvement

Elements 3 (Commitment and Endorsement), 7 (Risk Assessment), 18 (Emergency Management), and 19 (Internal Audits) were not audited during the 2020 internal audit. These elements will be included in future internal audits.

1.3 Selection of Internal Audit Team

Internal auditors for the 2020 audit were:

- **Area 1:** Dawn MacArthur, Rhonda McCabe
- **Area 2:** Rachel Whyte, Andrew Braham
- **Area 3:** Deanna Barrow, Michelle Max
- **General Elements**: Jen Croswell, Janet Rose, Rachel Whyte
- **Risk Assessment Outcomes**: Rachel Whyte

All internal auditors have completed Internal Auditor Training as required by the ***Internal Audit Procedure*** *(QMS-WT-ALL-P-190, rev9, effective 3Feb2020)*.

1.4 Criteria and Methodology

Audit criteria included the following:

- ***Internal Audit Procedure*** *(QMS-WT-ALL-P-190, rev9, effective 3Feb2020)*;
- ***Niagara Region Water Operational Plan*** *(QMS-WT-ALL-MAN-010, rev9, effective 12Dec2019)* and supporting procedures; and
- Internal audit training materials (various auditor training courses).

Audits were conducted by assigned auditors as noted in Section 1.3 of this report. Selected members of Top Management and other support staff were also interviewed by assigned auditors. An opening meeting was held at each of the audit interviews. Auditor checklists were completed and reviewed with the Lead Auditor. These checklists are not attached to this audit report, but are retained as per ***Document & Records Control*** *(QMS-WT-ALL-P-050, rev8, effective 6Jan2020)*.

1.5 Summary of New Internal Audit Findings

Findings are categorized as follows and are summarized in Table 1 below.

- **Non-conformance:** A requirement of the Drinking Water Quality Management Standard or a documented Standard Operating Procedure is not being met. These findings require **corrective action**.
- **Potential non-conformance:** A non-conformance has not yet occurred, but a trend or pattern indicates that occurrence of a non-conformance is likely. These findings require **preventive action**.
- **Best practice for evaluation**: A best practice behaviour or opportunity for improvement is identified. These findings are brought forward to the appropriate level of management for review and consideration, and those requiring Top Management direction or input are reviewed at the annual Management Review.

Table 1: Summary of Internal Audit Findings – Number and Type

Element	NC	PNC	BP	Total
Document and Records Control (5)	4	1	1	6
Drinking Water System (6)			1	1
Risk Assessment Outcomes (8)	2		1	3
Org Structure, Roles, Responsibilities, and Authorities (9)		1		1
Competencies (10)	1	1	2	4
Communications (12)			2	2
Review and Provision of Infrastructure (14)	3	4	3	10
Infrastructure Maintenance, Rehab, and Renewal (15)			3	3
Continual Improvement (21)			1	1
Total	**10**	**7**	**14**	**31**

Details of all findings are provided in Table 2 (see Section 1.8 of this Audit Report).

1.6 Review of Previous Internal Audit Findings

No previous audit findings were reviewed during this internal audit, as much work was done in advance of the internal audits to address and close open corrective actions from the previous internal audit in 2019. These efforts were summarized in a memo to Public Works Committee (PWC-C 8-2020, 10March2020).

1.7 Review of Previous External Audit Findings

No findings were identified in the 2019 external audit.

Internal Audit Results

1.8 Summary of QMS Internal Audit Findings

Table 2 provides a summary of findings from the QMS Internal Audit. In reviewing Table 2, the following acronyms should be noted:

Acronym	Definition
C	Conformance
NC	Non-Conformance
PNC	Potential Non-Conformance
BP	Best Practice for Evaluation
N/A	Not applicable – did not audit this element

Table 2 is provided below.

Table 2: Summary of Findings – 2020 Internal Audit

Element #	Finding	DWQMS Standard Element	Number
1	C	QMS conforms to the requirements of this element.	
2	C	QMS conforms to the requirements of this element.	
3	N/A	*Not reviewed during this internal audit.*	
4	C	QMS conforms to the requirements of this element.	
5	NC	***Document and Records Control (QMS-WT-ALL-P-050, rev8, 6Jan2020)*** specifies retention locations and times for key drinking water system records. The procedure does not include direction for retention of capital project records.	WTCAR-20-001
5	NC	The external-facing Niagara Region website contains a link to access the corporate ***Contractor Safety Program (C3-H17, 1Sep2013)***. However, the internal corporate policy library includes an updated version of ***Contractor Safety Program (C-HS-001-002, 8Oct2019)*** that is not accessible to contractors.	WTCAR-20-002
5	NC	Section 5.5.3 of ***Document and Records Control (QMS-WT-ALL-P-050, rev8, 6Jan2020)*** specifies that "controlled printed documents that are obsolete are removed from use and replaced with the current printed version". Auditors examined printed Emergency Response Plans at Welland WTP, Decew WTP, and Grimsby WTP, and a significant number of these binders were found to have obsolete copies of the ***Emergency Contact List (ERP-ALL-ALL-T-002, rev17, 21Feb2020)***.	WTCAR-20-003

Element #	Finding	DWQMS Standard Element	Number
5	NC	Section 5.4.2 of ***Document and Records Control (QMS-WT-ALL-P-050, rev8, 6Jan2020)*** specifies that "the majority of QMS documents are typically reviewed every three years unless otherwise indicated in the document header". No evidence was found to support this statement.	WTCAR-20-004
5	PNC	A directive was issued from the AD, Engineering to all Senior Project Managers and Project Managers to update the Project List on Vine at least once monthly. Many records in the Project List are missing key information (project numbers, contract numbers, etc.) and are not populated with current information. No formal procedure exists to document the use and maintenance of the Project List; at present, it is expected that Senior Project Managers remember to communicate this requirement to new Project Managers.	2020-001-Audit Internal
5	BP	All controlled procedures include a reference to ***Personal Protective Equipment (HS-ALL-ALL-P-029)***; however, the document link does not work. It may be beneficial to update ***Personal Protective Equipment (HS-ALL-ALL-P-029)*** in EtQ to render these links functional.	2020-002-Audit Internal
6	BP	The Operating Authority may wish to add process control narratives (PCNs) to the list of project deliverables identified in ***Approvals and Change Management for Infrastructure Changes in a Drinking Water System (rev5, 28Feb2020)***. While PCNs are not explicitly required by legislation, in general, they help to satisfy the requirement to document drinking water system operation as required by Schedule B, Section 16, of the Municipal Drinking Water Licence. PCNs can also form part of each system's QMS drinking water system description.	2020-003-Audit Internal
7	N/A	*Not reviewed during this internal audit.*	---

Element #	Finding	DWQMS Standard Element	Number
8	NC	***Drinking Water System Risk Assessment (QMS-WT-ALL-P-070, rev9, 5Feb2020)*** specifies that risk action items/plans must be initiated for any risks with scores of 15 or greater. Risk action items/plans were not initiated in EtQ for high-scoring risks from the 2020 assessment reviews.	WTCAR-20-009
8	NC	***Tracking Critical Control Limit Deviations (OP-WT-ALL-P-028, rev2, 24Oct2019)*** specifies requirements for logging details of CCL alarms in SCADA. The SCADA log for the high turbidity alarm at Filter 5300 on 31Oct2019 does not include any comments.	WTCAR-20-010
8	BP	***CCP - Filter Effluent Turbidity (OP-WT-ALL-P-008, rev8, 21Apr2020)*** does not include a reference to ***Tracking Critical Control Limit Deviations (OP-WT-ALL-P-028, rev2, 24Oct2019).*** This reference should be included in order to create a linkage between the two processes.	2020-021-Audit Internal
9	PNC	There is an opportunity to establish a process for notifying key stakeholders when new positions are created within the Division so that key documents (e.g., Operational Plan, Competencies Table, etc.) and key systems (e.g., myLearning, EtQ, etc.) can be updated. As an example, the new Project Coordinator position is not listed in the Operational Plan or the Competencies Table.	2020-004-Audit Internal
10	NC	***"MOECC Operator Certificate/Licence Renewal Monitoring and Notification" (ADM-WWW-ALL-P-001, rev6, 2Aug2017)*** does not reflect current practice. The use of automated PeopleSoft reminders/flags is not captured in the procedure.	WTCAR-20-005

Element #	Finding	DWQMS Standard Element	Number
10	PNC	***Review and Revision of Water Operations Manuals (rev0, 11Jun2019)*** was created to define responsibilities and processes for water operations manuals. The Engineering auditee was not aware of this procedure.	2020-005-Audit Internal
10	BP	There is an opportunity to reference ***"MOECC Operator Certificate/Licence Renewal Monitoring and Notification" (ADM-WWW-ALL-P-001, rev6, 2Aug2017)*** in "Competencies" (QMS-WT-ALL-P-100, rev6, 19Sep2016) to ensure that the critical certificate renewal process is captured within the competencies program documentation.	2020-006-Audit Internal
10	BP	It is recommended that key conference dates (i.e., SCOWWA, OWWA, WEAO) be considered when scheduling training courses for staff.	2020-007-Audit Internal
11	C	QMS conforms to the requirements of this element.	---
12	BP	Consider formalizing the administration and use of ThinkTank in a controlled procedure. Procedure to include details of how suggestions are received and routed to the appropriate subject matter expert, how suggestions are evaluated, and how responses are posted.	2020-008-Audit Internal
12	BP	It may be beneficial to expand the scope of information shared via the Project List on Vine. At present, there is no common location for project files (e.g., RFP, design drawings, etc.) that project stakeholders can access easily. These documents are stored in engineering project folders, and there may be risk in directing stakeholders to these directories. The Engineering group may wish to consider adding additional fields to the Project List pages to include links to the RFP, design drawings, commissioning plans, etc.	2020-009-Audit Internal
13	C	QMS conforms to the requirements of this element.	---

Element #	Finding	DWQMS Standard Element	Number
14	NC	***Approvals and Change Management for Infrastructure Changes in a Drinking Water System (rev5, 28Feb2020)*** specifies the following due dates for deliverables: - Relevant Operations Manuals must be updated within 6 months of placing infrastructure in service; - New asset information must be uploaded to EAM upon the in-service date; - As-built drawings and record drawings must be provided within 12 months of the in-service date. Upgrades to the Kent Avenue Reservoir were completed in August 2018. - The corresponding Operations Manual section (***Niagara Falls WTP - E.30 - Storage & Transmission - Off-Site Storage, OP-WT-NF-MAN-E.30, rev3, 26Sep2017***) has not been updated to reflect the changes in operation. - The project contractor provided X28 asset information to Group EAM, but this information was not uploaded accordingly. - As-built drawings for the project are available electronically in DMD, but are not available in print at the Niagara Falls WTP.	WTCAR-20-006

Element #	Finding	DWQMS Standard Element	Number
14	NC	***Approvals and Change Management for Infrastructure Changes in a Drinking Water System (rev5, 28Feb2020)*** specifies that new asset information must be uploaded to EAM upon the in-service date. The King Street Elevated Tank decommissioning is complete and the project is in warranty phase, however, there were 11 assets remaining in EAM for this project. Additionally, the procedure focuses on addition of new assets, but equally important is the removal of existing assets that are no longer installed. It may be beneficial to modify the wording of the subject procedure to reflect this.	WTCAR-20-007
14	NC	Contractor specifications for Section 3.1 of the ***Water Treatment Filter Media*** contract document (GAC replacement) states that "the Engineer/Owner will collect GAC samples and provide these to the suppliers for performance testing". One of these samples was due to be collected at Decew Falls WTP in late 2019. No evidence was provided to indicate that this sample was collected and submitted to the supplier.	WTCAR-20-008

Element #	Finding	DWQMS Standard Element	Number
14	PNC	There is an opportunity to clarify responsibilities for staff training in capital projects, specifically, whether these responsibilities fall to the consultant or the contractor. Auditors reviewed the ***W-WW RFP Template (ENG-PM-ALL-F-003, rev9, 14Nov2019)*** outlining consultant deliverables and the ***Niagara Peninsula Standard Contract Document – Front-End Template (ENG-STD-ALL-F-001, rev12, 24Jan2020)*** outlining contractor deliverables and did not find evidence that responsibilities for staff training on new infrastructure are clearly assigned in either document. Additionally, there is an opportunity to clarify responsibilities for the development of preventive maintenance schedules in ***W-WW RFP Template (ENG-PM-ALL-F-003, rev9, 14Nov2019)*** and/or ***Niagara Peninsula Standard Contract Document – Front-End Template (ENG-STD-ALL-F-001, rev12, 24Jan2020)***. There are compliance implications if maintenance activities and calibrations that are required by regulation are not scheduled appropriately in EAM and completed on time in the field.	2020-010-Audit Internal
14	PNC	***"Approvals and Change Management for Infrastructure Changes in a Drinking Water System" (rev5, 28Feb2020)*** outlines processes for identifying the types of regulatory approvals required for a project. These approval requirements are established at the beginning of a project. As a project progresses, any changes in scope may impact the project's approval requirements. There is a potential for non-compliance issues if projects are not re-evaluated when scopes change. It may be beneficial for the Operating Authority to establish a process for this.	2020-011-Audit Internal

