



Department/Division:	Public Works / Pelham Distribution System
Report:	Municipal Summary Report
Covering:	January 1, 2019 to December 31, 2019

## 1. Purpose

This report was prepared by the Director of Public Works and Manager of Public Works for the Owner of the Pelham Distribution System, the Corporation of the Town of Pelham, to be presented to Council.

Two annual water reports are required by the Ministry of the Environment, Conservation and Parks (MECP) to be prepared: (1) the 'MECP Annual Report' (O.Reg. 170/03 section 11), and (2) the municipal 'Summary Report' (O. Reg. 170/03 schedule 22).

As required by QMS-PROC-021 in the Town of Pelham's Quality Management System, results of the annual management and infrastructure review shall be presented to the Owner through the Annual Municipal Summary Report.

As legislated, Council is responsible as the Owner of the water system for ensuring these reports are prepared and available to the public each year.

The MECP Annual Report has been prepared and submitted as an attachment to the Public Works Report #2020-0002, 2019 Pelham Distribution System Summary Report.

This is the Municipal Summary Report.

To enhance the communication and understanding of these reports, this Municipal Summary Report contains additional non-legislated information on the drinking water system operations and water quality.

## 2. Definitions

"DWQMS" means Drinking Water Quality Management Standard.

"MECP" means Ontario Ministry of the Environment, Conservation, and Parks.

"WTP" means Water Treatment Plant.

"QMS" means Quality Management System.

"OIC" means Operator in Charge of the distribution system, as per O.Reg 128/04

"ORO" means Overall Responsible Operator of the distribution system, as per O.Reg 128/04

"HAA" means Haloacetic Acid. Haloacetic Acids in drinking water are a by-product of Chlorine disinfection.

"THM" means Trihalomethanes. Trihalomethanes in drinking water are a by-product of Chlorine disinfection.

"CFU" means Colony Forming Units. It is a unit of measure for bacteriological contaminants in drinking water.

"HPC" means Heterotrophic Plate Count. It is a method that measures colony formation on culture media of heterotrophic bacteria in drinking water.

### 3. System Overview

The provision of drinking water for residents in the Niagara Region is a responsibility shared between two tiers of municipal government. The Niagara Region is responsible for treatment and supply of the water to the Town of Pelham via transmission mains. The Town of Pelham is responsible for distributing water to local consumers via its own network of distribution pipes.

The Pelham Distribution System is a Class 2 water distribution subsystem. The system consists of approximately 84.5 km of watermains varying in size from 50mm to 400mm diameter providing water to approximately 12,500 residents within the general urban area.

The service area is approximately 14 km<sup>2</sup> and includes the Villages of Fonthill, Ridgeville and Fenwick. The system receives treated drinking water from the Welland Water Treatment Plant located on Cross Street in the City of Welland. The treatment plant is owned and operated by the Regional Municipality of Niagara. The plant receives its raw water from the Welland Recreational Canal. Treated water is transmitted to the Town by way of a 750mm diameter watermain to the Shoalts Drive Reservoir. The reservoir, which includes chlorination, is also Regionally-owned and operated. Water enters the Pelham Distribution System at the reservoir outlet.

The Town of Pelham owns and operates a water filling station with side-fill and a backflow prevention device to serve consumers outside of the urban boundary who do not have direct access to the distribution system. Water haulers must obtain approval from the Niagara Region before being permitted to use the station.

The Town of Pelham owns a small pressure booster pump station which is located on the Niagara Region's Elevated Tank Property. This pump is used to improve water pressure in the Chestnut Ridge development area. The normal operating pressure in the area is low due to its geographic location in relation to the elevated tank that supplies distribution supply and pressure by way of gravity.

The Town of Pelham Distribution System consists of 5 pressure zones separated by Pressure Reducing Valves (PRV). In Pelham, because of our unique topography, maintaining safe operating pressure within the system is a delicate balance. Increasing pressure in one area can cause damage to municipal infrastructure and private plumbing downstream.

