

Audit Report

Upgrade Audit for:

The Regional Municipality of Niagara
1631650-01

Audited Address: 3501 Schmon Parkway
Thorold ON CAN L2V 4T7

Start Date: Jun 12, 2019 End Date: Jun 14, 2019

Type of audit: Surveillance System Audit

Issue Date: Jun 14, 2019

Revision Level: Final

BACKGROUND INFORMATION

SAI Global conducted an upgrade surveillance system audit of the Regional Municipality of Niagara beginning on Jun 12, 2019 and ending on Jun 14, 2019 to the DRINKING WATER QUALITY MANAGEMENT STSNDARD VERSION 2 - 2017.

The purpose of this audit report is to summarise the degree of conformance 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 conformance 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.

Audit Report

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:	Drinking Water
Drinking Water System Owner:	Regional Municipality of Niagara
Operating Authority:	Regional Municipality of Niagara
Population Serviced:	400000
Activities:	Treatment and 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:	Days: 2.25 audit days
Audit Team Member:	Team Leader Patrick Moore
Other Participants:	None

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 is 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 plans 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.

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

This 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

Surveillance Audit

A systems desktop audit in accordance with the systems audit procedure as it applies to Full Scope accreditation. The audit also included consideration of the results of the most recent audit undertaken in accordance with this Accreditation Protocol and any of the following that have occurred subsequent to that audit including but limited to:

- (a) the results of any audits undertaken in accordance with element 19 of the DWQMS V2;
- (b) historical responses taken to address corrective action requests made by an Accreditation Body;
- (c) the results of any management reviews undertaken in accordance with element 20 of the DWQMS V2; and,
- (d) any changes to the documentation and implementation of the QMS.

Audit Objectives

The objective of the audit was to determine whether the Operational Plan and associated documents of the drinking water Quality Management System (QMS) of the subject system conform to the requirements of the Ontario Ministry of the Environment, Conservation and Parks' (MECP) 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 to be offered to the Operating Authority.

Audit Scope

The Operational Plan and associated documents and records of the Drinking Water Quality Management System of the subject system were reviewed.

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

SAI Global stores their records and reports to ensure their preservation and confidentiality. Unless required by law, 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, Conservation and Parks (MECP). 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 to the Operating Authority

No changes to the organizational structure of the water QMS Operating Authority have been identified since the last audit.

EXECUTIVE OVERVIEW

Based on the results of this surveillance system audit, the management system remains effectively implemented and meets the requirements of the standard relative to the scope of certification; therefore, a recommendation for continued certification will be submitted.

Recommendation

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

Opportunities for Improvement

No opportunities for improvement were identified during this audit.

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

Management System Documentation

The management system's Operational Plan 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
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	Conforms
18. Emergency Management	Conforms
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.
NA/NC	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:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> The Operational Plan and associated documentation meet the requirements of the DWQMS Version 2 - 2017.	

DWQMS Reference:	2 Quality Management System Policy
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 2
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> The QMS Policy, issued Mar 31, 2015, Rev 1, meets the requirements of the DWQMS Version 2-2017.	

DWQMS Reference:	3 Commitment and Endorsement
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 3
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> Commitment and endorsement of the current Operational plan by the Owner (Regional Council) is shown through approval of the minutes of the Public Works Committee management systems update meeting held on Mar 19, 2019 (Report PW 19-2019). The Council authorized the Regional Chair and the Regional Clerk to sign the Operational Plan as evidence of Council's endorsement, which they did on May 8, 2019. On May 24 and May 25, 2018, the five members of Top Management renewed their commitment and endorsement of the Operational Plan. Part of Top Management's responsibilities is to maintain commitment and endorsement of future versions of the Operational Plan as approved by the Owner or delegate.	

DWQMS Reference:	4 Quality Management System Representative
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 4
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> Top Management has appointed the Water & Wastewater Quality Management Specialist as the QMS Representative for Niagara Region's drinking water systems. In the event that the Water & Wastewater Quality Management Specialist is unable to fulfill the duties of QMS Representative, the Water Compliance Specialist will assume the role and responsibilities. Responsibilities of the QMS Representative are outlined in the Operational Plan.	

