



The Corporation of the Town of Pelham

Drinking Water Quality Management System (v2)
Internal Audit Report

*20 Pelham Town Square
P.O. Box 400
Fonthill ON, L0S 1E0*

Virtual Internal Audit Dates: 13/14 November 2024

Report Distribution: Ryan Cook, *Manager of Public Works (MPW)*
Jason Marr, *Director of Public Works (DPW)*

A handwritten signature in black ink, appearing to read "S. Tavares", is positioned above a horizontal line.

Sandra Tavares, *B.Sc., M.Sc., EP(EMSLA), EP-Sustainability*

Report Issued: 26 November 2024

Project Objectives

Tavares Group Consulting Inc. was engaged by The Town of Pelham to conduct an Internal Audit of the Town’s Drinking Water Quality Management System (QMS) against the Drinking Water Quality Management Standard (DWQMS V2). This audit was conducted to satisfy the requirements of the DWQMS Element 19 requirement to complete a QMS internal audit at least once every calendar year. Please see [Annex A](#) for auditor qualifications.

Project Scope

An onsite audit was performed 13-14 Nov-2024 according to ISO 19011:2018 Guidelines for auditing management systems, including the Internal Audit Plan issued 4-Oct-2022 to confirm:

- the QMS conforms with the applicable elements of the DWQMS; and
- Corporation of the Town of Pelham conforms with its own policies and procedures.

Results of prior internal and external audits were also considered and reviewed through the course of the audit.

An Opening Meeting was held 13-Nov-2024 with the Supervisor Water / Wastewater (SWW) with a Closing Meeting 14-Nov-2024 during Management Review and including the Director of Public Works (both interviewees).

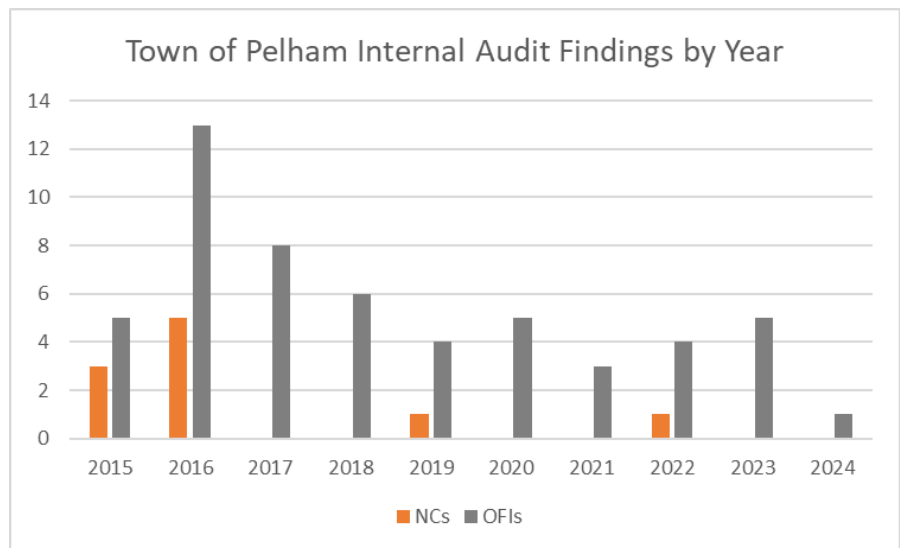
Conclusions

The Town of Pelham’s QMS conforms with:

- the applicable elements of the DWQMS, and
- its own policies and procedures.

Public Works’ (Operating Authority [OA]) commitment to the improvement of its QMS is evident and has the appropriate elements in place for further improvement.

In total, there was one [1] recurring Opportunity for Improvement (OFI) identified related to Element 5 Document and Records Control. Refer throughout the audit report for previous audit finding follow-up (details regarding closure and verification can be found in QMS LIST 006). A [Summary of Findings](#) has been provided below with details in the [Comments](#) portion of the report; an identification number (e.g., 2024-IA-OFI-XX) has been assigned for the new finding.



Confidentiality

This report was prepared exclusively for The Corporation of the Town of Pelham and is based on information collected during off- and on-site reviews. The scope of the project is described in this report and is subject to restrictions, assumptions, and limitations. As noted herein, the work was conducted in accordance with the scope of Tavares Group Consulting’s proposal and Terms and Conditions.