Element #	Finding	DWQMS Standard Element	Number
14	PNC	The 10-Year Capital Forecast is updated annually and provides an overview of planned capital works. In an ideal year, every project that is planned for the year is initiated on schedule; however, it happens often that planned projects are bumped or delayed. The auditors found evidence that new projects in a current year are sometimes initiated before the deferred ones from previous years are initiated.	2020-012-Audit Internal
14	PNC	The auditors found a memo on the Vine Divisional Memorandum Search page titled ***Clarification on Repair Responsibilities – Doors, Locks, Fence and Security Systems (MEMO-180419)***. The memo divides labour for maintenance and renewal of security infrastructure. It may be beneficial to formalize the contents of this memo in a controlled procedure.	2020-013-Audit Internal
14	BP	There is an opportunity for Engineering Project Managers to communicate capital project timelines more clearly and consistently, and in a format that all stakeholders can access.	2020-014-Audit Internal
14	BP	There is an opportunity to more clearly define ownership and assignment of PIRs and identify who is following up on open requests.	2020-015-Audit Internal

Element #	Finding	DWQMS Standard Element	Number
14	BP	It may be beneficial to examine current expectations for upload of asset information as phases of capital projects are completed. At present, the expectation is that asset information be uploaded to EAM upon the in-service date of the full project; this often means that all asset data is provided at once at the end of a project. In reality, some assets are brought online as the project progresses, and these assets may come due for preventive maintenance/calibration before the project is complete. However, this work cannot be planned and scheduled in EAM if the assets have not been added.	2020-016-Audit Internal
15	BP	It may be beneficial to develop a documented procedure (or procedures) that outlines the key steps in project implementation and delivery, including but not limited to: - Responsibilities and process for RFP and tender development; - Communication requirements over the course of the project; - Typical project milestones, including situations where Operations may require deliverables in advance of legislated due dates; - Development of preventive maintenance schedules for new assets, including roles and responsibilities, requirements, timelines, and submission requirements; - Roles, responsibilities, training, and other activities involved in handing over completed projects to Water Operations, and any forms and templates that may be required.	2020-017-Audit Internal

Element #	Finding	DWQMS Standard Element	Number
15	BP	It may be beneficial to require Engineering Project Managers to provide capital project contractors with a list of current assets in the area of the planned capital work so that they can identify, with more certainty, the assets that are removed during construction.	2020-018-Audit Internal
15	BP	It may be beneficial to include GAC as an asset in EAM so that relevant specifications, lifecycle history, and other information can be properly tracked.	2020-019-Audit Internal
16	C	QMS conforms to the requirements of this element.	---
17	C	QMS conforms to the requirements of this element.	---
18	N/A	*Not reviewed during this internal audit.*	---
19	N/A	*Not reviewed during this internal audit.*	---
20	C	QMS conforms to the requirements of this element.	---
21	BP	There is an opportunity to define a process for communicating the outcomes of non-conformances, potential non-conformances, and opportunities for improvement to staff, and to apply this process consistently.	2020-020-Audit Internal

Prepared by: Rachel Whyte

Date: July 16, 2020 (rev1)

Audit Report

Systems Audit for

The Regional Municipality of Niagara

1631650-02

Audited Address:
3501 Schmon Parkway, Thorold, Ontario, CAN, L2V 4T7

Start Date: May 27, 2020 End Date: May 29, 2020

Type of audit - System

Issue Date: May 29, 2020
Revision Level: Final

BACKGROUND INFORMATION

SAI Global conducted an audit of The Regional Municipality of Niagara beginning on May 27, 2020 and ending on May 29, 2020 to DRINKING WATER QUALITY MANAGEMENT STANDARD VERSION 2 - 2017.

The purpose of this audit report is to summarise the degree of compliance with relevant criteria, as defined on the cover page of this report, based on the evidence obtained during the audit of your organization. This audit report considers your organization's policies, objectives, and continual improvement processes. Comments may include how suitable the objectives selected by your organization appear to be in regard to maintaining customer satisfaction levels and providing other benefits with respect to policy and other external and internal needs. We may also comment regarding the measurable progress you have made in reaching these targets for improvement.

SAI Global audits are carried out within the requirements of SAI Global procedures that also reflect the requirements and guidance provided in the international standards relating to audit practice such as ISO/IEC 17021-1, ISO 19011 and other normative criteria. SAI Global Auditors are assigned to audits according to industry, standard or technical competencies appropriate to the organization being audited. Details of such experience and competency are maintained in our records.

In addition to the information contained in this audit report, SAI Global maintains files for each client. These files contain details of organization size and personnel as well as evidence collected during preliminary and subsequent audit activities (Documentation Review and Scope) relevant to the application for initial and continuing certification of your organization.

Please take care to advise us of any change that may affect the application/certification or may assist us to keep your contact information up to date, as required by SAI Global Terms and Conditions.

This report has been prepared by SAI Global Limited (SAI Global) in respect of a Client's application for assessment by SAI Global. The purpose of the report is to comment upon evidence of the Client's compliance with the standards or other criteria specified. The content of this report applies only to matters, which were evident to SAI Global at the time of the audit, based on sampling of evidence provided and within the audit scope. SAI Global does not warrant or otherwise comment upon the suitability of the contents of the report or the certificate for any particular purpose or use. SAI Global accepts no liability whatsoever for consequences to, or actions taken by, third parties as a result of or in reliance upon information contained in this report or certificate.

Please note that this report is subject to independent review and approval. Should changes to the outcomes of this report be necessary as a result of the review, a revised report will be issued and will supersede this report.

Standard:	DRINKING WATER QUALITY MANAGEMENT STANDARD VERSION 2 - 2017
Scope of Certification:	Full Scope - Treatment and Distribution System
Drinking Water System Owner:	Regional Municipality of Niagara
Operating Authority:	Regional Municipality of Niagara
Population Services:	400,000
Activities:	**Treatment Distribution**
Drinking Water Systems	Decew Falls / Niagara Falls Drinking Water System, Municipal Drinking Water Licence # 007-102, Issue 5 Grimsby Drinking Water System, Municipal Drinking Water Licence # 007-105, Issue 3 Port Colborne Drinking Water System, Municipal Drinking Water Licence # 007-101, Issue 3 Welland Drinking Water System; Municipal Drinking Water Licence # 007-104, Issue 3 Rosehill Drinking Water System, Municipal Drinking Water Licence # 007-103, Issue 5
Total audit duration:	**Person(s):** 1 **Day(s):** 2.25
Audit Team Member(s):	Team Leader Marco Brunato

Definitions and action required with respect to audit findings

Major Non-conformance:

Based on objective evidence, the absence of, or a significant failure to implement and/or maintain conformance to requirements of the applicable standard. Such issues may raise significant doubt as to the capability of the management system to achieve its intended outputs (i.e. the absence of or failure to implement a complete Management System clause of the standard); or

A situation which would on the basis of available objective evidence, raise significant doubt as to the capability of the Management System to achieve the stated policy and objectives of the customer.

NOTE: The "applicable Standard" is the Standard which SAI Global are issuing certification against, and may be a Product Standard, a management system Standard, a food safety Standard or another set of documented criteria.

Action required: This category of findings requires SAI Global to issue a formal NCR; to receive and approve client's proposed correction and corrective action plans; and formally verify the effective implementation of planned activities. Correction and corrective action plan should be submitted to SAI Global prior to commencement of follow-up activities as required. Follow-up action by SAI Global must 'close out' the NCR or reduce it to a lesser category within 90 days for initial certification and within 60 days for surveillance or re-certification audits, from the last day of the audit.

If significant risk issues (e.g. safety, environmental, food safety, product legality/quality, etc.) are detected during an audit these shall be reported immediately to the Client and more immediate or instant correction shall be requested. If this is not agreed and cannot be resolved to the satisfaction of SAI Global, immediate suspension shall be recommended.

In the case of initial certification, failure to close out NCR within the time limits means that the Certification Audit may be repeated.

If significant risk issues (e.g. safety, environmental, food safety, product legality/quality, etc.) are detected during an audit these shall be reported immediately to the Client and more immediate or instant correction shall be requested. If this is not agreed and cannot be resolved to the satisfaction of SAI Global, immediate suspension shall be recommended.

In the case of an already certified client, failure to close out NCR within the time limits means that suspension proceedings may be instituted by SAI Global.

Follow-up activities incur additional charges.

Minor Non-conformance:

Represents either a management system weakness or minor issue that could lead to a major nonconformance if not addressed. Each minor NC should be considered for potential improvement and to further investigate any system weaknesses for possible inclusion in the corrective action program

Action required: This category of findings requires SAI Global to issue a formal NCR; to receive and approve client's proposed correction and corrective action plans; and formally verify the effective implementation of planned activities at the next scheduled audit.

Opportunity for Improvement:

A documented statement, which may identify areas for improvement however shall not make specific recommendation(s).

Action required: Client may develop and implement solutions in order to add value to operations and management systems. SAI Global is not required to follow-up on this category of audit finding.

Audit Type and Purpose - Systems Audit:

A desktop audit of the operational plan for the subject systems to assess whether the documented QMS meets the PLAN requirements of the DWQMS V2.

Audit Objectives

The objective of the audit was to determine whether the drinking water Quality Management System (QMS) of the subject system conforms to the requirements of the Ontario Ministry of the Environment & Climate Change (MOECC) Drinking Water Quality Management Standard (DWQMS V2).

The audit was also intended to gather the information necessary for SAI Global to assess whether accreditation can continue or be offered to the operating authority.

Audit Scope

The operational plan and processes associated with the operating authority's QMS were objectively evaluated to determine a) whether the quality management activities and related results conform with the DWQMS V2 PLAN requirements.

Audit Criteria:

- The Drinking Water Quality Management Standard Version 2
- Current QMS manuals, procedures and records implemented by the Operating Authority
- SAI Global Accreditation Program Handbook

Confidentiality and Documentation Requirements

The SAI Global stores their records and reports to ensure their preservation and confidentiality. Unless required by law, the SAI Global will not disclose audit records to a third party without prior written consent of the applicant. The only exception will be that the SAI Global will provide audit and corrective action reports to the Ontario Ministry of the Environment. For more information, please refer to the SAI Global Accreditation Program Handbook.

As part of the SAI Global Terms, it is necessary for you to notify SAI Global of any changes to your Quality Management System that you believe are significant enough to risk non-conformity with DWQMS V2: For more information, please refer to the SAI Global Accreditation Program Handbook.

Review of any changes

There have been no noted changes to the system.

EXECUTIVE OVERVIEW

The objective of this System audit (Stage 1) was to review the management system and processes, confirm the scope for certification, and determine the organization's preparedness for the onsite verification audit (Stage 2). In addition, it allowed for the review of the adequacy of the SAI Global audit program and resources for the audit including confirming and preparing the draft audit plan.

The results of this System (Stage 1) audit indicate that the organization is now ready for an onsite accreditation (Stage 2) audit.

Recommendation

Based on the results of this audit it has been determined that the management system is effectively implemented and maintained and meets the PLAN requirements of the standard relative to the scope of certification identified in this report; a recommendation for continued certification will be submitted to SAI Global review team pending the outcome of the onsite verification audit.

Opportunities for Improvement:

The following opportunities for improvement have been identified for the identified clauses;

- 3 - Consider clarifying the role of the CAO as an Owner representative endorsing the Operational Plan
- 3 - Consider referencing section 9 to identifying/specifying the top management by position title.
- 9 - Consider defining the roles, responsibility and authority of the ORO and an OIT (Operator in Training) if such a role exists or is being planned.
- 10 - Consider expanding the definition of Competency beyond knowledge from (training) requirements defined in the table to also included education, experience and/or skills (as might be defined in position descriptions or job postings)
- 10 - Consider documenting the process by which initial and ongoing competency is assessed.
- 16 - Consider including within the scope of each procedure a clarification regarding relevant sampling, testing or monitoring activities, that may or may not take place, upstream of the subject system (that is before water enters the DWS).
- 18 - Consider reviewing the 5-year frequency to assess if the frequency may be too long between changes of people, processes, equipment, hazards and the frequency of actual events.