## 4. Water Quality Testing

Ontario Regulation 170/03 prescribes water quality testing requirements for municipal drinking water systems.

The requirements prescribed by the MECP include: test parameters, number of test samples, frequency of testing, location of testing, reporting of test results, and reporting and corrective action of adverse test results, amongst other items. Operational guidelines are parameters used to monitor the general quality of water and the performance of the system.

The Town carried out testing in 2019 as prescribed by legislation.

In 2012, the Town of Pelham qualified for an exemption from collecting lead samples from residential or non-residential plumbing under the community lead testing program; however, reduced sampling must still take place in four locations within the distribution system. As such, the Town has continued with its lead testing program in the distribution system, with no concerns.

In addition to the prescribed sampling, the Town tested for water quality in response to complaints from consumers. Complaints generally refer to colour, odour, pressure, particulate, supply and/or taste.

The Town responded to 24 water quality/supply complaints in 2019. 8 were related to low pressure concerns and 16 to water colour/odour. All were resolved promptly.

Taste and odour episodes are often related to a natural phenomenon caused by seasonal biological changes in the source water. These changes may produce odour-causing chemical compounds that can be detected by humans at very low levels. Most municipalities in Ontario which obtain their water supply from surface water sources experience this problem periodically in the summer or early fall. Also, private plumbing fixtures including small water filtration systems and drain traps can also contribute to concerns regarding taste and odour of municipally supplied water. Once identified, most of these can be resolved quickly and easily through regular maintenance completed by the property owner.

Water Treatment Plants are equipped with various filtration systems designed to reduce the effects of taste and odour, but may not eliminate it entirely.

**Table 1 - Testing requirements and results.**

<b>Table 1 – 2019 Testing Summary</b>					
<b>Parameter</b>	<b># Samples Required</b>	<b># of Samples Taken</b>	<b>Legislated Requirement</b>	<b>Guideline</b>	<b># of Samples Exceeding Limit</b>
Esherichia Coli (bacteriological)	22 per month	~ 44 per month	0 CFU/100mL Not detected	--	0
Total Coliform (bacteriological)	22 per month	~ 44 per month	0 CFU/100ml Not detected	--	0
HPC (heterotrophic plate count)	6 per month	~ 44 per month	--	< 500 CFU/100mL (AWWA c651-05)	0

Trihalomethanes	1 per quarter	3 per quarter	100 ug/L (annual running average)	--	0
Haloacetic Acids	1 per quarter	3 per quarter	80 ug/L (annual running average)	--	0
Free Chlorine	7 per week	14 per week	>=0.05 mg/L <=4.0 mg/L	--	0
pH	8 per year	8 per year	--	6.5 – 8.5 Operational guideline	0
Alkalinity	8 per year	8 per year	--	30 – 500 Operational guideline	0
Lead	8 per year	8 per year	0.01 mg/L	--	0
Pressure	None	5 per month (taken from each pressure zone)	--	>=28psi	0

## 5. Adverse Water Quality Incidents

An “adverse water quality incident” refers to a water quality test result exceeding the legislated requirements shown in **Table 1**.

A total of **Zero** incidents of adverse water quality conditions were detected in the system in 2019.

## 6. MECP Drinking Water System Inspection Report

In December 2019, the Town’s distribution system underwent a “focused” inspection by a MECP Drinking Water Inspector. The inspection included a review of operational records from November 16, 2018 to December 15, 2019.

The Town of Pelham received a Final Inspection Rating of 100%.

The Pelham Distribution System Inspection Report is included in the 2019 Pelham Distribution System Summary Report.

## 7. Regulatory Updates

In 2019, the standard for HAA's was set at 80 ug/L calculated as an annual running average. The standard came into force on January 1, 2020. The Town of Pelham has been conducting HAA sampling since 2017.