Summary of Findings

Owner (& Operating Authority):		The Corporation of the Town of Pelham (Public Works)
Auditors:		Sandra Tavares (<i>Lead</i>) and Francis Chua (<i>Team Member</i>)
System Reviewed:		Pelham Distribution System (PDS)
REQUIREMENT ↓		FINDING(S) ↓
1. Quality Management System		C
2. Quality Management System Policy		2023-IA-OFI-01 COMPLETE
3. Commitment and Endorsement		C
4. Quality Management System Representative		C
5. Document and Records Control		2024-IA-OFI-01 2023-IA-OFI-02 COMPLETE
6. Drinking Water System		C
7. Risk Assessment		C
8. Risk Assessment Outcomes		C
9. Organizational Structure, Roles, Responsibilities and Authorities		C
10. Competencies		2023-IA-OFI-03 COMPLETE
11. Personnel Coverage		C
12. Communication		C
13. Essential Supplies and Services		C
14. Review and Provision of Infrastructure		C
15. Infrastructure Maintenance, Rehabilitation and Renewal		2023-IA-OFI-04 IN PROGRESS 2022-IA-OFI-04 COMPLETE
16. Sampling, Testing and Monitoring		2023-IA-OFI-05 IN PROGRESS
17. Measurement and Recording Equipment Calibration and Maintenance		C
18. Emergency Management		C
19. Internal Audits		C
20. Management Review		C
21. Continual Improvement		2022-IA-OFI-05 COMPLETE
C	Conforms to the requirement – See comments in body of report	
NC	Non-conformity	
OFI	Opportunity for improvement – See Annex A	
OFI *	Opportunity for improvement which may become a nonconformity if not addressed– See Annex A	

Audit Summary

DWQMS Reference
Evidence
Finding
Summary

1. Quality Management System

Pelham Distribution System (PDS) Operational Plan (rev.18, 1-Feb-2024)

Conforms

Public Works has established and maintains its Quality Management System (QMS) in accordance with the DWQMS and the policies and procedures documented in the Pelham Distribution System (PDS) Operational Plan (OP), recently revised to update Section 10 to reflect the timeframe for Operator Certification submission as per 2023-OFI-35 (*refer to Element 10 below*).

A recurring OFI pertaining to Element 5 was identified.

DWQMS Reference
Evidence
Finding
Summary

2. Quality Management System Policy

PDS OP Element 2, S801-01 (Council Approval date of 22-Mar-2021 and OA sign-off 2-Mar-2021)

Refer to Element 5 2024-IA-OFI-01

The Pelham OP documents, established and maintains a QMS Policy documented within S801-01, signed by the DPW and MPW 2-Mar-2021, and approved by Council 22-Mar-2021 via agenda number 10.2.6, that provides the foundation for and is consistent with the QMS, and:

- a) includes a commitment to the maintenance and continual improvement of the QMS as per Elements 15 and 21 summarized below,
- b) includes a commitment to the Consumer to provide safe drinking water consistent with Element 16,
- c) includes a commitment to comply with applicable legislation and regulations as per Element 3 directly below, and
- d) is in a form that can be communicated to all Operating Authority personnel, the Owner and the Public, available online at <https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx>. Consistent with PDS OP Element 2, the Policy is also posted at the Town of Pelham Operations Centre (**refer to Element 5 2024-IA-OFI-01**) and is available upon request. As per QMS PROC 021, it was last communicated to Essential Suppliers 2023-12-11 via email by the SWW. **COMPLETE 2023-IA-OFI-01 (2023-OFI-30)** to ensure availability of the QMS Policy in a Public location and known by Town of Pelham Municipal Offices staff was completed 3-Jan-2024, as per QMS LIST 006 Corrective and Preventive Action List (30-Apr-2024) by the PW Exec Assistant with the OP in Engineering Wing main bookshelf (**refer to Element 5 2024-IA-OFI-01**).

DWQMS Reference
Evidence
Finding
Summary

3. Commitment and Endorsement

PDS OP Element 3

Conforms

21-Feb-2023 Council Endorsement of the OP and Summary Report is in Appendix A with endorsement by OA Top Management (i.e., DPW and MPW) most recently 9-Feb-2021. Top Management has provided evidence of its commitment by:

- i. ensuring a QMS is in place that meets the requirements of the DWQMS as per Element 1;
- ii. communicating the QMS as per Element 12;

- iii. determining, obtaining, and providing the resources needed to maintain and continually improve the QMS as per Management Review outlined in Element 20; and
- iv. ensuring the OA is aware of applicable regulatory requirements for which none have been identified since the MECP **cybersecurity Potential Risk**. Potential changes continue to be communicated to OA Top Management through the MECP Inspector, e-mails from the Ontario Municipal Water Association (OMWA), Municipal Water and Wastewater Regulatory Committee (MWWRC) and Region of Niagara Municipal QMS/Compliance Working Group although no changes identified as per the SWW.

DWQMS Reference
Evidence
Finding
Summary

4. Quality Management System Representative

PDS OP Element 4

Conforms

The QMS Representative is identified within the OP Element 4 as the MPW, appointed via a Memorandum of Understanding (MoU) issued by the Public Works Department – Engineering 15-Dec-2015 and approved via by-law, as per OP Appendix B. Responsibilities described under Element 9 confirmed during the audit include:

- administering the QMS by ensuring that processes and procedures needed for the QMS are established and maintained and that current versions of documents are being used as per Element 5;
- reporting to Top Management on QMS performance as per Element 20; and
- ensuring that personnel are aware of applicable regulatory requirements and the QMS as per Elements 3, 10 and 12.