It is suggested that the opportunities for improvement be considered by management to further enhance the Operating Authority's Quality Management System and performance.

Management System Documentation

The management systems operational plan Rev 10 was reviewed and found to be in conformance with the PLAN requirements of the standard.

Management Review

The procedure for management review was found to meet the PLAN requirements of the standard.

Internal Audits

The procedure for Internal audits was found ensure conformance to PLAN arrangements, the requirements of the standard and the established management system.

Corrective, Preventive Action & Continual Improvement Processes

The procedure for implementing an effective process for the continual improvement of the management system through the appropriate management of corrective and preventive actions and management reviews was found to meet the PLAN requirement of the standard.

Summary of Findings

1. Quality Management System	Conforms
2. Quality Management System Policy	Conforms
3. Commitment and Endorsement	Conforms/OFI
4. Quality Management System Representative	Conforms
5. Document and Records Control	Conforms
6. Drinking-Water System	Conforms/****
7. Risk Assessment	Conforms
8. Risk Assessment Outcomes	Conforms
9. Organizational Structure, Roles, Responsibilities and Authorities	Conforms/OFI/****
10. Competencies	Conforms/OFI
11. Personnel Coverage	Conforms
12. Communications	Conforms
13. Essential Supplies and Services	Conforms
14. Review and Provision of Infrastructure	Conforms
15. Infrastructure Maintenance, Rehabilitation & Renewal	Conforms
16. Sampling, Testing and Monitoring	Conforms
17. Measurement & Recording Equipment Calibration and Maintenance	Conforms/****
18. Emergency Management	Conforms/OFI
19. Internal Audits	Conforms
20. Management Review	Conforms
21. Continual Improvement	Conforms

Major NCR #	Major non-conformity. The auditor has determined one of the following: (a) a required element of the DWQMS has not been incorporated into a QMS; (b) a systemic problem with a QMS is evidenced by two or more minor non-conformities; or (c) a minor non-conformity identified with a corrective action request has not been remedied.
Minor NCR #	Minor non-conformity. In the opinion of the auditor, part of a required element of the DWQMS has not been incorporated satisfactorily into a QMS.
OFI	Opportunity for improvement. Conforms to requirement, but there is an opportunity for improvement.
Conforms	Conforms to requirement.
NANC	Not applicable/Not Covered during this audit.
********	Additional comment added by auditor in the body of the report.

PART D. Audit Observations, Findings and Comments

DWQMS Reference:	1 Quality Management System
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 dated Dec 12, 2019
Details: *The operational plan details all requirements of the standard*	

DWQMS Reference:	2 Quality Management System Policy
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 2
Details: *The policy is outlined in its commitments to W-A-T-E-R and addresses all required commitments. The W-A-T-E-R poster is a format that communicates to OA personnel, the Owner and the Public.*	

DWQMS Reference:	3 Commitment and Endorsement
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 3
Details: *Owner Representatives of Niagara Regional Council; The Regional Chair and Regional Clerk endorse the Operational plan through direct sign off the Operational Plan in Section 3. Operating Authority top management representatives sign off via the Commitment and Endorsement Memorandum.* *Per Section 9 Top Management includes the* • *Commissioner of Public Works* • *Director of Water and Wastewater* • *Associate Director, Water Operations, Maintenance, and Staff Development* *OFI - Consider clarifying the role of the CAO as an owner representative endorsing the Operational Plan* *OFI – Consider referencing section 9 to identifying/specifying the top management by position title.*	

DWQMS Reference:	4 Quality Management System Representative
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 4 & Section 9
Details: *Top Management has appointed the Water-Wastewater Quality Management Specialist (reporting to the Manager, Quality & Compliance – Water) as the QMS Representative for Niagara Region's drinking water systems. The representatives' responsibilities with respect to the DWQMS are defined in Section 4. The role is also reflected in Section 9 of the operational plan*	

DWQMS Reference:	5 Document and Record Control
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 5 Procedure - Document and Records Control (QMS-WT-ALL-P-050) Rev 8
Details: *Section 5 of the Operational plan references the procedure which provides full details of the document and records control.* *Table 1 of the Procedure identifies "other documents" required in support of the DWQMS i.e. Records Retention Bylaw, Niagara Region Purchasing Bylaw, External Sampling testing & Monitoring Reference documents* *The Operational Plan includes hyperlinks to references procedures, appendices, tables and forms.* *The EtQ database is used to track document reviews and approvals.* *Read only documents are available via the Niagara Region Employee Portal VINE and the SOP & Controlled Document Search page.* *The procedure also references the Corporate Records Retention By-Law and Schedule. In addition, information outlined in Table 2 of the procedure identifies records relevant to the DWQMS in electronic or printed format, record owner, storage and retention.*	

DWQMS Reference:	6 Drinking Water System
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 6 Decew Falls DWS QMS-WT-DN-P-060 Rev 7 Grimsby DWS QMS-WT-GR-P-060 Rev 4 Port Colborne DWS QMS-WT-PC-P-060 Rev 5 Rosehill DWS QMS-WT-RH-P-060 Rev 9 Welland DWS QMS-WT-WE-P-060 Rev 7

Details:

DECEW Falls DWS includes the following described assets;

- *Decew Falls Water Treatment Plant (source Lake Erie & Lake Gibson)*
- *Niagara Falls Water Treatment Plant (source Lake Erie, Niagara River via Welland River/Chippewa Creek)*
- *Lundy's Lane Tower (Elevated Tank)*
- *Brock Street (Brock High Lift) Booster Pumping Station*
- *Glendale Pumping Station & Glendale Meter Chamber*
- *Kent Avenue Reservoir & Booster Pumping Station*
- *Vineland Booster Pumping Station*
- *Fifth Avenue Reservoir & Re-Chlorination Station*
- *Montrose Road Re-Chlorination Station*
- *Line 2 Re-Chlorination Station*
- *Niagara-On-The-Lake Analyzer Station*
- *Carlton Street Reservoir (not in service)*
- *Port Robinson Re-Chlorination Station*
- *St. David's Re-Chlorination Station, St. David's Standpipe*
- *Stanley Avenue Re-Chlorination Station*
- *Thorold South Elevated Tank (Zone 3)*
- *Virgil Elevated Tank*
- *Zone 2 Standpipe (St. Catharine's)*

Source water characteristics are reflected in table 1 and 2.
Table 3 describes common event driven fluctuation.
Water treatment process include pre-chlorination, coagulation, flocculation and sedimentation, filtration (activated carbon and silica sand) & UV disinfection, Primary disinfection – chlorination; Secondary disinfection – chlorination in the distribution system.
Table 4 identifies distribution systems connected and the Owner/Operating authorities.

Process Schematic QMS-WT-DN-V-060 Rev 3

Grimsby DWS assets include;

- *Grimsby Water Treatment Plant (source Lake Ontario)*
- *Hixon Street Reservoir*
- *Lincoln / Grimsby Booster Pumping Station*
- *Park Road Reservoir & Booster Pumping Station*
- *Smithville Elevated Tank, Reservoir & Booster Pumping Station*

Source water characteristics are reflected in table 1
Table 2 describes common event driven fluctuation.
Water treatment process include pre-chlorination, coagulation, flocculation and sedimentation, filtration (activated carbon and silica sand) & UV disinfection, Primary disinfection – chlorination; Secondary disinfection – chlorination in the distribution system.
Table 3 identifies distribution systems connected and the Owner/Operating authorities.

Process Schematic QMS-WT-GR-V-060 Rev 3

Port Colborne DWS assets include;

- *Port Colborne Water Treatment Plant (source Lake Erie)*
- *Fielden Avenue Reservoir & Pumping Station;*
- *Barrick Road Elevated Tank;*

Source water characteristics are reflected in table 1
Table 2 describes common event driven fluctuation.
Water treatment process include pre-chlorination, coagulation, flocculation and sedimentation, filtration (activated carbon and silica sand) & UV disinfection, Primary disinfection – chlorination; Secondary disinfection – chlorination in the distribution system.
Table 3 identifies distribution systems connected and the Owner/Operating authority (City of Port Colbourne/Distribution System).

Process Schematic QMS-WT-PC-V-060 Rev 4

Rosehill DWS assets include;

- *Rosehill Water Treatment Plant; (Source Lake Erie)*
- *Central Avenue Elevated Tank;*
- *Erie Road Re-Chlorination Station;*
- *Ridgeway Standpipe;*
- *Stevensville Reservoir & Pumping Station.*

Source water characteristics are reflected in table 1 (Comment: table 1 is duplicate in section 5.2.2 and 5.2.3)
Table 2 describes common event driven fluctuation.
Water treatment process include pre-chlorination, coagulation, flocculation and sedimentation, filtration (activated carbon and silica sand) & UV disinfection, Primary disinfection – chlorination; Secondary disinfection – chlorination in the distribution system.

Table 3 identifies distribution systems connected and the Owner/Operating authority (Town of Fort Erie/Fort Erie Distribution)

Process Schematic QMS-WT-RH-V-060 Rev 5

Welland DWS assets include;

- *Welland Water Treatment Plant; (source Lake Erie)*
- *Bemis Park Elevated Tank;*
- *Pelham Elevated Tank;*
- *Shoalts Drive Reservoir and Pumping Station;*

Source water characteristics are reflected in table 1 (Comment: table 1 is duplicate in section 5.2.2 and 5.2.3)
Table 2 describes common event driven fluctuation.
Water treatment process include pre-chlorination, coagulation, flocculation and sedimentation, filtration (activated carbon and silica sand) & UV disinfection, Primary disinfection – chlorination; Secondary disinfection – chlorination in the distribution system.
Table 3 identifies distribution systems connected and the Owner/Operating authorities.

Process Schematic QMS-WT-WE-V-060 Rev 6

Comment: There appears to be no specific mention of lake turnover as seasonal or event driven fluctuations in except for the Rosehill DWS description in Table 2.

DWQMS Reference	7 Risk Assessment
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 7 Procedure - Drinking Water System Risk Assessment (QMS-WT-ALL-P-070) Rev 9

Details: *The procedure outlines the risk assessment method and criteria. Risk assessment outcome are documented in Risk Assessment Outcomes Table (QMS-WT-ALL-T-080) and stored I the EtQ portal.*
Risk assessment is completed annually.
Risk Assessment Review Form - Water (QMS-WT-ALL-F-070 Rev 0) is used to updates the completed Risk Assessment Outcomes Table with changes as applicable. A rank of >15 denotes the need for action.
Appendix A of the procedure defines the risk assessment scoring criteria;
Table A1 Likelihood (1-5; 1=Rare, 5=Very Likely);
Table A2 Severity impact water quality (1-5; 1=Insignificant, 5=Catastrophic);
Table A3 Severity impact on system capacity (1-5; 1=Insignificant, 5=Catastrophic);
Table A4 Severity impact on compliance (1-5; 1=Insignificant, 5=Catastrophic);
Table A5 Severity impact on the environment (1-5; 1=Insignificant, 5=Catastrophic);
Table A6 Severity impact financial (1-5; 1=Insignificant, 5=Catastrophic);
Table A4 Severity impact on reputation (1-5; 1=Insignificant, 5=Catastrophic);

DWQMS Reference:	8 Risk Assessment Outcomes
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 8

Details:
Risk Outcomes Table QMS-WT-ALL-T-080 Rev 4
CCPs for Niagara Region's drinking water systems are identified as:

- *CCP: Coagulant (Aluminum Sulphate) Feed (OP-WT-ALL-P-006)*
- *CCP: Secondary Disinfection (Distribution Chlorine) (OP-WT-ALL-P-007)*
- *CCP: Filter Effluent Turbidity (OP-WT-ALL-P-008)*
- *CCP: Primary Disinfectant (Sodium Hypochlorite) Feed (OP-WT-ALL-P-009)*
- *CCP: Verification of Primary Disinfection (OP-WT-ALL-P-010)*

DWQMS Reference:	9 Organizational Structure, Roles, Responsibility and Authorities
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section

Details: *Roles, responsibilities and authorities are defined in table 3. The organizational chart Figure 2 identifies the interrelationship of the various roles and lines of reporting.*

Comment: The reverse of the statement actually seems to be true for Figure 2 and table 3 "Positions that are greyed in Table 3 are have been deemed to ***not*** *directly impact drinking water quality."*

OFI: Consider defining the roles, responsibility and authority of the ORO and an OIT (Operator in Training) if such a role exists or is being planned.