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DWQMS Reference:	5 Document and Record Control
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan Rev No. 9, Effective Date Mar 28, 2019, Section 5 QMS-WT-ALL-P-050 Document and Records Control Rev. No. 7, Feb 8, 2017
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> <p>The Document and Control Procedure meets the requirements of DWQMS V2. The procedure delineates between other-controlled documents identified in Table 1 (e.g. regulations governing sampling, testing and monitoring requirements available on the MECP website) and internally-controlled documents such as the Operational Plan and associated documents, and documents required for effective operation of the QMS. Table 2 in the procedure identifies records which are relevant to the QMS, such as training attendance records, purchasing records and SCADA data. Both tables usefully also identify the elements of the standard related to documents and records listed in the tables.</p>	

DWQMS Reference:	6 Drinking Water System
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 6 QMS-WT-XX-P-060 Individual Drinking Water System <u>Descriptions</u> , various revision levels, where XX represents one of the five drinking water systems, e.g. QMS-WT-PC-P-060, Rev. No. 4, Nov 9/16 for Port Colborne. QMS-WT-XX-V-060 Individual Drinking-Water System Process <u>Schematics</u> , various revision levels, where XX represents one of the five drinking water systems, e.g. QMS-WT-GR-V-060, Rev. No. 3, Sep 12/16 for Grimsby.
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> <p>No documentation changes were required in order to meet the requirements of DWQMS V2-2017. The drinking water descriptions and process schematics for the five drinking water systems are well documented. Table I: Niagara Region's Drinking Water Systems in the procedure identifies the components of the individual drinking water systems and references the locally-owned and operated municipal distribution systems supplied from each DW system. Fluctuations, challenges and threats common to all five drinking water systems include seasonal temperature fluctuations with three resulting operational threats, e.g. zebra mussels clogging the raw water intake, and event-driven fluctuations such as high winds and storms causing increased turbidity in the raw water.</p> <p>All of the source water treated by the Niagara Region is surface water. The Decew Falls and Niagara Falls water treatment plants are connected in Niagara-on-the-Lake and are defined as one drinking water system. The Decew Falls/Niagara Falls water treatment system and the Welland water treatment plant have the additional event-driven challenges of responding to changes in flow direction. The Niagara Falls current process is not able to adequately treat water from the Welland River. The Action/Control Measures involve shutting down the intake and investigating the issue to determine a course of action. For the Welland plant, Action/Control Measures involve using the main bypass gate for isolation when the Welland River level exceeds the Welland Canal level.</p>	

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DWQMS Reference	7 Risk Assessment
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 7 QMS-WT-ALL-P-070 Drinking-Water System Risk Assessment, Rev. No. 8, May 16, 2018 QMS-WT-ALL-F-070 Risk Assessment Review Form (Water), Rev 0, Aug 29, 2016
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> Risk assessment teams have been established for each drinking water system with the QMS Rep attending each meeting. A risk assessment is carried out at least every 36 months (most recent Feb 7, 2018) for each system (treatment, storage, and general transmission) and an annual review of the risk assessment results is done. The annual risk assessment reviews were carried out on Feb 15-21, 2019 for the six water treatment plants. Details of the reviews are captured in the respective Risk Assessment Review Forms. Potential hazardous events specified by the MECP were considered. Action plans to decrease the severity and/or likelihood of the associated hazardous events are developed for high scoring risks (risk score greater than 15) or other risks identified to require action.	

DWQMS Reference:	8 Risk Assessment Outcomes
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 8 Risk Assessment Outcomes Table QMS-WT-ALL-T-080, Rev. No. 4, Feb 7, 2018 OP-WT-ALL-P-028 Tracking CCL Deviations, Rev. No. 1, Feb 8, 2017 OP-WT-ALL-P-0XX-CCP response procedures, various revision levels, where 0XX represents one of the critical control point response procedures, e.g. OP-WT-ALL-P-008-CCP-Filter Effluent Turbidity, Rev. No. 7, Feb 8, 2017
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> The Risk Assessment Outcomes Table for the WTPs and their respective transmission systems was updated Feb 28, 2019, following the risk assessment reviews completed earlier in the month. Potential hazardous events specified by the MECP were included as applicable. Included in the table are the five critical control points [coagulant (aluminum sulphate) feed, secondary disinfection (distribution chlorine), filter effluent turbidity, primary disinfectant (sodium hypochlorite) feed and verification of primary disinfection], the respective critical control limits, monitoring procedures/processes and appropriate responses/mitigating procedures for the CCPs. Risk scores were updated to reflect revised likelihoods and severities associated with potential hazardous events, and the comments and supporting information sections were expanded as appropriate, e.g. risk values (likelihood times severity) for the coagulation CCPs at both the Niagara Falls and Rosehill plants (Risk ID #5-7) were increased due to the increased severity of problems resulting from potential equipment failure. Risk ID 14-9 for the Rosehill WTP has a higher risk value due to possible clogging of the process waste outfall with beach debris as a result of higher water levels in Lake Ontario. The risk table for transmission was modified to show that new equipment was installed at the Welland plant (ID # WE-87 and #WE-94; no change in risk value).	