DWQMS Reference
Evidence
Summary

5. Document and Records Control

PDS OP Element 5, QMS PROC 005 (rev.14, 15-Feb-2024), QMS LIST 010 Document Management List (rev.4, 1-Feb-2024, last updated 11-Apr-2024)

QMS PROC 005, recently updated to revise the Document/Record table as per **COMPLETE 2023-OFI-32 ii)** to reflect training records for Operators no longer in place, also identifies the document and records control process that includes how documents are kept current through creation and revision, and documents and records remain legible and identifiable, and are retrieved, stored, retained, and disposed of. PDS' QMS documentation includes the OP and associated procedures (PROC-level), Standard Operating Procedures (SOPs), FORMS and LISTS, some of which were confirmed and summarized throughout this audit report. **QMS LIST 010**, also recently updated to add the 'Obsolete Documents' tab, also identifies QMS documentation by name, revision number, date, controlled copy location, and, for forms, change history; current OP documents were observed to be maintained in the shared drive, 'M:\PUBLIC WORKS & UTILITIES DEPARTMENT\E08 - Water Distribution System (Superseded + 15 years)\DWQMS\Operational Plan Procedures SOPs Forms, Town Hall hard copy and online <https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx>' [most recent revision posted as per 2023-IA-OFI-02]) with the MPW responsible for electronic and Operations Centre and Town Hall updates with the assistance of the Administrative Assistant. **Internal audit and**

Finding
Details

Management Review records date back to 2010 with obsolete documentation such as previous OPs dating back to 2009, still located at ‘...\DWQMS/Obsolete Documents’; **external audit records** are located at ‘...\DWQMS\Accreditation Licensing and Permits\Accreditation\Audits – Accreditation’ as per **QMS PROC 005**. 3900-2017 - Records Retention By-law was reviewed with the Administrative Assistant at Town Hall with an amendment to the Records Retention Schedule/Citation Table #03-01-04 (2024-07) and no changes reported to the Town of Pelham Emergency Management Plan adopted by Town Council By-Law 4489-2022. As per QMS LIST 006 Corrective and Preventive Action List (30-Apr-2024), 2023-OFI-31 (2023-IA-OFI-02) was completed on 3-Jan-2024 with an effectiveness date check of 30-Apr-2024 although document control issues persist (*refer to OFI below*).

Opportunity for Improvement 2024-IA-OFI-01

There is an opportunity to ensure document control, e.g.:

- i) review **Operational Plan (OP)** availability at Town Hall (e.g., S801-01 in the OP binder is dated 9-Feb-2021 and posted version has a 2016 Approval Date; hardcopy OP includes outdated QMS LIST 003 [rev.4, 28-Jan-2029]).
- ii) **QMS LIST 014 Valve Quadrants** (rev.1, 19-Apr-2023) use for 2024 Valve Inspections (obsolete QMS FORM 014 was provided for 2023 and still available in the active document directory) which requires the addition of Operator Initials for completion of each valve.
- iii) **Hydrant Maintenance and Inspection QMS FORM 002** (rev.06) is not always signed off by SWW and **QMS LIST 003 Hydrant Quadrants for Quads 3 and 4** had no revision control or Operator Initials.
- iv) consider controlling Dead End Blow Off Flushing locations via spreadsheet similar to QMS LISTs 003 and 014 (*use of previous rev.05 Dead-End Blow-Off Flushing QMS FORM 001 prevents 2023-OFI-33 effectiveness verification*).
- v) Forms fields are not completed in their entirety (e.g., **QMS FORM 025 Watermain Commissioning Town** dated 11-Mar- for Emerald Hills and 2-Jul-2024 for Forest Park indication of no Construction Inspector, i.e., ‘Not Applicable’).
- vi) **Contractor Plan QMS FORM 010** rev.1 was used instead of rev.3 for Forest Park Phase 1 dated 18-Apr- and Park Place North 7-Oct-2024.
- vii) hardcopy AWQIs #164025 dated 23-Nov-2023 and #164036 2023-11-21 **QMS FORM 017** fields indicated electronic copy was in electronic folder (M:\PUBLIC WORKS & UTILITIES DEPARTMENT\Water Distribution System\Water Quality\Adverse Water Sample location requires update) but rather in a different folder (i.e., WDS\System Maintenance Summaries\Operations Maintenance Summary\2022\Adverse).
- viii) add electronic records to appropriate folder as completed (e.g., 2024 lab testing results not available, QMS FORM 008 Chlorine Residual Sampling forms were confirmed available for Jan/Feb-2024 at 'M:\PUBLIC WORKS & UTILITIES DEPARTMENT\E08 - Water Distribution (Superseded + 15 years)\System Maintenance Summaries\Operations Maintenance Summary', Region of Niagara pressure boosting station 2023 maintenance records).