Roles and responsibilities in an emergency are delegated/reflected by title. They are documented in section 4 of ERP-ALL-ALL-P-001.

DWQMS Reference:	10 Competencies
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 10 Procedure – Competencies QMS-WT-ALL-P-100 Rev 7

Details: *Competencies have been documented in the Competency table QMS-ALL-ALL-T-100 Rev 8*

OFI – Consider expanding the definition of Competency beyond knowledge from (training) requirements defined in the table to included education, experience and/or skills (as might be defined in position descriptions or job postings)

OFI - Consider documenting the process by which initial and ongoing competency is assessed.

DWQMS Reference:	11 Personnel Coverage
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 11 Procedure - Personnel Coverage QMSWT-ALL-P-110 Rev 8

Details: *Coverage of Water Operations Staff, the Manager-on-call and ORO and OIC, Water Maintenance and Technical Trades is defined. Details for schedules are reflected in the Manager-On-Call Schedule. On Call schedule change process is defined per the On-Call Scheduling procedure ADM-ALL-ALL-P-005.*

DWQMS Reference:	12 Communications
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 12 & 3.3 Procedure - Communications QMS-WT-ALL-P-120 Rev 6

Details: *Procedure defines communications between top management and*

- *Council (Owner)*
- *Operating Authority Personnel*
- *Suppliers*
- *Area Municipalities*
- *General Public*
- *External Agencies*

Communication from Top Management to the Owner is conducted through an annual report to Council that summarizes: Operational Plan updates, Internal Audit results, Management Review results.

Communications from the Owner to Top Management occur via Public Works Committee meetings.

Communications with Suppliers occurs via Niagara Region's Corporate Services Department and the W-WW Contract Administrators to ensure that tendered essential suppliers receive relevant information.

Water Servicing Memoranda of Understanding with each are municipality defines the communication expectations between the region and municipality.

Communication with the Public occurs via the external newsletter GreenScene and the DWQMS link in the Regions Website. The "Contact us" link on the public website also provides an avenue for public communications with Top management,

DWQMS Reference:	13 Essential Supplies and Services
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 13 Procedure - Essential Supplies and Services QMS-WTALL-P-130 Rev 9

Details:
Procedure references the Essential Supplies and Services page on Vine. Chemical, laboratory and calibration services are included. Sections 5.2, 5.3, 5.4 and 5.5. define the means for ensuring requirements are met.

For chemical suppliers the procedure Bulk Chemical Deliveries OP-ALL-ALL-P-001 defines supplier requirements

Contract requirements for essential supplies and/or services can be found referenced in the applicable Request for Tender or Request for Quotation from Niagara Region's Purchasing Services. The Purchasing By-Law defines purchasing policies and procedures for Niagara Region.

Essential Supplies and Services associated with capital expenses are described in Water-Wastewater Project Design Manual (ENG-PM-ALL-MAN-001).

DWQMS Reference:	14 Review and Provision of Infrastructure
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 14 Procedure - Review, Rehabilitation, and Renewal of Infrastructure QMS-WT-ALL-P-140 Rev 9

Details: *Procedure outlines a process for the annual review of drinking water system infrastructure to ensure its continued adequacy. It details how capitally-funded drinking-water infrastructure rehabilitation and renewal projects are initiated, approved and communicated to the Owner.*

Various means for review include

- *W-WW working group staff meetings (Operations, Maintenance, Quality & Compliance, Engineering, Capital Planning, others)*
- *DLT Meetings*
- *Condition Assessment Studies*
- *Master Servicing Plan (identifies short and long-term infrastructure needs)*
- *Detailed Servicing Studies (can be from lower tier municipalities)*
- *Risk Assessment workshops and reviews*
- *MOECC inspections*
- *Process studies*
- *Observations made during regular system operation*

Project Initiation Request is used to identify a potential infrastructure need.
Annual Capital validation Process defined and reflected in Figure 1 process overview.

DWQMS Reference:	15 Infrastructure Maintenance, Rehabilitation and Renewal
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 15 Procedure - Maintenance QMS-WT-ALL-P-150 Rev 5

Details:
The procedure defines planned and unplanned maintenance requirements per Figure 1. Table 1 defines maintenance service by team. The use of the Operations Work Request Process MTCE-WT-ALL-P-002 is used when staff recognize need for non-emergency work. Area Managers are responsible for development of Preventive maintenance Schedules. Work orders are generated weekly.
Procedure for unplanned maintenance and maintenance after hours have been established. i.e. Procedure - Maintenance After-Hours Call-In Process - Water (OP-WT-ALL-V-001)

DWQMS Reference:	16 Sampling, Testing and Monitoring
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 16 Procedure -Sampling, Testing and Monitoring QMS-WT-ALL-P-160 Rev 5

Details:
Details for Sampling, Testing and Monitoring Activities in each DWS are reflected the following procedures;

- *Rosehill WTP QMS-WT-RH-T-160 Rev 6*
- *Niagara Falls QMS-WT-NF-T-160 Rev 6*
- *Welland QMS-WT-RH-T-160 Rev 7*
- *Port Colborne QMS-WT-PC-T-160 Rev 7*
- *Grimsby QMS-WT-GR-T-160 Rev 6*
- *DeCew Falls QMS-WT-DF-T-160 Rev6*

The tables within each of the listed procedures includes a column for challenging conditions.

OFI: Consider including within the scope of each procedure a clarification regarding relevant sampling, testing or monitoring activities that may or may not take place upstream of the subject system (that is before water enters the DWS).

Sample are collected by and analysed by a certified Water Operator according to the procedures. The Operator records internal testing results on the Plant Log Sheet. Which are reviewed at least once every 72 hours.

Key process parameters for each drinking water system are continuously monitored using a SCADA system.

External testing includes analyses that are performed by an external, Ministry-licenced drinking-water laboratory as defined in the above noted procedures. External testing covers Microbiological, Chemical, Radiological and Inorganic Parameters as defined in the referenced regulations.

DWQMS Reference:	17 Measurement and Recording Equipment Calibration and Maintenance
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 17 Procedure - Measurement and Recording Equipment Calibration and Maintenance QMS-WT-ALL-P-170 Rev 6

Details:

The procedure defines calibration and maintenance programs for instrumentation and equipment used in Niagara Region's drinking water systems. Additional calibration and verification activities are referenced in Table 1 for handheld and benchtop chlorine analyzers and turbidity meters.

Table 2 provides maintenance/calibration requirements for verification or calibration (reference vs confirmation vs calibration.

Table 3 defines functional uses of equipment (information vs control vs regulatory)

The EAM PM Schedule controls and hold calibration and verification records of measuring equipment.

In house Instrumentation Technicians are responsible for completion of online instrumentation calibrations and verifications
Comment: What are the competency requirements for in house Instrumentation Technicians – see OFI under Clause 10 above

DWQMS Reference:	18 Emergency Management
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 18 Water and Wastewater Emergency Response Plan ERP-ALL-ALL-P-001 Rev 7

Details:

Section 2 of the ER Procedure lists the procedure in response to the listed specified potential emergency situations
Section 3 describes the communication tree per figure 1. In addition, the Emergency Response Contact List (ERP-ALL-ALL-T-002) is also included as part of the ERP Manual. And exists as a separate document.

The Emergency & Debrief Reporting Form (ERP-ALL-ALL-F-001) is used to capture debriefing notes following an emergency event. Details of the debriefing process are outlined in procedure Post-Event Debriefing (ADM-ALL-ALL-P-009).

Section 6 documents requirements for training which included both orientation sessions and ERP documentation reviews via e-learning and table top workshops.

Section 7 documents the requirements for testing (table top of full scale)

The procedure documents that drills are held at least every five years and that real emergencies may be used to evaluate and revise emergency response.

OFI – Consider reviewing the 5-year frequency to assess if the frequency may be too long between changes of people, processes, equipment, hazards and the frequency of actual events.

Niagara Region's Water-Wastewater Services Division has signed a Mutual Aid & Assistance Agreement with OnWARN of which participation requirements are detailed in procedure OnWARN Emergency Response Assistance (OP-ALL-ALL-P-002).

Other documentation in support of this element include

- *Various checklist for spills, contamination within a treatment plant or system, source water quality compromise, inability to meet water demand, adverse water quality results and sewage spills*
- *Evacuation procedures*
- *Watermain shutdown and repair*
- *Watermain breaks*
- *Adverse water quality results handling*
- *Emergency lab services for non-bacteriological sampling*
- *Source water protection zone maps*
- *Sewage spill clean up*

DWQMS Reference:	19 Internal Audits
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 19 Procedure Internal Auditing QMS-WT-ALL-P-190 Rev 9

Details:

The procedure documents the criteria (Section 1), scope (Section 5.2) and frequency of internal audits (Section 5.3) ; that all 21 elements are assessed at least every 3 calendar years and that each DWS facility is audited at least every 2 calendar years.
Records keeping is defined in section 5.6 reporting and references the Document and Records Control procedure QMS-WT-ALL-P-050.

Section 5.4.3 refers to the review of results of previous audits in preparation for the audit.

Section 5.6.3 defines the use of the Corrective Action procedure QMS-WT-ALL-P-210 for identification and initiation of corrective actions.

DWQMS Reference:	20 Management Review
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 20 Procedure - Management Review QMS-WT-ALL-P-200 Rev 7
Details: *The procedure specifies a management review once per calendar by means of a Q2 and a Q4 meeting with all requirements discussed over course of the 2 meetings. In section 5.3.1, the procedure defines the specific items to be discussed in each of the respective meetings. All required inputs have been specified.*	

DWQMS Reference:	21 Continual Improvement
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 21 Procedure - Corrective Action, Preventive Action, and Best Practices QMS-WT-ALL-P-210 Rev 8
Details: *EtQ is the Management system software tool used to track and monitor corrective and preventive actions. EtQ is also used record the root cause analysis.* *Best Practices are also part of the procedure. The procedure specifies that at least once every 36 months the QMS representative will review best practices published by the MECP.* *The procedure describes activities for handling both corrective actions and preventive actions. Handling of best practices and preventive action are addressed in Section 5.4 of the procedure with Figure 2 providing an overview of the process*	

This report was prepared by:

Marco Brunato
SAI Global Management Systems Auditor

The audit report is distributed as follows:

- SAI Global
- Operating Authority
- Owner
- MOECC

Notes

Copies of this report distributed outside the organization must include all pages.

Audit Report

Re Accreditation Audit for

The Regional Municipality of Niagara

1631650-02

Audited Address: 3501 Schmon Parkway, Thorold, Ontario, CAN, L2V 4T7

Start Date: Jul 06, 2020 End Date: Jul 10, 2020

Type of audit – Re-accreditation Verification Audit

Issue Date: July 24, 2020
Revision Level:

BACKGROUND INFORMATION

SAI Global conducted an audit of The Regional Municipality of Niagara beginning on Jul 06, 2020 and ending on Jul 10, 2020 to DRINKING WATER QUALITY MANAGEMENT STANDARD VERSION 2 - 2017.

The purpose of this audit report is to summarise the degree of compliance with relevant criteria, as defined on the cover page of this report, based on the evidence obtained during the audit of your organization. This audit report considers your organization's policies, objectives, and continual improvement processes. Comments may include how suitable the objectives selected by your organization appear to be in regard to maintaining customer satisfaction levels and providing other benefits with respect to policy and other external and internal needs. We may also comment regarding the measurable progress you have made in reaching these targets for improvement.

SAI Global audits are carried out within the requirements of SAI Global procedures that also reflect the requirements and guidance provided in the international standards relating to audit practice such as ISO/IEC 17021-1, ISO 19011 and other normative criteria. SAI Global Auditors are assigned to audits according to industry, standard or technical competencies appropriate to the organization being audited. Details of such experience and competency are maintained in our records.

In addition to the information contained in this audit report, SAI Global maintains files for each client. These files contain details of organization size and personnel as well as evidence collected during preliminary and subsequent audit activities (Documentation Review and Scope) relevant to the application for initial and continuing certification of your organization.

Please take care to advise us of any change that may affect the application/certification or may assist us to keep your contact information up to date, as required by SAI Global Terms and Conditions.