DWQMS Reference:	9 Organizational Structure, Roles, Responsibility and Authorities
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 9
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> Figure 2 Water and Wastewater Services Division - Organizational Structure in the Operational Plan depicts the four branches of the Division and clearly identifies Top Management, the QMS Rep, which staff are directly responsible for the safe and reliable supply of drinking water and which staff provide supporting activities. Table 3 Water and Wastewater Services Division - Responsibilities and Authorities, also included in the Operational Plan, correlates well with the organizational chart. Responsibilities and authorities for positions identified in the organizational structure are well defined.	

DWQMS Reference:	10 Competencies
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 10 QMS-WT-ALL-P-100 Competencies, Rev. No.6, Sep 19, 2016 QMS-WT-ALL-T-100 Competencies Table, Rev. No.7, Jul 26, 2018
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> Competency requirements of operations personnel performing duties directly affecting drinking water quality have been detailed in the Competencies Table. Frequency of training is included in the table. In the recent review, training requirements for all positions were reviewed and minor adjustments were made. The procedure specifies that all Operating Authority personnel are informed of the relevance of their job to the provision of safe drinking water through presentations, written communications and computer-based training.	

DWQMS Reference:	11 Personnel Coverage
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 11 QMS-WT-ALL-P-110 Personnel Coverage, Rev. No. 8, Aug 1, 2018
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> The personnel coverage procedure ensures that operations personnel meeting the required competencies are available for duties that directly affect drinking water quality. Personnel coverage is ensured under various conditions such as normal operation, after-hours operation, absences, emergency situations and strikes/lockouts. Designations of the ORO and OIC are defined. Responsibility for ensuring that sufficient personnel are available for drinking water systems operations is shared by various management and supervisory levels within the Operating Authority. Workforce planning has been implemented as part of the annual management review to deal with potential staffing reductions and unavailability of certified staff as a result of staff retirements, turnover, illness, etc.	

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DWQMS Reference:	12 Communications
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 12 QMS-WT-ALL-P-120 Communications, Rev. No. 5, Sep 19, 2016
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> The procedure for communications covers how relevant aspects of the QMS are communicated between Top Management and the Owner, Operating Authority personnel, essential suppliers, area municipalities, the general public and external agencies. The procedure also includes how external agencies (e.g. MECP, MOH, SAC) communicate with Top Management.	

DWQMS Reference:	13 Essential Supplies and Services
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 13 QMS-WT-ALL-P-130 Essential Supplies and Services, Rev. No. 8, Apr 24, 2017 Essential Supplies and Services pages in VINE
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> Four main categories of essential supplies and services have been identified - chemical supplies, lab services, calibration services and miscellaneous supplies and services. The list of essential supplies and services is now maintained on the Essential Supplies and Services page in VINE. Procurement of essential supplies and services is ensured through a contract for tendered essential supplies and services and by flexibility afforded to the appropriate Manager to contact alternate suppliers, if needed, for non-tendered essential supplies and services. Quality of essential supplies and services is ensured through clearly identifying quality requirements in contract specifications for tendered essential supplies and services. For non-tendered essential supplies and services, the Area Operations or Maintenance Managers have the responsibility to take action if the quality requirements are not met. Additionally, an Approved Product and Equipment List for the Niagara Region's drinking water systems is maintained to ensure that the quality of these products and equipment meets requirements.	

DWQMS Reference:	14 Review and Provision of Infrastructure
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 14 QMS-WT-ALL-P-140 Review, Rehabilitation and Renewal of Infrastructure, Rev. No. 9, Jul 26, 2018
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> The procedure calls for a review of the drinking water system's infrastructure to be held annually to assess the adequacy of the infrastructure required to operate and maintain the system. The procedure has been updated to include consideration of the outcomes of the risk assessment process as part of the Capital Validation Process by which capially-funded drinking water infrastructure major maintenance, rehabilitation and renewal projects are initiated and approved. The ultimate output of this process is the Final Draft 10-Year Capital Budget which is presented to the Owner (Regional Council) for approval, e.g. the Capital Forecast Summary - Water (2018). Personnel from Operations & Maintenance, Engineering and Integrated Systems participate in the Capital Validation Process.	