DWQMS Reference
Evidence
Finding
Summary

6. Drinking Water System

PDS OP Element 6

Conforms

A description of the Class 2 Water Distribution System has been documented within OP Element 6, owned by the Corporation of the Township of Pelham, and operated by the Public Works Department referencing the annual Engineering inventory for the system's components:

- approximately 86 Km of **water main**,
- **fire hydrants, valves, and service connections**,
- Pressure Reducing Valves (**PRVs**) as per QMS LIST 015 (refer to Element 15 below for maintenance and associated OFI with SOP-022 [Maintenance]), and
- **pressure boosting station** serving Chestnut Ridge at 177 Hwy 20 observed with only access by Region for contracted maintenance and operation.

PDS receives treated drinking water from the Welland Water Treatment Plant, owned and operated by the Regional Municipality of Niagara which is relied upon to ensure the provision of safe drinking water. A description of the water source and treatment process has been documented, in addition to a process flow chart. The subject system is also connected to the Welland Distribution System (owned and operated by the City of Welland) via 3 connections (valves have been closed since 1970). The Town of Pelham maintains disinfection residuals through the flushing program – *refer to Element 15 for more details*. There are no common event-driven fluctuations or resulting operational challenges or threats concerning the water source.

DWQMS Reference
Evidence

Finding
Summary

7. Risk Assessment

QMS PROC 007 (rev.12, 11-Apr-2024), QMS LIST 001 Risk Assessment Outcomes List (rev. 5, 19-Apr-2023) completed 11-Apr-2024 (12-Month Review)

Conforms

QMS PROC 007, recently updated to revise the CCP reference in the 'Procedure' section for consistency with the definition, also documents a risk assessment process where hazards and associated events are ranked based on likelihood, consequence, and detectability, with those meeting the threshold of 7 and higher identified as Critical Control Points (CCPs). A risk review or re-assessment may also be conducted if significant changes occur within the DWS (e.g., change in size or scope of the system, addition of new infrastructure). The annual review was most recently completed on 11-Apr-2024 with the following revisions noted:

- #7 Distribution watermain failure/ break near sewage pumping station was removed as deemed no longer an issue.
- no local asbestos pipe material issues public inquiries.
- no changes to the distribution system, modifications to existing processes or CCP thresholds since the previous assessment/reviews.
- last MECP Inspection Report dated 26-Oct-2023 had a 100% rating and identified no recommendations/Best Management Practice (BMP; Operator identification **2023-BMP-02 COMPLETE**).
- **OPEN backflow MECP recommendation inventory.**

DWQMS Reference
Evidence

Finding
Summary

8. Risk Assessment Outcomes

QMS PROC 007, QMS LIST 001 Risk Assessment Outcomes List, QMS SOP 001 (rev.7, 24-Jan-2023)

Conforms

QMS LIST 001 demonstrates implementation of a risk assessment that is consistent with QMS PROC 007. MECP hazards such as chemical spill impacting source water is addressed in an evergreen Memorandum of Understanding (MoU) dated 21-Apr-2016 with the Regional Municipality of Niagara (no proposed changes identified as per DPW) and signed by the former DPW, with no incidences reported. One voluntary CCP has been identified related to loss of chlorine residual due to long residence time (Critical Control Limit [CCL] = 0.20 mg/L). Flushing measures to restore residual is documented as per QMS SOP 001 (*refer to Element 6 and 15*). As confirmed via QMS LIST 006, the last deviation from the identified CCL took place 11-Jun-2020 as per 2021-NC-01; QMS FORM 008 Chlorine Residual Sampling (rev.08) also confirmed this for 2023 and 2024 which is being trended for identification of potential issues as per a **2023 Element 16 OFI** and recommended to continue for Council as identified by the DPW. Response, reporting, and recording processes in the event of a deviation from the identified CCL have been documented within QMS PROC 016 (*refer to Element 16*). As per QMS FORM 026, the risk assessment outcomes were reviewed at the Infrastructure Review with **OPEN 2023-AI-06** MPW to document Hydrant Flow Tester process and conduct Operator training postponed to 31-Dec-2024 and **COMPLETE 2023-AI-05** where the PRV 2024 maintenance operational budget has been established.

DWQMS Reference
Evidence

Finding
Summary

9. Organizational Structure, Roles, Responsibilities and Authorities

PDS OP Element 9

Conforms

OP Element 9 describes the OA organizational structure including respective roles, responsibilities and authorities which were reviewed during the onsite audit; Figure 3 Organizational Chart for water system relevant personnel identifies all relevant Public Works personnel with no changes noted, confirmed by the SWW. **Top Management**, as per Element 3 above, continues to be involved in Infrastructure and Management Reviews, with the DPW having regular informal DWQMS communication with the MPW. The **SWW** is responsible for ensuring maintenance is conducted and documented (e.g., 'Current Combined Water Ops 2015 onward' spreadsheet) as reviewed. **Operators** respond to watermain breaks and conduct maintenance, etc.