This report has been prepared by SAI Global Limited (SAI Global) in respect of a Client's application for assessment by SAI Global. The purpose of the report is to comment upon evidence of the Client's compliance with the standards or other criteria specified. The content of this report applies only to matters, which were evident to SAI Global at the time of the audit, based on sampling of evidence provided and within the audit scope. SAI Global does not warrant or otherwise comment upon the suitability of the contents of the report or the certificate for any particular purpose or use. SAI Global accepts no liability whatsoever for consequences to, or actions taken by, third parties as a result of or in reliance upon information contained in this report or certificate.

Please note that this report is subject to independent review and approval. Should changes to the outcomes of this report be necessary as a result of the review, a revised report will be issued and will supersede this report.

Standard:	DRINKING WATER QUALITY MANAGEMENT STANDARD VERSION 2 - 2017
Scope of Certification:	Treatment and Distribution System
Drinking Water System Owner:	Regional Municipality of Niagara
Operating Authority:	Regional Municipality of Niagara
Population Services:	400,000
Activities:	**Treatment Distribution**
Drinking Water Systems	Decew Falls / Niagara Falls Drinking Water System, Municipal Drinking Water Licence # 007-102, Issue 5 Grimsby Drinking Water System, Municipal Drinking Water Licence # 007-105, Issue 3 Port Colborne Drinking Water System, Municipal Drinking Water Licence # 007-101, Issue 3 Welland Drinking Water System; Municipal Drinking Water Licence # 007-104, Issue 3 Rosehill Drinking Water System, Municipal Drinking Water Licence # 007-103, Issue 5
Total audit duration:	**Person(s):** 1 **Day(s):** 4.50
Audit Team Member(s):	Team Leader Marco Brunato

Definitions and action required with respect to audit findings

Major Non-conformance:

Based on objective evidence, the absence of, or a significant failure to implement and/or maintain conformance to requirements of the applicable standard. Such issues may raise significant doubt as to the capability of the management system to achieve its intended outputs (i.e. the absence of or failure to implement a complete Management System clause of the standard); or

A situation which would on the basis of available objective evidence, raise significant doubt as to the capability of the Management System to achieve the stated policy and objectives of the customer.

NOTE: The "applicable Standard" is the Standard which SAI Global are issuing certification against, and may be a Product Standard, a management system Standard, a food safety Standard or another set of documented criteria.

Action required: This category of findings requires SAI Global to issue a formal NCR; to receive and approve client's proposed correction and corrective action plans; and formally verify the effective implementation of planned activities. Correction and corrective action plan should be submitted to SAI Global prior to commencement of follow-up activities as required. Follow-up action by SAI Global must 'close out' the NCR or reduce it to a lesser category within 90 days for initial certification and within 60 days for surveillance or re-certification audits, from the last day of the audit.

If significant risk issues (e.g. safety, environmental, food safety, product legality/quality, etc.) are detected during an audit these shall be reported immediately to the Client and more immediate or instant correction shall be requested. If this is not agreed and cannot be resolved to the satisfaction of SAI Global, immediate suspension shall be recommended.

In the case of initial certification, failure to close out NCR within the time limits means that the Certification Audit may be repeated.

If significant risk issues (e.g. safety, environmental, food safety, product legality/quality, etc.) are detected during an audit these shall be reported immediately to the Client and more immediate or instant correction shall be requested. If this is not agreed and cannot be resolved to the satisfaction of SAI Global, immediate suspension shall be recommended.

In the case of an already certified client, failure to close out NCR within the time limits means that suspension proceedings may be instituted by SAI Global.

Follow-up activities incur additional charges.

Minor Non-conformance:

Represents either a management system weakness or minor issue that could lead to a major nonconformance if not addressed. Each minor NC should be considered for potential improvement and to further investigate any system weaknesses for possible inclusion in the corrective action program

Action required: This category of findings requires SAI Global to issue a formal NCR; to receive and approve client's proposed correction and corrective action plans; and formally verify the effective implementation of planned activities at the next scheduled audit.

Opportunity for Improvement:

A documented statement, which may identify areas for improvement however shall not make specific recommendation(s).

Action required: Client may develop and implement solutions in order to add value to operations and management systems. SAI Global is not required to follow-up on this category of audit finding.

Audit Type and Purpose

On-site Verification Audit:

An onsite audit to assess whether a QMS has been implemented for the subject system that meets the “DO” requirements of the DWQMS V2.

This audit was conducted remotely for part of the audit but on site for assessment of the conditions at the treatment plants per the audit plan.

Audit Objectives

The objective of the audit was to determine whether the drinking water Quality Management System (QMS) of the subject system conforms to the requirements of the Ontario Ministry of the Environment & Climate Change (MOECC) Drinking Water Quality Management Standard (DWQMS V2).

The audit was also intended to gather the information necessary for SAI Global to assess whether accreditation can continue or be offered or to the operating authority.

Audit Scope

The facilities and processes associated with the operating authority’s QMS were objectively evaluated to obtain audit evidence and to determine a) whether the quality management activities and related results conform with DWQMS V2 requirements, and b) if they have been effectively implemented and/or maintained.

Audit Criteria:

- The Drinking Water Quality Management Standard Version 2
- Current QMS manuals, procedures and records implemented by the Operating Authority
- SAI Global Accreditation Program Handbook

Confidentiality and Documentation Requirements

The SAI Global stores their records and reports to ensure their preservation and confidentiality. Unless required by law, the SAI Global will not disclose audit records to a third party without prior written consent of the applicant. The only exception will be that the SAI Global will provide audit and corrective action reports to the Ontario Ministry of the Environment. For more information, please refer to the SAI Global Accreditation Program Handbook.

As part of the SAI Global Terms, it is necessary for you to notify SAI Global of any changes to your Quality Management System that you believe are significant enough to risk non-conformity with DWQMS V2: For more information, please refer to the SAI Global Accreditation Program Handbook.

Review of any changes

Changes to the Operating Authority since last audit include: No Changes

EXECUTIVE OVERVIEW

The results of this onsite verification audit (Stage 2) indicate that the management system does not fully meet the requirements of the standard based on the area(s) of non-conformance identified during the audit and as documented in the attached Non-conformance Report(s). As discussed during the closing meeting a recommendation for certification to the standard and to the scope of certification identified in this report is on hold pending the receipt, review and acceptance of the corrective action taken. For re-certification, failure to address the nonconformances within the 60-day timeframe may lead to suspension.

Nonconformance

Minor NCR 2020-01

- Element 17 Measurement & Recording Equipment Calibration and Maintenance

Opportunities for Improvement:

The following opportunities for improvement have been identified.

- 6 – Consider the addition of the map indicating the 3 operating areas with the associated assets for which the areas are responsible
- 17 – Consider recording the lot number referenced on decanted PH buffers used to calibrate PH meters/sensors.
- 18 - Consider addition of MetroLinx (GO) to Emergency contacts list considering the increased frequency of trips between Niagara Falls and Hamilton.

It is suggested that the opportunities for improvement be considered by management to further enhance the Operating Authority's Quality Management System and performance.

Management System Documentation

The management systems operational plan(s) was reviewed and found to be in conformance with the requirements of the standard.

Management Review

Records of the most recent management review meetings were verified and found to meet the requirements of the standard. All inputs were reflected in the records and appear suitably managed as reflected by resulting actions and decisions.

Internal Audits

Internal audits are being conducted at planned intervals to ensure conformance to planned arrangements, the requirements of the standard and the established management system.

Corrective, Preventive Action & Continual Improvement Processes

The Operating Authority is implementing an effective process for the continual improvement of the management system through the use of the quality policy, quality objectives, audit results, data analysis, the appropriate management of corrective and preventive actions and management review.

Summary of Findings

1. Quality Management System	Conforms
2. Quality Management System Policy	Conforms
3. Commitment and Endorsement	Conforms
4. Quality Management System Representative	Conforms
5. Document and Records Control	Conforms
6. Drinking-Water System	Conforms/OFI
7. Risk Assessment	Conforms
8. Risk Assessment Outcomes	Conforms
9. Organizational Structure, Roles, Responsibilities and Authorities	Conforms
10. Competencies	Conforms
11. Personnel Coverage	Conforms
12. Communications	Conforms
13. Essential Supplies and Services	Conforms
14. Review and Provision of Infrastructure	Conforms
15. Infrastructure Maintenance, Rehabilitation & Renewal	Conforms
16. Sampling, Testing and Monitoring	Conforms
17. Measurement & Recording Equipment Calibration and Maintenance	Minor NCR 2020-01 & OFI
18. Emergency Management	Conforms/OFI
19. Internal Audits	Conforms
20. Management Review	Conforms
21. Continual Improvement	Conforms

Major NCR #	Major non-conformity. The auditor has determined one of the following: (a) a required element of the DWQMS has not been incorporated into a QMS; (b) a systemic problem with a QMS is evidenced by two or more minor non-conformities; or (c) a minor non-conformity identified with a corrective action request has not been remedied.
Minor NCR #	Minor non-conformity. In the opinion of the auditor, part of a required element of the DWQMS has not been incorporated satisfactorily into a QMS.
OFI	Opportunity for improvement. Conforms to requirement, but there is an opportunity for improvement.
Conforms	Conforms to requirement.
NANC	Not applicable/Not Covered during this audit.
********	Additional comment added by auditor in the body of the report.

PART D. Audit Observations, Findings and Comments

DWQMS Reference:	1 Quality Management System
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 dated Dec 12, 2019
Details: *The operational plan details all requirements of the standard. All systems in place all treatment plants; all plants follow similar sops and for the smaller treatments sites. Policies & procedures established in all locations – few procedures plant specific. Operational Plan Rev 10*	

DWQMS Reference:	2 Quality Management System Policy
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 2
Details: *The policy is outlined in its commitments to W-A-T-E-R and addresses all required commitments. The W-A-T-E-R poster is a format that communicates to OA personnel, the Owner and the Public.* *Associate Director Water operations and maintenance John Brunet* - *Constant updates* - *Ensure a dedicated resource for policy and procedure updates and understanding by the staff* - *New policies and engineering (contractors and capital projects) and asset management* - *Water succession; brain drain in last 5-10years; new young staff with high educational levels i.e. environmental studies* - *12 municipal customers/partners and end users* - *Water quality high,* - *Still high capacity for growth* - *Compliance regulations – guides* *Associate Water & Integration Systems – support group on water and ops, maintenance; specialized tech groups. H&S. Public outreach – campaigns - wastewater flushable; water festival; water wagon at large events (>500 people)* *Associate Asset Management Richard Pinder* *Director of Water and waste water services Joe – future development; few complaints; timing of new capital projects; Succession in stable.* *Communication with the owners; more spend on water services.* *Owners awareness of need to maintain infrastructure;* *Sustainability –* *Risk Assessment – Environmental hazards; GHG, Source protection.* *Associate Direct Engineering – deliver capital program; ensure budget and funding – meets compliance; asset increasing and budget about; local municipalities* *Virtual Water Festival – included a 4-day lesson plan*	

DWQMS Reference:	3 Commitment and Endorsement
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 3
Details: *Owner Representatives of Niagara Regional Council; The Regional Chair and Regional Clerk endorse the Operational plan through direct sign off the Operational Plan in Section 3. Operating Authority top management representatives sign off via the Commitment and Endorsement Memorandum.* *Per Section 9 Top Management includes the* • *Commissioner of Public Works* • *Director of Water and Wastewater* • *Associate Director, Water Operations, Maintenance, and Staff Development* *Commitment & endorsement from the Regional Level and divisional level from the Water Services* *PW 19-2019 March 19, 2019 Request for Endorsement;* *Ownership; Regional Chair, PW Commissioner; carried by council March 19, 2019* *Per Memorandum submitted by R Whyte QMS Oct 11, 2019* *Top Management i.e. Rich Pinder Associate Director Asset management Oct 15, 2019*	

DWQMS Reference:	4 Quality Management System Representative
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 4 & Section 9

Details: *Top Management has appointed the Water-Wastewater Quality Management Specialist (reporting to the Manager, Quality & Compliance – Water) as the QMS Representative for Niagara Region's drinking water systems. The representatives' responsibilities with respect to the DWQMS are defined in Section 4. The role is also reflected in Section 9 of the operational plan*

WW QM Specialist responsible for the system maintenance
Interface with all departments i.e. Integrated Systems; Asset Management
Least connected with Engineering; interface needs to be managed by the WW Specialist
Compliance awareness shared with water compliance specialist; Communications via training course "This is how we do it" mandatory compliance course
Displayed Rev June 2019
Revised – look at the responsibilities of the various work groups; aligned the learning objectives
Contractors and Consultants also receive awareness training of Quality & Compliance - completed
Standard of Care for top Management, Ops Managers & Mtce Managers; once per council cycle and as required.