It is anticipated that an updated Watermain Disinfection Procedure will be issued by the MECP in 2020. Staff are expecting that a number of internal procedures and forms will require updating to conform to the new procedure but will not have a major impact on water operations.

## 8. Competency, Licensing and Training

Operator training is required by law to maintain drinking water licenses and ensure competency. Operators and key water staff participate in a number of diverse course offerings aimed at broadening their knowledge.

The Town of Pelham owns and operates a Class 2 Water Distribution System and a Class 2 Wastewater Collection System. The Town of Pelham Water Division currently has a compliment of a Manager of Public Works, Supervisor of Water and Wastewater, and three Water Operators. All water and wastewater operators must maintain a Water Distribution License and Waste Water Collection Facility License to operate the Town's systems.

## 9. Flow Data

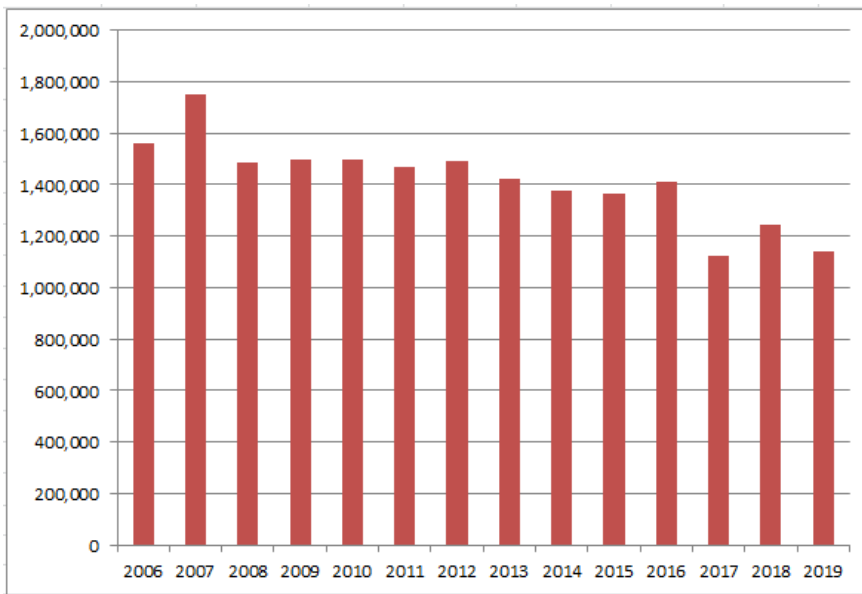
Water consumed by the Town of Pelham is measured by the Niagara Region, and provided monthly to the Town. In 2019, a total of 1,150,570 cubic meters (m<sup>3</sup>) of water flowed to the Town of Pelham in total. (1 cubic meter of water = 1,000 litres).

**Table 2 – Annual Totals**

<b>Year</b>	<b>Supply (m<sup>3</sup>)</b>
2006	1,559,490
2007	1,752,470
2008	1,488,891
2009	1,499,700
2010	1,497,110
2011	1,469,470
2012	1,491,850
2013	1,420,220
2014	1,374,130
2015	1,364,450
2016	1,410,410
2017	1,122,740
2018	1,243,900
2019	<b>1,150,570</b>

The totals in this table are also reflected in the graph below, **Figure 1**

**Figure 1 – 2019 Total Water Supplied by the Region of Niagara**



All water demands were met in the system, thus the Town was not required to implement the additional use restrictions under section 4(p) of the Water Supply By-law No. 3198-2011.

The Town's Drinking Water License does not limit demand of flows to the Town, so a comparison to license limits is not required. The 2019 average daily consumptions are shown in **Table 3**, along with the maximum daily flows for each month.