DWQMS Reference

Finding
Evidence
Summary

10. Competencies

Conforms

PDS OP Element 10, Operator Training Summaries

OP Element 10, recently revised to reflect the timeframe for Operator Certification submission as per **IN PROGRESS 2023-OFI-35**, also documents the required competencies of personnel whose duties directly affect drinking water quality. Regular training is provided and can take place off-site, On-the-Job, or electronically. QMS Awareness training is provided to new operations personnel where the OP is reviewed and covers relevance of duties (lastly 7-Dec-2023 which incorporates documentation changes, including record control issues and

in 2023, with an Emergency response exercise, *refer to Element 18*) with no new Operators since the last internal audit. Updated Operator Training Summaries are in place by name and tab related to the certificate duration, signed off by the DPW prior to submission for Operator re-certification, located at 'Ops:\Public Works\Water Distribution System\Operator Training Records' by name and '...\Water Distribution System\DWQMS\Training Records' (presentations). The following **Class 2 Water Distribution and Supply** certificates are posted at Tice Rd. addressing:

- **B. Smith** #10961 exp.30-Nov-2025 (*records date back to 2018*)
- **L. Johnson** (*newest hire as of 8-Aug-2023 with DWQMS Awareness completed 7-Dec-2023*) #94663 exp.30-Nov-2024 (license submitted 7-Nov-2024 exceeding timeline for submission) and 15-Feb-2024 MECP Mandatory Course and 3-Apr-2024 SCOWWA conference all with B. Smith and S.Berstling
- **R. Cook** #16368 exp.31-Mar-2026 shows no 2024 training identified
- **S. Berstling** #58758 exp.28-Feb-2026 records date back to 2015
- **SWW** #71210 exp.31-Jan-2026

As per QMS LIST 006 Corrective and Preventive Action List, **IN PROGRESS 2023-OFI-35** identified as a result of the 7-Dec-2023 Training session is in progress with website updates and Ontario Code backflow enforcement but QMS SOP 016 issued 15-Feb-2024 (*refer to Element 12*) and in place.

DWQMS Reference
Evidence
Finding
Summary

11. Personnel Coverage

PDS OP Element 11, QMS PROC 011 (rev.9, 30-Mar-2022)

Conforms

OP Element 11 documents a process to ensure sufficient personnel meeting the identified competencies outlined in Element 10 directly above are available for duties that directly affect drinking water quality. The Town has an after normal working hours emergency telephone number which is still serviced by a Call Centre and will contact designated On Call Personnel. Overall Responsible Operator (ORO, i.e., MPW) designation is documented via email for holidays and observed from MPW 8-Nov-2024 (for 12-19 Nov-2024) to the PW Administrative Assistant, Operator-In-Charge (OIC, first to respond to after hours call) and DPW. After hours calls, approximately once / month, generally still involve water main breaks, service leaks, and emergency shut offs, with call outs documented in the respective form (i.e., watermain breaks or WO), Water Distribution System Operation Record / **Logbook** (observed for 3-Oct- and 23-Jul to 2-Oct-2024 with no Adverse Water Quality Incidents [AWQIs] noted as per QMS FORM 017) or On-Call Log as per MPW. No frozen services were noted since 2021. As per Supervisor, 3 Supervisors rotate every week who in turn pick an appropriate Water Operator from the Seniority List posted in the Supervisor office.

DWQMS Reference
Evidence

Finding
Summary

12. Communication

PDS OP Element 12, QMS PROC 021 (rev.10 17-Feb-2022) and QMS SOP 016 Consumer Complaints (rev.8, 15-Feb-2024)

Conforms

QMS PROC 021 documents a process that involves communication of the QMS Policy (refer to Element 2 above) and how **Top Management** communicates to the **Owner**, e.g.:

- **Committee and Council meetings** (refer to Element 3 above), which includes the results of the annual **Management Review** (refer to Element 20)
- **Annual Water Quality Reports** (e.g., 2023 available online [dating back to 2003] through [Water and Wastewater Maintenance - Town of Pelham](#)),
- **Infrastructure Review** (refer to Element 14 below).
- On-the-job instructions related to changes to the QMS are communicated to **OA personnel** during tailgate talks and may be documented via QMS FORM 016 (refer to Element 10 above for more information on DWQMS Awareness presentation).