DWQMS Reference:	5 Document and Record Control
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 5 Procedure - Document and Records Control (QMS-WT-ALL-P-050) Rev 8

Details: *Vine portal demonstrated; Public services link is home page – Water Wastewater Services Division links*
EtQ login – to Reliance
Link to SOP & Controlled Document Search (Pulls from EtQ)
Emergency Response documents also linked as a main
EtQ indicates the current approved and revision level

QMS Records retained in EtQ records management module from the Portal link to Records Management; index identifies the disposition/retention dates; management review and internal audits also available and retained for up to 10 years

Bylaw 63-2013 Region Niagara retention and destruction of records

DWQMS Reference:	6 Drinking Water System
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 6 Decew Falls DWS QMS-WT-DN-P-060 Rev 7 Grimsby DWS QMS-WT-GR-P-060 Rev 4 Port Colborne DWS QMS-WT-PC-P-060 Rev 5 Rosehill DWS QMS-WT-RH-P-060 Rev 9 Welland DWS QMS-WT-WE-P-060 Rev 7

Details: *Physical onsite observations were made of the assets located below. All sites are consistent with the drinking water description provided*

<u>DECEW DWS assets observed included;</u>
- *Niagara Falls Water Treatment Plant (source Lake Erie, Niagara River via Welland River/Chippewa Creek)*
- *Lundy's Lane Tower (Elevated Tank)*
- *Kent Avenue Reservoir & Booster Pumping Station*
- *Stanley Avenue Re-Chlorination Station*
- *Queenston Heights Pumping Station*

Process Schematic QMS-WT-DN-V-060 Rev 3

<u>Grimsby DWS assets observed included;</u>
- *Grimsby Water Treatment Plant (source Lake Ontario)*
- *Hixon Street Reservoir*
- *Lincoln / Grimsby Booster Pumping Station*

Process Schematic QMS-WT-GR-V-060 Rev 3

<u>Welland DWS assets observed included;</u>
- *Welland Water Treatment Plant; (source Lake Erie)*
- *Bemis Park Elevated Tank;*
- *Shoalts Drive Reservoir and Pumping Station;*

Process Schematic QMS-WT-WE-V-060 Rev 6

DWQMS Reference	7 Risk Assessment
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 7 Procedure - Drinking Water System Risk Assessment (QMS-WT-ALL-P-070) Rev 9

Details: *The procedure outlines the risk assessment method and criteria. Risk assessment outcome are documented in Risk Assessment Outcomes Table (QMS-WT-ALL-T-080) and stored I the EtQ portal.*
Risk assessment is completed annually.
Risk Assessment Review Form - Water (QMS-WT-ALL-F-070 Rev 0) is used to updates the completed Risk Assessment Outcomes Table with changes as applicable. A rank of >15 denotes the need for action.
Appendix A of the procedure defines the risk assessment scoring criteria;
Table A1 Likelihood (1-5; 1=Rare, 5=Very Likely);
Table A2 Severity impact water quality (1-5; 1=Insignificant, 5=Catastrophic);
Table A3 Severity impact on system capacity (1-5; 1=Insignificant, 5=Catastrophic);
Table A4 Severity impact on compliance (1-5; 1=Insignificant, 5=Catastrophic);
Table A5 Severity impact on the environment (1-5; 1=Insignificant, 5=Catastrophic);
Table A6 Severity impact financial (1-5; 1=Insignificant, 5=Catastrophic);
Table A4 Severity impact on reputation (1-5; 1=Insignificant, 5=Catastrophic);

Risk assessment completed as per procedure.

DWQMS Reference:	8 Risk Assessment Outcomes
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 8

Details:
Risk Outcomes Table QMS-WT-ALL-T-080 Rev 4
CCPs for Niagara Region's drinking water systems are identified as:

- *CCP: Coagulant (Aluminum Sulphate) Feed (OP-WT-ALL-P-006)*
- *CCP: Secondary Disinfection (Distribution Chlorine) (OP-WT-ALL-P-007)*
- *CCP: Filter Effluent Turbidity (OP-WT-ALL-P-008)*
- *CCP: Primary Disinfectant (Sodium Hypochlorite) Feed (OP-WT-ALL-P-009)*
- *CCP: Verification of Primary Disinfection (OP-WT-ALL-P-010)*

Discussions with the control room/SCADA operator confirmed alarms established per the critical control points. No incidents of alarm conditions were observed during the on-site audit of the treatment plants visited as identified in element 6 above

DWQMS Reference:	9 Organizational Structure, Roles, Responsibility and Authorities
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section

Details: *Roles, responsibilities and authorities are defined in table 3. The organizational chart Figure 2 identifies the interrelationship of the various roles and lines of reporting.*
Regional Council
CAO – Owner representative
Comm. of Public works
Manager Water & Quality Compliance – position will not be filled
WW specialist report directly to the AD Water Operations & Maintenance
All ADs sit in the Environmental Centre (Schmon Parkway)
Water Ops includes – 3 operating areas defined by
3 Operations Manager and Maintenance Manager responsible for 3 plants each
Area 1 NF & Rosehill
Area 2 Welland & PC
Area 3 Decew (3 plants on one site) & Grimsby

DWQMS Reference:	10 Competencies
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 10 Procedure – Competencies QMS-WT-ALL-P-100 Rev 7

Details: *Competencies have been documented in the Competency table QMS-ALL-ALL-T-100 Rev 8*
Interview with the Training Advisor
Reg 128 – operators require set hours of training
"Director approved" – reviewed by MECP and approved + on the job training
150 hours, with up to 108 of those as "on the job"

"On the Job hours" – i.e. organized class room, lunch and learned, commissioning training form project managers, tail gate talks.
i.e. Tail gate talks

Learning Calendar Winder Spring 2020 issued 2x per year.

Class 4 facilities – require for highest level for facility level
Approximately 175 certified water and Wastewater

Peoplesoft notifies staff via email flags several times to notify the operator.
Learning calendar published.
Mandatory related to OHS requirements

1 course counted 1 once in the three year renewal
Quality & Compliance 101
Q & C in water Operations

Competencies for all staff confirmed during the audit
i.e. Grimsby Jeff Carl Level IV #58702 Expire Sept 2021
i.e. N. fall B. Weaver Level III #16433 Expiry April 2022
i.e. Welland A. Ritter, J Carl, B. Haley verified IV

Certifications verified on the daily log sheets used in each of the SCADA control rooms; log sheet indicates class and expiry
Training requirements verified for operators specifically designated for sampling and for maintenance operators designated for instrumentation calibration. i.e. R. Bochaar Instrumentation Technician verified per Competency table Rev 8; Job Description ID 6TE4J

Memo MECP March 24, 2020 re Certified Operator Relief Blanket MECP per O. Reg 75/20

DWQMS Reference:	11 Personnel Coverage
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 11 Procedure - Personnel Coverage QMSWT-ALL-P-110 Rev 8

Details: *Coverage of Water Operations Staff, the Manager-on-call and ORO and OIC, Water Maintenance and Technical Trades is defined. Details for schedules are reflected in the Manager-On-Call Schedule. On Call schedule change process is defined per the On-Call Scheduling procedure ADM-ALL-ALL-P-005.*
Niagara Falls WTP
-minimum 1 person on shift
-on call ORO
-2020 Ops/MTCE schedules reviewed – 4 operators on different shifts
-N Falls dedicated staff + floaters may be called in
-2020 Area 2 Ops + MTCG schedule Jul-Dec 2020
COVID 19 coverage – self isolation impact – no sampler & no A shift; 3 operators self-isolated

COVIS SharePoint site developed; communications included memo on Temporary absence and work from home plans.

Welland WTP Area 2 Schedule 2020 reviewed
Grimsby WTP Area 3 Schedule 2020 reviewed

DWQMS Reference:	12 Communications
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 12 & 3.3 Procedure - Communications QMS-WT-ALL-P-120 Rev 6

Details: *Procedure outlines means to communicate policy and procedures*
Interview with Engagement & Education Coordinator

Management to Owner
- *annual report to council – late Nov/Dec. – public document; regional website; report is attached as*
- *public works memos to communications to municipality*
- *councilor standard of care – changeover of councilor*

Internal communication of QMS
- *intranet policy and links, QMS Rep; verified on VINE.*
- *Controlled document portal.*
- *Posters at facilities*
- *Security ide cards included policy*
- *Divisional newsletter 3 X per year. Dec 2019*
- *Employee portal to communication to top management - suggestions for CI and concerns*

VINE – And suggestion screens shared Think Tank for suggestions; suggestions reviewed by area responsible manager and then divisional leadership; reviewed monthly
These feed the management review suggestions from employees

Vine is main portal for electronic communication
- *Provided link to all procedures (EtQ) and ESS*
- *Water compliance page*

Niagara Region webpage – used for public communications – DWQMS
Water quality reports
Newsletter – Green Scene

DWQMS Reference:	13 Essential Supplies and Services
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 13 Procedure - Essential Supplies and Services QMS-WTALL-P-130 Rev 9

Details: *Interview with Security and Contracts Administrator*
Chemicals, calibration services, lab services
CofA for chemicals required – AWWA standards. Sample and C of A.
Liquid Alum tender just closed; RFT 2018 Appx D includes specifications and CofA requirements; response to chemical spills.
Work with procurement to develop scopes
Stakeholders provided the specific product or service requirements; into a tender document;
Corporate services group – Procurement; most 1 year with option for 2 years;
Lowest compliant bid
W & WW Emergency Contact list includes water haulers and main break repairs and suppliers
Hazardous waste – spill responders
Emergency fuel suppliers are also on the ESS effective Sept 25, 2019; Canada Clean Fuels is supplier – fuel purchase consortium

DWQMS Reference:	14 Review and Provision of Infrastructure
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 14 Procedure - Review, Rehabilitation, and Renewal of Infrastructure QMS-WT-ALL-P-140 Rev 9

Details: *Procedure outlines a process for the annual review of drinking water system infrastructure to ensure its continued adequacy. It details how capitally-funded drinking-water infrastructure rehabilitation and renewal projects are initiated, approved and communicated to the Owner.*

Capital budget completed in Jan
EAM system input
Meeting with ops and maintenance; process works
End of life;
Parts availability considered
Capital projects some years off; what is the mitigation to keep asset operational

Year capital plan approved by council; with a 10-year plan;
2020 approved Nov 2019

Condition assessment studies – update yearly; last completed

Municipalities meeting annually to discuss infrastructure work and number of projects

PtC – second source of water – as connections between NFalls and PtC
Master Servicing Plan – currently being update and based on growth of the systems and new developments (infrastructure planning group) look at sustainability

DECEW – several projects in next 3 years – $90 Million worth.

10 Year plan for water Operations Draft 2021
Rosehill Ne Intake
New Fort Erie Elevated Tank
Chemical system upgrade program
Generator replacement program
Roof replacements
Master meter replacement program
Watermain evaluation and replacement program

DWQMS Reference:	15 Infrastructure Maintenance, Rehabilitation and Renewal
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 15 Procedure - Maintenance QMS-WT-ALL-P-150 Rev 5

Details:
The procedure defines planned and unplanned maintenance requirements per Figure 1. Table 1 defines maintenance service by team. The use of the Operations Work Request Process MTCE-WT-ALL-P-002 is used when staff recognize need for non-emergency work. Area Managers are responsible for development of Preventive maintenance Schedules. Work orders are generated weekly. Procedure for unplanned maintenance and maintenance after hours have been established. i.e. Procedure - Maintenance After-Hours Call-In Process - Water (OP-WT-ALL-V-001)

Interview with Associate Director for Asset Management
Maintenance – EAM work management – tracks assets and work performed generates the work orders., replacement allows retire of old piece – warranty tracking
Capital upgrades tracked.
Criticality for each asset – Id which are run to failure; maintain shelf spares

Maintenance has up to 80% of asset included; remaining 20% up to facilities;
Facilities now under responsibility of Asset Management

Replacement of assets – i.e. Anger Avenue WW Plant.

4 of 6 intakes require replacement – approvals are in, Rosehill intake – age failure; Grimsby, Niagara Falls

DWQMS Reference:	16 Sampling, Testing and Monitoring
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 16 Procedure -Sampling, Testing and Monitoring QMS-WT-ALL-P-160 Rev 5

Details:

Details for Sampling, Testing and Monitoring Activities in each DWS are reflected the following procedures;

- *Rosehill WTP QMS-WT-RH-T-160 Rev 6*
- *Niagara Falls QMS-WT-NF-T-160 Rev 6*
- *Welland QMS-WT-RH-T-160 Rev 7*
- *Port Colborne QMS-WT-PC-T-160 Rev 7*
- *Grimsby QMS-WT-GR-T-160 Rev 6*
- *DeCew Falls QMS-WT-DF-T-160 Rev6*

The tables within each of the listed procedures includes a column for challenging conditions.