**Table 3 – 2019 Daily Water Usage**

Month	Average Daily Flow (m³)	Maximum Flow in One Day (m³)
January	2796	3410
February	2689	3310
March	2799	3450
April	2821	3360
May	3015	3550
June	3437	4680
<b>July</b>	<b>4732</b>	<b>6750</b>
August	3941	5990
September	3232	4160
October	2866	3900
November	2708	3620
December	2736	3780

The 2019 highest demand day occurred in July, which aligns with the typical high monthly demands in the summer.

No servicing concerns are noted. The Niagara Regional Master Servicing Plan (MSP) lists the firm capacity of the Shoalts Drive Reservoir to be 19,400 m<sup>3</sup> / day. The MSP has identified future projects

including the replacement of the Pelham Elevated Water Tank and increased pumping capacity at the Shoalts Drive Reservoir to accommodate projected 2041 servicing needs.

## 10. Capital Projects and Purchases

The Town updated the 20-year capital plan. Although efforts to ensure it represents the most current water distribution system improvement needs were made, many allowances were necessary based on competing capital infrastructure needs.

The 150mm Cast Iron Haist Street Watermain originally built in 1955 was replaced from Welland Road to Beckett Crescent. A portion of watermain on Welland Road from Haist Street to Edward Avenue was also replaced as part of this project.

The replacement of watermain on Pelham Street from Burton Avenue to 1634 Pelham Street is currently underway as well as the watermain on Station Street between Hwy 20 and Port Robinson Road. These projects will be completed in 2020.

Developments involving the construction of new watermain by developers included the Fonthill Yards, Saffron Meadows Phase 2 and River Estates Phase 2.

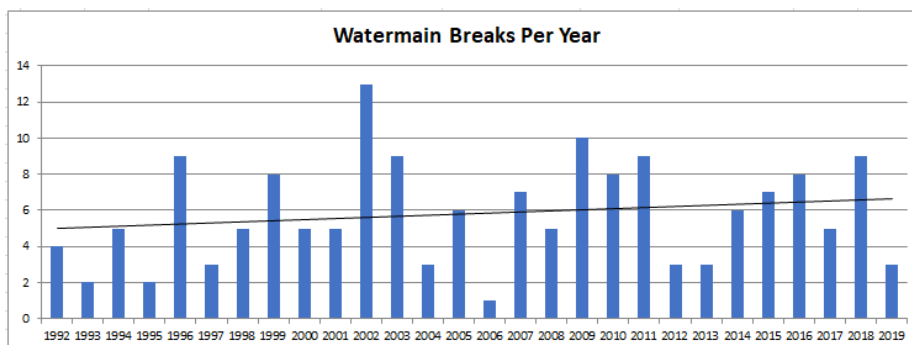
## 11. Rehabilitation and Repairs

A Total of 3 watermain breaks occurred in 2019, summarized in **Table 4**. **Figure 2** shows the overall trend for the total number of watermain breaks caused by pipe material and age.

**Table 4 – Watermain Break Summary**

Date	Location	Pipe Material	Suspected Cause	Planned Replacement
1-17-2019	8 Blackwood Cres.	Asbestos Concrete (AC)	Bedding, Age	20+ years
7-29-2019	698 Welland Rd.	AC	Bedding, Age, High water table	Pending grant approval 2022
9-29-2019	698 Welland Rd.	AC	Settlement from previous repair	Pending grant approval 2022

**Figure 2 – Town of Pelham – Watermain Breaks per Year**



In addition to watermain repairs, in 2019 Town of Pelham Staff replaced 5 leaking water services.

Regular maintenance and repairs are required at our Chestnut Ridge Booster Pump Station. Since installation these have been completed by the Niagara Regional Staff through a Maintenance Agreement. The Town continues to work closely with the Region of Niagara to maintain close communication about pressure or supply interruptions related to this pumping station.

The Town of Pelham owns and operates a Water Loading Station at 294 Canboro Road. Minor maintenance tasks are performed throughout the year including backflow prevention device testing and sampling programs.