Public water concerns / complaints are managed as per QMS SOP 016, QMS SOP 016 Consumer Complaints, recently revised to reflect website complaint submissions as per **OPEN 2023-OFI-35**, with the process confirmed by the Administrative Assistant. Details are tracked on the 'Current Combined Water Ops 2015 onward' spreadsheet's 'Complaint Summary' tab which identifies the following:

Complaints / Year	2016	2017	2018	2019	2020	2021	2022	2023	2024 YTD	TOTAL
Air	3	1	1	2	2	-	-	0	1	10
Colour	4	7	3	12	3	7 (construction)	2	4	2	44
Leaky Service	5	22	3	2	5	7 (mostly age)	-	4	5	53
Low Pressure	9	13	5	8	7	7	5	4	3	61
Odour / Taste	1	2	1	2	1	1	1	1	1	11
TOTAL	22	45	13	26	18	22	8	6	12	179

DWQMS Reference
Evidence
Finding
Summary

13. Essential Supplies and Services

PDS OP Element 13, QMS PROC 013 (rev.13, 17-Oct-2023)

Conforms

QMS PROC 013 documents a process by which Public Works lists and ensures the quality of essential supplies and services. Procurement Policy By-Law S402-00 was updated 23-Feb-2023 to highlight the tendering process with no specific reference to Public Works or DWQMS. Nov-2017 Engineering Design Manual which pertains to drinking water quality requirements (e.g., AWWA, ANSI/NSF 61, no lead for valves, chambers, main) is still in effect with an intent for revision in 2025 as per DPW (from Q1/Q2 2024 timeline provided in 2023 by the MPW and an intent to reference QMS PROC 013). Public Works personnel are responsible for inspecting all received supplies to confirm identified requirements. The following quality requirements were verified:

- **Anchem Anchlor 12 sodium hypochlorite** 10L jug last marked dated 17-Aug-2023 (kept for one year as per SWW) in maintenance garage included **NSF/ANSI/CAN 61** mark.

- **CALA Directory of Laboratories Memberships** 1003086 for **E3 Laboratories Inc.** was confirmed valid to 16-Sep-2025 via CALA website as per PROC 013 and mostly used as per watermain commissioning results documented in Element 15 below (2728 Caduceon Environmental Laboratories listed for inorganic and microbiological sampling is not used as per SWW) and 1003149 **ALS (Waterloo)** exp.3/10/2027 for organic and inorganic testing.
- storage trailer was not stocked with drinking water equipment since the last internal audit as per SWW.

DWQMS Reference Evidence

14. Review and Provision of Infrastructure

PDS OP Element 14 (rev.18, 1-Feb-2024), QMS PROC 014 (rev.13, 11-Apr-2024), QMS FORM 026 Infrastructure Review Summary (rev.03, 29-Jan-2021) dated 11-Apr-2024

Finding Summary

Conforms

QMS PROC 014, recently updated to delete the list of background material in Step 1 as it is already listed in QMS Form 026, addresses proposed needs, being identified via Infrastructure Review Team meeting once per calendar year, lastly completed 11-Apr-2024. Water Long Range Financial Plan is available online at <https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx>. As per QMS LIST 006, there are two actions from the 2023 review (**2023-AI-05** and **-06**, both addressed in Element 8 above), one from the 2021 review (**IN PROGRESS 2021-BMP-01** valves / hydrants GPS scheduled for 2025 completion), and one from the 2020 review (**IN PROGRESS 2020-OFI-11** Operator WO software tablets with a revised due date of 2024 from 31-Dec-2022). Updates to the Forecast are reported to the Senior Management Team, led by the Chief Administrative Officer, for review and approval as part of the annual budget process before being presented to Council for approval with removed budgetary requests considered in future years.

DWQMS Reference Evidence

15. Infrastructure Maintenance, Rehabilitation and Renewal

PDS OP Element 15, Current Combined Water operations 2015-onward Spreadsheet (current to 8-Nov-2024)

Finding: Summary

Refer to 2024-IA-OFI-01

OP Element 15 documents a summary of the OA's infrastructure maintenance, rehabilitation, and renewal programs. Key infrastructure maintenance and repairs are summarized within 'Current Combined Water Ops 2015 onward' spreadsheet in 'Maintenance Activities (2)' tab up to 12-Nov-2024. The following maintenance was reviewed as per OP Element 15:

- **Annual Valve** Maintenance was completed in Sep-Dec 2023 for **Quad 2** although unsure as to their entirety as obsolete QMS FORM 014 Watermain Valve Maintenance and Inspection Forms (rev.06) but not QMS LIST 014 spreadsheet (rev.1), the latter with updates addressed via **CLOSED 2022-OFI-25** as of 29-Feb-2024. **Quad 3** scheduled for 2024 has not yet started (**refer to Element 5 2024-IA-OFI-01**). Each Quad is completed annually with all done in 4 years.
- **Annual Hydrant** Maintenance is documented on Hydrant Maintenance and Inspection QMS FORM 002 (rev.06) for those with issues identified for all 4 Quads completed in **2024 (refer to Element 5 2024-IA-OFI-01)** and records located at 'E08-Water Distribution\System Maintenance

Summaries\Operations Maintenance Summary' by year as per QMS PROC 005.