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DWQMS Reference:	15 Infrastructure Maintenance, Rehabilitation and Renewal
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 15 QMS-WT-ALL-P-150 Maintenance, Rev. No. 5, Jul 30, 2018
<p>Details: <i>(personnel interviewed, procedures, activities and records observed)</i></p> <p>The Operating Authority uses the Enterprise Asset Management (EAM) system to record and track planned maintenance (non-emergency and preventive) and unplanned maintenance (ad-hocs, breakdowns and emergency), and renewal and rehabilitation of infrastructure that is funded from the operating budget. Key Performance Indicators (KPI's) are available to each of the Maintenance Managers in the EAM system to track the effectiveness of the maintenance program.</p> <p>Long-term infrastructure rehabilitation and renewal plans for the DWS are identified as part of the Capital Validation Process during the review and provision of infrastructure, e.g. the Decew Falls WTP - Valve House - complete rehabilitation and restoration of the original building built in 1919, with forecast expenditures of \$90K in Y1 (2019) and \$420K in Y3 (2021). Other sources for identifying long-term infrastructure needs include observations by staff and using information in EAM to generate long-term maintenance forecasts.</p>	

DWQMS Reference:	16 Sampling, Testing and Monitoring
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 16 QMS-WT-ALL-P-160 Sampling, Testing and Monitoring, Rev. No. 4, Sep 28, 2016 QMS-WT-XX-T-160 Sampling, Testing and Monitoring Activities, various revision levels, where XX represents one of the six water treatment plants, e.g. QMS-WT-DF-T-160, Rev. No. 4, Feb 28, 2017 for the Decew Falls WTP (note: these procedures currently are being revised) OP-WT-ALL-P-018 Initial Response to an Adverse Water Quality Result, Rev 5, Feb 17, 2017
<p>Details: <i>(personnel interviewed, procedures, activities and records observed)</i></p> <p>The procedure includes details of steps to be taken by the Operator if a drinking water system fails to meet a quality target which either results in or does not result in an adverse test result.</p> <p>A table for sampling, testing and monitoring has been developed for each water treatment plant (Table 1 Process Sampling in QMS-WT-XX-T-160 Sampling, Testing and Monitoring Activities) to reflect the uniqueness of conditions under which each of the treatment plants operates, including frequency, quality target responses if targets are not met and challenging conditions. Tables for process sampling identify the points in the drinking water treatment systems where sampling is done for each WTP, e.g. raw water, settled water, filters, remote stations, etc.</p> <p>Also included for each plant in Table 2 Testing Conducted Externally at MECP Licensed Laboratories is identification of parameters which are tested externally at MECP licensed labs according to schedules identified in the relevant O. Regs. Responses to adverse test results are provided, e.g. what immediate action to take to address the issue and what steps to take if an adverse is confirmed.</p>	

DWQMS Reference:	17 Measurement and Recording Equipment Calibration and Maintenance
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 17 QMS-WT-ALL-P-170 Measurement and Recording Equipment Calibration and Maintenance, Rev. No. 5, Feb 28, 2017
<p>Details: <i>(personnel interviewed, procedures, activities and records observed)</i></p> <p>Measurement equipment is classified according to a combination of its maintenance classification (reference, confirmation or calibration status) and its functional classification (information, control or regulatory). Equipment used for process control and regulatory monitoring has a higher priority for maintenance and calibration compared to equipment deemed to be of medium priority or used only for informational or reference purposes, e.g. a classification of CaR indicates that the equipment is classified as high priority and is calibrated according to a regulatory schedule whereas a classification of Col indicates that the equipment is maintained as needed.</p> <p>Chart recorders installed at selected WTPs are not calibrated, confirmed, or maintained in any way since the data collected by these devices is not used to calculate operating parameters or to make operational decisions.</p> <p>All required calibrations, confirmations, and maintenance activities are scheduled in EAM based on their assigned classifications. EAM generates resulting work orders and associated due dates.</p>	

DWQMS Reference:	18 Emergency Management
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 18 ERP-ALL-ALL-P-001 Water and Wastewater Emergency Response Plan (ERP)-Front End, Rev. No. 1, Jan 27, 2017 ERP-ALL-ALL-T-002 Water and Wastewater Emergency Response Contact List, printed version updated to Mar 29, 2019 (most current version is available electronically on VINE)
<p>Details: <i>(personnel interviewed, procedures, activities and records observed)</i></p> <p>Ten emergency response procedures for the water systems have been referenced in Water and Wastewater Emergency Response Plan (ERP)-Front End, e.g. ERP-ALL-ALL-P-003 SCADA System-Wide Interruption, Rev. No. 1, Dec 15, 2016. The Emergency Response Contact List is extensive and includes contact information for the Niagara Region Water and Wastewater Services Division (e.g. Water Operations & Maintenance for all three Areas, Technical Trades and Engineering), Service Providers, Emergency Lab Services, Area Municipalities and other key contacts.</p> <p>A mock emergency exercise was held on Mar 22, 2018. Over eighty participants from Water and Wastewater Services, area municipal representatives and other branches of the Region worked through five emergency modules including a communications breakdown with a telecommunications provider, wet weather impacts, loss of water from an elevated storage tank, a watermain break and critical injuries at the scene of a watermain break. Detailed summary notes were developed for each emergency module which included Summaries of Common Themes and Discussion Topics, Example Policies and Procedures and Summary of Action Items and Topics to Explore. Feedback from participants was very positive.</p>	