OFI: Consider including within the scope of each procedure a clarification regarding relevant sampling, testing or monitoring activities that may or may not take place upstream of the subject system (that is before water enters the DWS).

Sample are collected by and analysed by a certified Water Operator according to the procedures. The Operator records internal testing results on the Plant Log Sheet. Which are reviewed at least once every 72 hours.

Key process parameters for each drinking water system are continuously monitored using a SCADA system.

External testing includes analyses that are performed by an external, Ministry-licenced drinking-water laboratory as defined in the above noted procedures. External testing covers Microbiological, Chemical, Radiological and Inorganic Parameters as defined in the referenced regulations.

For each of Niagara Falls WTP, Welland WTP & Grimsby WTP the daily log sheets as maintained by the control room operator were review Jan – March 2020, indicating checks every 8 hours; including Cl residuals, turbidity and water chemistry.

Sampling completed as per schedule and include weekly Bacteriological and microcyctin. testing

DWQMS Reference:	17 Measurement and Recording Equipment Calibration and Maintenance
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 17 Procedure - Measurement and Recording Equipment Calibration and Maintenance QMS-WT-ALL-P-170 Rev 6

Details:

The procedure defines calibration and maintenance programs for instrumentation and equipment used in Niagara Region's drinking water systems. Additional calibration and verification activities are referenced in Table 1 for handheld and benchtop chlorine analyzers and turbidity meters.

Table 2 provides maintenance/calibration requirements for verification or calibration (reference vs confirmation vs calibration.

Table 3 defines functional uses of equipment (information vs control vs regulatory)

The EAM PM Schedule controls and hold calibration and verification records of measuring equipment.

In house Instrumentation Technicians are responsible for completion of online instrumentation calibrations and verifications

Niagara Falls WTP equipment calibrations

- *Turbidity meter on inlet to UV 7/209*
- *UV 3/2020*
- *Cl Analyser 42722 4/2020 wo 689253*
- *Ph analyser 39878 4/2020 wo 689255 (buffer 4 & 7 lot?)*
- *Cl analyser 38783 4/2020*
- *Inline Alum injection #41448 – PM not completed*
- *Lab alum analyser 6/2020*

NCR 2020-01 Alum flow meters have not been calibrated annually (as per PM10511) since installation in 2017

Stanley Ave. Cl Booster Station

- *2019 log verified for Cl residuals, Hypo pump check and tank level*
- *Maintenance logs indicate quarterly chlorine analyser calibration*
- *Post Cl analyser $427224 cal 7/2020*
- *Pre Cl-analyser #42193*
- *Ph meter*

Lundy's lane ET

- *2019 log – Cl residuals free & total checked every other day*
- *Maintenance log chamber inspections and monthly station checks*

Kent Street Booster & ReChlor station

- *Maintenance log Cl analyser cal Apr 3, 2020*
- *Hypo tank vented*
- *Cl analyser # 38688 cal 7/2020*
- *Cl Hach #36192 cal May 2020*

Queenston Heights Station

- *Cl analyser #42895 cal 4/2020*

Welland WTP
- *Lab spectrophotometer #41455 cal 5/2020*
- *Lab Turbidity meter #9259 cal 5/2020 wo 683000*
- *UV bulbs #42121 wo 705627*
- *Post Cl analyser 42394 cal 4/2020 wo 689542*
- *Ph meter 42123 cal 4/2020*
- *Turbidity meter 42169 wo 690964*

Beamis
- *Cl analyser cal 4/2020 per logbook quarterly*

Shoalts Dr Reservoir
- *Mtce logbook up to date*
- *Post Cl analyser 36798 cal 4/2020*

Grimsby WTP
- *Flow meter42857 wo 9328*
- *Alum flow side B41906 cal 12/2019, flow side A 41907 cal 12/2019; asset numbers reversed - See NCR 2020-01*
- *Raw water turbidity meter 32935 cal 4/2020*
- *Settled water turbidity meter 36144 cal 4/2020 wo 691491*
- *Cl analyser contact tank outlet 15442 cal 4/2020*
- *Venturi flowmeter 45531 WO 694456*
- *Cl analyser reservoir outlet 15771 cal 5/2020 wo 690934*

Lincoln Booster pumping station
- *Cl analyser 14972 cal 7/2020 wo 692358*
- *Mtce logbook include generator inspection, degas hypo tank and CL analyser calibration; Cl residuals every other day*
- *Ops logbook up to date*

Hixon Reservoir
- *Cl analyser 36846 cal 2/2020 wo 684698*

DWQMS Reference:	18 Emergency Management
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 18 Water and Wastewater Emergency Response Plan ERP-ALL-ALL-P-001 Rev 7

Details: *ERP manual for Water & Wastewater systems*
ERPs individual for each potential emergency

Per manual 5-year frequency but in practice done annually.
Done off site as a desk top involving all personnel and with the municipalities

i.e. 2019 Held at Balls Falls March 22, 2019
- Niagara Region EOC
- Emergency Drinking Water Provision Plan
- Town of Grimsby Lessons Learned

Mock Emergency Workshop modules/scenarios
- *Communication breakdown*
- *Blame it of the rain*
- *Gone, gone, gone – (Pelham ET)*
- *I want to break free – water main break*
- *Help I need somebody*

2018 Mock Drill – water on road close to CN rail tracks

OFI Consider addition of MetroLinx (GO) to Emergency contacts list considering the increased frequency of trips between Niagara Falls and Hamilton.

Actual Events - June 19, 2019 – Emergency & Debriefing Reporting Form actual event May 31, 2019 Lincoln BPS– inability to meet water demand – watermain break

DWQMS Reference:	19 Internal Audits
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 19 Procedure Internal Auditing QMS-WT-ALL-P-190 Rev 9

Details:

The procedure documents the criteria (Section 1), scope (Section 5.2) and frequency of internal audits (Section 5.3) ; that all 21 elements are assessed at least every 3 calendar years and that each DWS facility is audited at least every 2 calendar years.
Records keeping is defined in section 5.6 reporting and references the Document and Records Control procedure QMS-WT-ALL-P-050.
Internal audit conducted all at once – with all requirements covered.
Initiated planning Jan 2020
Meeting held to develop audit plan; training refresher on audit objectives
Determine what areas need to be audited based
3 processes selected; Competencies & training, Top Management Communications and Capital Projects
All elements once every 3 years;
All 3 areas covered; each plant once every 2 years.
Audit Report March 2-12, 2020 issued April 7, 2020 by the WW & Q Specialist.
Audits conducted in pairs one more experienced audit and one less experienced

DWQMS Reference:	20 Management Review
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 20 Procedure - Management Review QMS-WT-ALL-P-200 Rev 7

Details:

The procedure specifies a management review once per calendar by means of a Q2 and a Q4 meeting with all requirements discussed over course of the 2 meetings. In section 5.3.1, the procedure defines the specific items to be discussed in each of the respective meetings. All required inputs have been specified.

DWQMS Reference:	21 Continual Improvement
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 21 Procedure - Corrective Action, Preventive Action, and Best Practices QMS-WT-ALL-P-210 Rev 8

Details:

EtQ is the Management system software tool used to track and monitor corrective and preventive actions. EtQ is also used record the root cause analysis.
Best Practices are also part of the procedure. The procedure specifies that at least once every 36 months the QMS representative will review best practices published by the MECP.
The procedure describes activities for handling both corrective actions and preventive actions. Handling of best practices and preventive action are addressed in Section 5.4 of the procedure with Figure 2 providing an overview of the process

Currently 25 open in the system with 8 open form the internal audits
QMR follows up for implementation and verification of the actions
Annual update includes internal audit results

WTCAR-20-008 Element 15
PWC -c-8-2020 Internal Audit Findings Per report PW-67-2019
Council update – of CA progress Dec 3, 2019

WTCAR-20-006 open
WTCAR-19-007 completed Jan 31, 2020 CAR Action 247 & 248
WTCAR-19-025 RCA and action developed CAR Action 172 completed Dec 1, 2017; CAR Action 173 completed April 27, 2018; CAR Action 174 completed April 29, 2020.

Compliance obligations/MECP Inspections
Adverse i.e. AWQI 150198; Notice of Adverse June 10, 2020, Resolution June 12, 2020
Noncompliance – Beamis disinfection issue April 8, 2019 Event log 247

Details regarding the personnel interviewed and objective evidence reviewed are maintained on file at SAI Global.

This report was prepared by:

Marco Brunato
SAI Global Management Systems Auditor

The audit report is distributed as follows:

- SAI Global
- Operating Authority
- Owner
- MOECC

Notes

Copies of this report distributed outside the organization must include all pages.

INTERNAL AUDIT REPORT

General Elements

Niagara Region

All Wastewater Systems

Internal Audit

October 29 – November 9, 2020

1.0 INTRODUCTION

1.1 Purpose

The 2020 internal audit was undertaken:

- To verify that the Wastewater QMS conforms to the requirements of the DWQMS[1] and the requirements of the Wastewater QMS Operational Plan; and
- To verify the effective implementation and maintenance of the Wastewater QMS for all Niagara Region's wastewater systems.

Audits were completed between November 2 and November 9, 2020. Due to the emergence of COVID-19, a decision was made to perform the 2020 internal audit as a remote desktop audit. This decision came from evaluating current working arrangements and the protocols that are currently in place in visiting Regional sites, limiting the unnecessary risk to wastewater staff in visiting remote sites and continuing to uphold our responsibility in providing effective wastewater treatment for the community. Wastewater internal audits are not a legislative requirement, but are performed annually out of due diligence and best practice. Internal audits were conducted remotely with Operating Authority personnel, as required.

1.2 Scope

The wastewater internal audit for 2020 was conducted as a desktop elemental audit, with the auditors focusing on specific elements of the standard that could be audited remotely. The following elements were examined as part of this internal audit:

- Element 1 – Quality Management System
- Element 3 – Commitment and Endorsement
- Element 7 – Risk Assessment
- Element 9 – Organizational Structure, Roles, Responsibilities and Authorities
- Element 10 – Competencies
- Element 17 – Instrument Calibration
- Element 18 – Emergency Management
- Element 19 – Internal Audit
- Element 20 – Management Review

[1] As modified by Niagara Region to suit our wastewater services.

1.3 Selection of Internal Audit Team

Internal auditors for the 2020 audit were:

- Element 1 – Quality Management System: Michelle Max
- Element 3 – Commitment &Endorsement: Michelle Max
- Element 7 – Risk Assessment: Rachel Whyte
- Element 9 – Organizational Structure, Roles, Responsibilities and Authorities: Michelle Max
- Element 10 – Competencies: Dawn MacArthur
- Element 17 – Instrument Calibration: Rachel Whyte
- Element 18 – Emergency Management: Michelle Max
- Element 19 – Internal Audit: Dawn MacArthur
- Element 20 – Management Review: Dawn MacArthur

All internal auditors have completed Internal Auditor Training as required by the ***Internal Auditing*** *(QMS-WW-ALL-P-190, rev1, effective 30Sep2019)*.

1.4 Criteria and Methodology

Audit criteria included the following:

- ***Internal Auditing*** *(QMS-WW-ALL-P-190, rev1, effective 30Sep2019)*;
- ***Niagara Region Wastewater Operational Plan*** *(QMS-WW-ALL-MAN-010, rev3, effective 12Dec2019)* and supporting procedures; and
- Internal audit training materials (various auditor training courses).

Audits were conducted by assigned auditors as noted in Section 1.3 of this report. Operating Authority personnel were also interviewed by assigned auditors. Auditor checklists were completed and reviewed with the Lead Auditor; the checklists are not attached, but are filed as per the ***Document & Records Control Procedure*** *(QMS-WW-ALL-P-050, rev1, effective 30Sep2019)*.

1.5 Summary of New Internal Audit Findings

Findings are categorized as follows and are summarized in Table 1 below.

- **C – Conformance:** Audit interviews and sampled records indicate that QMS requirements are met and applicable procedures are implemented as written.

- **NC – Non-conformance:** Audit interviews and sampled records indicate that a requirement of the QMS Standard was not met or a documented procedure was not implemented as written. These findings require **corrective action**.
- **OFI – Opportunity for Improvement**: Conformance was generally observed, but there may be an opportunity to enhance existing processes.