## 12. Backflow Prevention

The Ontario Building Code requires backflow prevention devices are to be installed at each connection to new buildings where a potentially severe health hazard may be caused by backflow. The Town relies on the Building Code to ensure that backflow preventers are installed in new buildings.

As approved in the 2018 budget, plans commenced in 2019 for the creation of a backflow prevention policy, associated by-law and programs. The program is in the final stages of completion and will be presented to Council for consideration in 2020. The MECP has been strongly encouraging the Town of Pelham to develop such a program for a number of years.

## 13. Leak Detection

Canadian Leak Detection provided a small water leak detection survey for the Town of Pelham in 2019. The survey was focused on older cast iron watermain sections within the distribution system most likely to experience leaks. The surveyed watermain sections appear to be tight with no significant leak issues.

## 14. Municipal Drinking Water Licensing Program

The Municipal Drinking Water Licensing Program is a five-stage initiative by the MECP under the Safe Drinking Water Act, 2002. The Town of Pelham maintains its Certificate of Accreditation as an Operating Authority for its water distribution system, and the system license and permit(s) are in place. **Table 6** lists the status of the key elements for water licensing.

**Table 6 – Municipal Drinking Water Licensing Program Status**

Stage	Status
License #072-101	Renewed July 23,2019 – Expires July 22, 2024
Permit #072-201	Active and current – No expiry
Operational Plan	Updated to version 2.0 and endorsed by Council March 4, 2019
Accreditation	Maintains full accreditation. Expires May 24, 2021
Financial Plan	Updated in 2018, covering 2019 – 2024 inclusive



## 15. Quality Management System

The Quality Management System (QMS) is fully integrated into Water operations, and maturing and improving with time. Council should remain aware of its commitments in the QMS Policy, which is the framework upon which to set the QMS.

The current Operational Plan is available through the network or in printed copies at select locations.

## 16. Infrastructure Review

The Infrastructure Review is a required component of the DWQMS, where infrastructure includes piping and related infrastructure, but also buildings, workspace, process equipment, hardware, software, and supporting services such as transport or communication. The purpose of the review was to assess the adequacy of the infrastructure necessary to operate and maintain the water system.

Recommendations from the annual 2019 review (performed in October 2019) were translated accordingly into the 2020 water operational and capital budget requests, and into the 20-year Capital Plan updates, and are communicated in this report below.

The Infrastructure Review has been included in **Appendix A**

## 17. Management Review

Management review is a required component of the DWQMS. In December 2019, the Director of Public Works and Manager of Public Works completed a management review of the QMS in alignment with the budget and capital planning process, in accordance with the Town's Operational Plan. Recommendations will be translated accordingly into future water operational and capital budget requests, and into the 20-year Capital Plan updates, and are communicated in this report below.

The Management Review has been included in **Appendix B**

## 18. Internal Audit Results

Results from the QMS internal audit performed in November 2019 are summarized. The internal audit must be performed once per year.

The Internal Audit found one (1) minor non-conformance and three (3) opportunities for improvement. All non-conformances and opportunities for improvement were discussed during management review as action items.

The Internal Audit Results have been included in **Appendix C**

## 19. External Audit Results

In May 2019, the Town engaged NSF as a third party auditor to the QMS, in accordance with the Town's drinking water license requirements.

No non-conformances or corrective action requests were identified. One (1) opportunity for improvement was identified with a recommendation for adding flow charts to operating procedures.