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DWQMS Reference:	19 Internal Audits
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 19 QMS-WT-ALL-P-190 Internal Audit Procedure, Rev. No. 8, Apr 25, 2019 QMS-WT-ALL-P-210 Corrective Action, Preventive Action and Best Practices, Rev. No. 8, May 21, 2019
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> <p>Internal audits are scheduled so that all 21 elements of the DWQMS are audited at least once every three calendar years and that each drinking water system facility is audited in a two-year cycle. Audits for 2019 were completed between March 11 and 15 at all six WTPs by a team of experienced auditors. Eighteen of the DWQMS elements were audited, with, Element 8 (Risk Assessment Outcomes), Element 13 (Essential Supplies and Services) and Element 20 (Management Review) planned to be audited in future audits as there were no changes to these elements in going to Version 2 of the standard.</p> <p>The internal audit report of May 16, 2019 records that 12 nonconformances (NCs), seven potential non-conformances (PNCs) and 22 best practices for evaluation (BPs) were identified during the audit with Element 10 (Competencies) showing the greatest potential for improvement, followed by Element 15 (Infrastructure, Maintenance, Rehabilitation and Renewal) and Element 18 (Emergency management). The NCs, PNCs and BPs have been entered into the respective Corrective Action log and the Preventive Action/Best Practices log.</p>	

DWQMS Reference:	20 Management Review
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 20 QMS-WT-ALL-P-200 Management Review Procedure, Rev. No. 7, Jul 26, 2018
Details: <i>(personnel interviewed, procedures, activities and records observed)</i> <p>Two management reviews of the QMS are held each year to assess the continuing suitability, adequacy and effectiveness of the QMS. The management reviews for 2018 were carried out on Jun 4, 2018 (Part I) and Dec 10, 2018 (Part II). For the 2019 management review, Part I was held on May 31, 2019 with Part II scheduled for Nov 21, 2019. All required agenda items are covered over the two meetings. Review of best management practices, e.g. those identified during MECP inspections and during internal audits, has been added as an agenda item. The QMS Representative provides Top Management with a summary of best practices that have been implemented over the previous 12 months and any that warrant Top Management's review and approval prior to implementation. Action items were identified as needed to address issues identified during the review.</p> <p>Not all five members of Top Management attended all of the meetings as is required by the Management Review Procedure. The QMS Representative will initiate a non-conformance to address this issue.</p>	

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DWQMS Reference:	21 Continual Improvement
Client Reference:	QMS-WT-ALL-MAN-010 Water QMS Operational Plan, Rev No. 9, Effective Date Mar 28, 2019, Section 21 QMS-WT-ALL-P-210 Corrective Action, Preventive Action and Best Practices, Rev. No. 8, May 21, 2019
<p>Details: <i>(personnel interviewed, procedures, activities and records observed)</i></p> <p>The Operational Plan indicates that the Niagara Region maintains and continually improves the QMS through annual audits, management reviews, implementation of best management practices, process optimization and staff development. Implementation of corrective actions, preventive actions and best management practices is a key driver of continual improvement of the QMS. Various sources of corrective actions, preventive actions and best management practices are identified in the procedure Corrective Action, Preventive Action and Best Management Practices, such as internal and external audits, staff suggestions, customer feedback, ER drills and MECP's published list of BMPs. Implemented best practices are tracked as preventive actions or opportunities for improvement. The QMS Representative has the responsibility to verify effectiveness of corrective actions and preventive actions prior to closure. Best practices do not require formal verification of effectiveness.</p> <p>Three logs have been developed to record continual improvement initiatives: a Corrective Action log used to record progress and effectiveness of responses to non-conformances identified during internal audits; a Preventive Action and Best Practices log used to record progress and actions taken for potential non-conformances and best practices; and a Best Practices (MECP Inspections) log to track follow up actions taken in response to Inspectors' recommendations/requested actions.</p>	

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

This report was prepared by:

Patrick Moore

SAI Global Management Systems Auditor

The audit report is distributed as follows:

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