- **Annual and 5-Year PRV** maintenance as per QMS SOP 022 (rev.0, 17-Oct-2023) and QMS LIST 015 PRV Inventory (rev.0) has not yet been completed as 2024 report has not yet been received.
- **Monthly pressure testing** on combined spreadsheet to Oct-2024 with hardcopy Watermain Pressure Testing Procedure Form QMS FORM 013 (rev.05) are scanned and available as per E08 location above.
- **Semi-annual 2023 dead end blow off flushing** is documented on Dead End Blow Off Flushing QMS FORM 001 (*refer to Element 5 2024-IA-OFI-01*) for Spring (April-May) and Fall (Oct-Nov) and summarized in the E08 location above.

One Category 1 **watermain break** was reported on the 'Current Combined Water Ops 2015 onward' spreadsheet, Watermain Break Report QMS FORM 025 (rev.09, 01-Feb-24) dated 7-Feb-2024. **Watermain Commissioning Town Checklist QMS FORM 012** (rev.09, 1-Feb-2024) dated 11-Mar-2024 for Emerald Hills and 2-Jul-2024 for Forest Park and **Contractor Plan QMS FORM 010** for Forest Park Phase 1 dated 18-Apr- and Park Place North 7-Oct-2024 were reviewed as well as Emerald Trails dated 11/9/2023 with MPW approval 2/12/2024 and Form 1 Record of Watermains. The maintenance program is communicated to the Owner through the budgeting process and the Annual Report, last carried and received [2/21/2024 via resolution 10.2.2 \(with Budget Resolution 14.2.4\)](#) as per the DWQMS timeline. The SWW still retains responsibility for issuing daily WOs and tasks to OA personnel and the electronic logbooks are being considered for easier tracking. **OPEN 2023-IA-OFI-04** involves verification (i.e., QMS [PRV] LIST 015 to track annual and 5-year inspections with **OPEN 2024-AI-07**), use of latest revision of Dead-End Blow-Off Flushing QMS FORM 001 [rev.06, 07-Feb-22; rev.05 used]).

DWQMS Reference
Evidence

Finding
Summary

16. Sampling, Testing and Monitoring

PDS OP Element 16, QMS PROC 016 (rev.14, 3-Jan-2024), QMS SOPs 010 THMs and HAAs (rev.9, 8-Feb-2022), QMS FORM 005 Drinking Water Advisory (DWA), Including Boiling Water (rev.1, 18-Feb-2022)

Refer to 2024-IA-OFI-01

Adverse results (e.g., AWQI 164025 dated 23-Nov-2023 with MECF Forms 2A and 2B and QMS FORM 017 [rev.0, 25-Mar-2021] available as well as AWQI 164036 dated 2023-11-21 for 1 Total Coliform thought to be lab error and thus not requiring investigation) identified during the 2023 Internal Audit were reviewed during this audit. No additional testing was conducted at the Shoalts Drive Reservoir for chlorine residual prior to the discharge of water to PDS as per SWW.

Semi-annual lead and alkalinity sampling took place 26-Sep-2024 and 2-Mar-2024 as per 'M:\PUBLIC WORKS & UTILITIES DEPARTMENT\E08 - Water Distribution (Superseded + 15 years)\System Maintenance

Summaries\Operations Maintenance Summary' (to 2023) as per PROC-005;

TriHaloMethane Running Annual Average 'THM RAA' and **HaloAcetic Acid** 'HAA RAA' tabs identify 5-Mar-, 18-Jun- and 10-Sep-2024 sampling.

QMS FORM 008 Chlorine Residual Sampling trending presented as part of 2024 Review of Infrastructure (11-Apr-2024) and 2024 Management Review Year End

Trend Presentation with DPW confirming continuing trending for Council effectively deems **2023-IA-OFI-05 / 2023-OFI-34 COMPLETE**.

The above program and associated results are communicated to Council through mandatory MECP **Annual Reports** available at <https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx>, lastly 2023.

DWQMS Reference
Evidence
Finding
Summary

17. Measurement & Recording Equipment Calibration and Maintenance

PDS OP Element 17, QMS PROC 017 (rev.13, 24-Jan-2023)

Conforms

QMS PROC 017 identifies the following equipment confirmed via the SCG Flowmetrix Water Quality Instrument Verification / Calibration Report dated 22-Jan-2024 with Instrument Tech Certification in place for D. Kettlewell:

- annual external 4 **pocket colorimeters** calibration (2024 internal verifications are documented on 'the Colorimeter Comparison' tab of the 'Current Combined Water Ops 2015 onward' spreadsheet to Aug-2024 and scanned in 'Monthly Checks' folder, observed for 30-Sep- and 4-Nov-2024)
- annual external **HR Colorimeter** FOO92701
- **backflow WATTS** SN 410544 (*identified as out of service*) and 12200226 pH meters are purchased annually to ensure certification / calibration.