Table 1: Summary of Internal Audit Findings – Number and Type

Element	NC	OFI	Total
Quality Management System (Element 1)	-	-	-
Commitment and Endorsement (Element 3)	-	-	-
Document and Records Control (Element 5)	2	-	2
Risk Assessment (Element 7)	1	-	1
Organizational Structure, Roles, Responsibilities and Authorities (Element 9)	-	-	-
Competencies (Element 10)	1	1	2
Instrument Calibration (Element 17)	-	4	4
Emergency Management (Element 18)	2	3	5
Internal Audits (Element 19)	2	1	3
Management Review (Element 20)	1	-	1
Total	**9**	**9**	**18**

Details of all findings are provided in Table 2 (see Section 2.1 of this Audit Report).

1.6 Review of Previous Internal Audit Findings

No previous audit findings were reviewed during this internal audit, as much work was done in advance of the internal audits to address and close open corrective actions from the previous internal audit in 2019. These efforts were summarized in a memo to Public Works Committee (PWC-C 8-2020, 10March2020).

1.7 Review of Previous External Audit Findings

Not applicable. The Wastewater QMS is not subject to external auditing at this time.

2.0 INTERNAL AUDIT RESULTS

2.1 Summary of QMS Internal Audit Findings

Table 2 provides a summary of findings from the QMS Internal Audit. In reviewing Table 2, the following acronyms should be noted:

Acronym	Definition
C	Conformance
NC	Non-Conformance
OFI	Opportunity for Improvement
N/A	Not applicable – did not audit this element

Table 2 is provided below.

NOTE: *Recurring findings are not noted in the list below, as corrective action activities are already in progress and the required records have already been opened in EtQ.*

Table 2: Summary of Findings – 2020 Internal Audit

Element #	Type	Details	Number
1	C	QMS conforms to the requirements of this element.	
2	N/A	*Not reviewed during this internal audit.*	
3	C	QMS conforms to the requirements of this element.	
4	N/A	*Not reviewed during this internal audit.*	
5	NC	***Document and Records Control (QMS-WW-ALL-P-050, rev1, 30-Sept-2019),*** Section 5.3.1 states both a table of revision and footer statement "printed documents are uncontrolled" be included in internally-controlled QMS documentation. The ***Niagara-on-the-Lake WWTP System Schematic (OP-WW-NL-V-061, rev5, 29-Aug-2016)*** is not on the proper document template and did not include the proper document header and relevant information required, nor does the schematic include a footer statement "printed documents are uncontrolled" or a table of revisions.	WWCAR-20-001

Element #	Type	Details	Number
5	NC	***Document Records Control (QMS-WW-ALL-P-050, rev1, 30-Sep-2019)***, Section 5.2.3 indicates that other documents, including procedures, tables, forms and guidance documents, are typically identified by a document header, including specific details of what should be included in the header. The header of the ***Emergency Contact List (ERP-ALL-ALL-T-002, rev21, 30-Sep-2020)*** does not contain the revision number, effective date or document ID.	WWCAR-20-002
6	N/A	*Not reviewed during this internal audit.*	
7	NC	***Wastewater System Risk Assessment (QMS-WW-ALL-P-070, rev3, 6Feb2020),*** Section 5.4.1 specifies that action plans are developed for "high-scoring risks (greater than 10)". In a sampling of 9 high-scoring risks recorded/updated during the 2020 review, the auditor had identified that 4 of the 9 records were found to have no associated risk action item.	WWCAR-20-003
8	N/A	*Not applicable to the Wastewater QMS.*	
9	C	QMS conforms to the requirements of this element.	
10	NC	Section 5.4.1 of ***Competencies procedure (QMS-WW-ALL-P-100, Rev1, 22-Sept-2020)*** states records of training attendance are stored in PeopleSoft. ***Document and Records Control (QMS-WW-ALL-P-050, Rev1, 30-Sept-2019),*** Section 5.7 – Table 2 states training attendance records are stored in MyLearning. These are two separate software programs.	WWCAR-20-004
10	OFI	In reviewing ***Competencies (QMS-WW-ALL-100, rev1, 22-Sep-2020)*** the auditor noted a gap in defining who is responsible to ensure staff enroll in and complete mandatory training. ***Training & Professional Development (ADM-ALL-ALL-P-017, Rev1, 29-Jul-2020)*** identifies the positions that are responsible for ensuring staff are enrolled in various types of training (Health and Safety, Mandatory and Other). It would be beneficial to include a reference in ***Competencies*** to ***Training & Professional Development.***	2020-022-Audit Internal

Element #	Type	Details	Number
11	N/A	*Not reviewed during this internal audit.*	
12	N/A	*Not reviewed during this internal audit.*	
13	N/A	*Not reviewed during this internal audit.*	
14	N/A	*Not reviewed during this internal audit.*	
15	N/A	*Not reviewed during this internal audit.*	
16	N/A	*Not reviewed during this internal audit.*	
17	OFI	It is strongly recommended that the ***Wastewater Calibration Procedure (QMS-WW-ALL-170, rev0, 16Jun2014)*** be updated to align with the current organizational structure and available tools. The procedure references Sherpa, the previous version of Regional intranet that no longer exists; it also references the CMMS scheduler position that was eliminated in 2016. Additionally, the procedure does not clearly define the instrument types to be calibrated under the "process equipment" category.	2020-023-Internal Audit
17	OFI	It may be beneficial to identify meters that are used for billing vs. compliance vs. process control in the Asset Management Software. While these meters are somewhat identifiable by virtue of their inclusion under associated preventative maintenance's (PM), there is no means of ensuring that the asset list for each PM is complete. Furthermore, some meters that are used for both billing and compliance will fall under only the billing PM, not the compliance PM, essentially losing their identification as a compliance meter.	2020-024-Internal Audit
17	OFI	It may be helpful to identify on each of the wastewater facilities billing schematic, which flows are calculated (e.g., hauled waste, trucked solids, etc.) vs. which flows are metered.	2020-025-Internal Audit
17	OFI	It may be beneficial to open up access to data fields, views, and prepared reports in the Enterprise Asset Management (EAM) software to ensure that all users have access to the same information. During the audit, it was identified that the auditor and auditee have access to different data fields under the same asset.	2020-026-Internal Audit

Element #	Type	Details	Number
18	NC	***Water and Wastewater Emergency Response Plan – Front End (ERP-ALL-ALL-P-001, rev7, 22-Oct-2019)***, Section 6.1 states that new staff are introduced to the Emergency Response Plan (ERP) through Water and Wastewater New Employee Orientation and quality management e-learning modules. Evidence indicates that W-WW orientation has been deferred due to the pandemic; thus, new staff starting between March and October 2020 have not been introduced to the Emergency Response Plan through orientation. An auditee communicated to the auditor that a Water-Wastewater orientation e-learning module has been developed and will include information on the ERP program. The module is scheduled to be rolled out to new W-WW staff in December 2020. The auditor did observe that several Emergency Response Plan e-learning modules have been assigned to wastewater staff over the course of the year.	WWCAR-20-005
18	NC	The ***Spill of Sewage (ERP-WW-ALL-P-001, rev2, 22-Oct-2019)*** and ***Spill or Chemical Leak On-Site (ERP-ALL-ALL-P-005, rev2, 22-Oct-2019)*** emergency response procedures reference a requirement to "review the Spill Contingency Plan to determine if a spill is reportable". The auditor could not find any wastewater-related Ministry of the Environment, Conservation and Parks (MECP) Spill Contingency Plans.	WWCAR-20-006
18	OFI	The ***Complaints-Wastewater (OP-WW-ALL-P-005, rev5, 17-Apr-2020)*** procedure does not mention a timeframe for an assignee to complete the incident investigation and does not include details on what is required if an investigation is deemed ongoing. Consider modifying ***Complaints-Wastewater*** to discuss assignment via task profile, the timeframe to complete investigations, and what is required if an investigation is deemed ongoing.	2020-027-Internal Audit

Element #	Type	Details	Number
18	OFI	Section 5.3.1 of the ***Post-Event Debriefing (ADM-ALL-ALL-P-009, rev4, 1-Apr-2020)*** identifies that a debrief meeting should be completed no later than five (5) calendar days following resolution of the unusual event. The auditor reviewed a wastewater debriefing record REC-00154 from 2019; the event occurred on 21-May-2018 and the debrief meeting was held 12-Jun-2019. It was not clearly indicated on the Emergency Debrief & Reporting form what day the event was resolved. Consider including a date of resolution field on the ***Emergency & Debrief Reporting Form (ERP-ALL-ALL-F-001)***.	2020-028-Internal Audit
18	OFI	The ***Water & Wastewater Emergency Response Plan – Front End (ERP-ALL-ALL-P-001, rev7, 22-Oct-2019)***, "Section 7.0 – Emergency Management", outlines requirements for emergency drills. In reviewing historical records of mock emergency drills, the auditor observed that these records reside on the L: drive. Consider storing mock emergency records in EtQ's Records module to ensure protection from tampering, damage, or deterioration and ease of record retrieval. ***Document & Records Control (QMS-WW-ALL-P-050)*** may require updating to reflect updates of the storage of records, if considered.	2020-029-Internal Audit
19	NC	According to the ***Internal Audit (QMS-WW-ALL-P-190, rev1, 30-Sept-2019)*** procedure, Section 5.1.3, the Lead Auditor is responsible for ensuring timely and effective corrective action follow-up from the internal audit. The auditor selected five (5) random corrective actions from the 2019 internal audit for review: – WWCAR-19-001, WWCAR-19-006, 2019-034-Audit Internal, WWCAR-19-009, WW-CAR-010, were reviewed – In general, of the 5 records reviewed, all 5 had been closed (< one year) While reviewing WWCAR-19-009, it was noted that it was closed as it was a duplicate to WWCAR-17-005 already existing in the system. WWCAR-17-005 was reviewed. The CAR was created November 20, 2017 and currently sits in the	WWCAR-20-007

Element #	Type	Details	Number
		"Investigation and Root Cause" phase. Nothing has been added to the action except the initial findings, nor has it been assigned to anyone for action. It is in the opinion of the auditor that this corrective action follow-up is not being completed in timely manner.	
19	NC	***Corrective Action, Preventative Action & Best Practices (QMS-WW-ALL-P-210, Rev1, 1-Apr-2020)***, Section 5.1.7 states "The QMS Representative monitors the effectiveness of the corrective action by assigning a date for follow-up and verifying the effectiveness of the corrective action on or immediately before that date." All four (4) of the corrective action records reviewed by the auditor did not have the "Approval and Closure" section completed under the Corrective Action form in EtQ despite the corrective actions being closed. In reviewing the records, it was unclear to the auditor if the corrective actions were implemented effectively. The Corrective Action procedure also states that if the corrective action is found to be ineffective, the corrective action report (CAR) is closed and a new corrective action report is initiated. It would be difficult to determine if these corrective action records were closed because they were deemed satisfactory or if another corrective action was opened to further address any outstanding issues.	WWCAR-20-008
19	OFI	***Internal Auditing (QMS-WW-ALL-P-190, Rev1, 30-Sept-2019)***, Section 5.6.1 states "audit notes should include the date of the audit, the name of the auditors, and the location(s) of the audit". The auditor reviewed the Area 1 auditor checklist stored as record # REC-00163 in EtQ. The auditor name, audit location, and audit date of the audit were not entered at the top of the checklist in the provided cells. It was also noted that selected cells have drop downs where an SOP can be selected. Without unlocking the sheet, an auditor would be unable to change the value of these cells. If using this checklist in the future, consider reformatting these cells to easily capture this information.	2020-030-Internal Audit

Element #	Type	Details	Number
20	NC	***Management Review SOP (QMS-WW-ALL-P-200, Rev1, 26-Mar-2019)***, Section 5.2.1 states "The QMS Rep or delegate provides a summary presentation of the listed items to management review meeting attendees at least seven (7) days prior to the meeting". – A review of Outlook provided evidence that the meeting package for Part 2 Management Review 2019 was provided to attendees via email on November 7, 2019. The meeting was held November 12, 2019. This does not meet the documented requirement. The meeting package for Part 1 Management Review 2020 was provided to attendees via email on June 4, 2020. Although the review meeting was held on June 22, 2020, the meeting package was sent out for the original meeting request of June 9, 2020. This did not meet the documented timeline for the originally scheduled meeting date.	WWCAR-20-009

Prepared by: Michelle Max

Date: November 9, 2020 (rev0)