DWQMS Reference
Evidence

18. Emergency Management

PDS OP Element 18, QMS LIST 002 Emergency Contacts (rev.6, 1-Feb-2024), QMS PROC 018 Emergency Management (rev.7, 21-Feb-2023), QMS PROC 025 Watermain Break (rev.10)

Finding
Summary

Conforms

A list of potential emergency situations have been documented in QMS PROC 018 (i.e., distribution system contamination, watermain break, and water quality advisory) which are all covered as part of emergency response exercises conducted every 3 years, lastly 14-Jul-2020 and 7-Dec-2023 (together with Awareness training), the latter focusing on PRVs, consistent with the QMS LIST 'DWQMS Timeline' tab and 2023 Management Review Minutes. QMS LIST 002 was recently updated to reference the Niagara Region Emergency Contact List and **COMPLETE 2023-OFI-36** raised as a result of the exercise.

DWQMS Reference
Evidence

19. Internal Audits

PDS OP Element 19, QMS PROC 019 (rev.8, 9-Oct-2018), 2023 Internal DWQMS Audit Report (Audit Date 15/16 Nov 2023, Report Date 30 Nov 2023)

Finding
Summary

Conforms

QMS PROC 019 documents an internal audit process that includes criteria, frequency, scope, methodology and record-keeping requirements, consideration of previous internal and external audit results, and describes how Corrective Actions are identified and initiated (i.e., QMS LIST 006 Corrective and Preventive Actions List). Internal audits have been completed annually by various Tavares Group Consulting Inc. auditors to ensure independence from the activity being audited with all Elements of the DWQMS subject to audit. The 2023 internal audit resulted in 5 OFIs in Elements 2, 5, 10 now complete and in progress 15, and 16, as discussed throughout this audit report. **IN PROGRESS 2024-OFI-38 / (DWQMS)-02 external audit** finding pertains to the process for

the completion of the 36-month risk assessment; the remaining **CLOSED -37 / (DWQMS)-01, -39 / (DWQMS)-03 and -40 / (DWQMS)-04** were discussed.

DWQMS Reference
Evidence

Finding
Summary

20. Management Review

PDS OP Element 20, QMS PROC 020 (rev.9, 9-Dec-2021), QMS FORM 027 Management Review Meeting Record (rev.01) dated 16-Nov-2023

Conforms

QMS PROC 020 documents a process for Management Review that incorporates the review and consideration of applicable Best Management Practices (BMPs), as required in DWQMS Element 21 (refer to **2021-BMP-01** in Element 14 above). Management Review was last completed 16-Nov-2023 and the results communicated to the Owner with the Annual Summary Report (O. Reg. 170/03 Schedule 22) as outlined in Element 14 above. Action items identified as a result of Management Review are being tracked to completion via QMS LIST 006:

- **COMPLETE 2020-AI-02** to redefine valves / hydrants quadrants map was verified 7-Dec-2023.
- **IN PROGRESS 2022-AI-01** to develop a backflow SOP with QMS SOP 023 Backflow Program (rev.0, 29-Feb-2024) issued.

DWQMS Reference
Evidence

Finding
Summary

21. Continual Improvement

PDS OP Element 21, QMS LIST 006 (rev.6, 17-Nov-2022) last updated 30-Apr-2024)

Conforms

OP Element 21 is implemented and conforms to QMS tracking and measuring of continual improvement:

- a. to review and consider applicable BMPs including recommendations from MECP, staff suggestions, association-wide best practices, external and internal audits, engineering, or contractor suggestions, etc. which have previously been reviewed as part of Management (*refer to Element 20 directly above*) and Infrastructure (*refer to Element 14*) Reviews.
- b. for identification and management of QMS Corrective Actions (e.g., resulting from nonconformities associated with internal / external audits and non-compliances as a result of MECP Inspections) as per QMS PROC 019 that includes, within QMS LIST 006 for:
 - i) investigating the cause(s) of an identified non-conformity,
 - ii) documenting the action(s) that will be taken to correct and prevent the non-conformity from re-occurring, and
 - iii) reviewing the action(s) taken to correct and verifying that they are implemented and effective, done as part of this audit as summarized throughout this audit summary.
 - iv) identifying and implementing Preventive Actions (e.g., OFIs, actions identified during emergency response training/testing and from infrastructure and Management Reviews [*refer to Element 20*], MECP inspection recommendations [1 related to backflow from 2016, **2020-OFI-05** tower and **COMPLETE 2023-BMP-02** Operator identification during live wet taps], staff observations [all complete], etc.) to eliminate the occurrence of potential non-conformities that includes:

1. reviewing potential non-conformities that are identified to determine if preventive actions may be necessary,
2. documenting the outcome of the review, including the action(s), if any, that will be taken to prevent a non-conformity from occurring, and
3. reviewing the action(s) taken to prevent non-conformity, verifying that they are implemented and are effective in preventing its reoccurrence.

QMS LIST 006 is being regularly reviewed with the number of “in progress” items reduced for a **93% closure rate** as of 14-Nov-2024.