The External Audit Results have been included in **Appendix D**

## Appendix A – Infrastructure Review

Infrastructure Review Meeting Minutes	
Details / Discussion Points / Issues Identified	Recommendation (for budget ask) / Action Items (to be tracked via QMS LIST 006)
<p><b>Outcomes of the Risk Assessment</b></p> <p>Reviewed the Town of Pelham's Critical Control Point (loss of chlorine residual) and associated Critical Control Limit (CCL = 0.20 mg/L after routine flush) and processes in place to maintain (i.e., Spring/Fall and watermain flushing) and monitor (weekly distribution system Cl2 sampling). There have been no deviations from the CCL in 2018/2019 and there are no current implications to the capital request.</p>	No additional recommendations or action items.
<p><b>Watermain – servicing, replacement, monitoring, operating &amp; capital needs, other</b></p> <ul style="list-style-type: none"> <li>• Reviewed <b>2018 Infrastructure Review Summary</b> and associated recommendations (<b>current status is in bold text; related risk assessment outcomes #4-7 &amp; 17</b>): <ul style="list-style-type: none"> <li>&gt; Clare Avenue Watermain Replacement - development driven (<b>development section has been completed by Developer – Town of Pelham portion was not approved</b>)</li> </ul> </li> <li>• Haist Street: Welland Rd to Beckett Cres, including Welland Rd Haist to Edward (approved and going to construction Fall 2019)</li> <li>• Station Street: Hwy 20 to Port Robinson, Watermain Replacement - trench only (WTR 02-18 in progress)</li> <li>• Water System Repair Equipment (WTR 03-18 re- approved, now WTR 02-20)</li> <li>• Backflow Prevention Program (WTR 01-2018 – should note context identifies this as a repeated recommendation from MOECC [now MECP]. Blue circled however project is in progress with the tender 90% complete, bylaw to be in place Spring 2020 and backflow testing form in place with testing to take place Jan-2020 – linked to risk assessment outcome #11) – no new projects are arising from risk assessment outcomes</li> <li>• Reviewed 2018/2019 break histories to date: <ul style="list-style-type: none"> <li>&gt; 8 in total in 2018 (1 pulled by contractor on Hurricane [risk assessment outcome 8]) 2x Pelham St N, 2x Pelham St S, 1 Strathcona Drive, 165 Welland and 1441 Station St. (watermain to be replaced in these areas)</li> <li>&gt; 2 to date in 2019 (Welland Rd., Blackwood)</li> <li>&gt; 5-10 per year previously with highest frequency in replacement process which is also dependent on funding/available reserves, wastewater and roads needs.</li> </ul> </li> <li>• Reviewed the 2018/2019 projected 20-Year Capital and 2018 Pelham St S (Welland St. to south limit) which is projected for 2023 with Pelham N (originally recommended for 2016) under construction and anticipated to be completed December 2020 addressing the 2018 Infrastructure Review action item. 2020 working 20-Year Capital was approved 21-Oct-2019 and reviewed (includes annual request for inventory [Water System Repair Equipment = \$30,000 annually], Clare Ave (deferred to 2021) and Haist Street identified from 2017 with imminent construction); budget process to move up to May 2020. <ul style="list-style-type: none"> <li>&gt; Reviewed Action Item identified during 2017 Infrastructure Review re: addition of ATP to existing sampling [related to risk assessment outcome #9] is now closed as per QMS LIST 006 Corrective Action List.</li> </ul> </li> </ul>	Action Items (tracking via inclusion on 20-Year Capital rather than QMS LIST 006):

<p><b><u>Hydrants – monitoring, servicing, operating &amp; capital needs, other</u></b></p> <ul style="list-style-type: none"> <li>No hydrant needs have been identified by the Fire Chief since Pelham St. Merrit to Quaker (see 2017 Infrastructure Review). No implications to capital requests.</li> </ul>	None
<p><b><u>Main valves – monitoring, servicing, operating &amp; capital needs, other</u></b></p> <ul style="list-style-type: none"> <li>No implications to capital requests. Discussed NC-2018-NC-03 re: 2017 delinquent maintenance activities has been addressed and was also confirmed as part of 28- Oct-2019 TGC onsite day (documented within QMS LIST 006)</li> <li>Existing PRVs – April 2020 inspection (prior to budget process) as part of operating budget (to be scheduled Jan-2020), no short-term concerns (2020 Final 20-Year Capital identifies projected needs in 2034 and 2035 which may change depending on 2020 inspection)</li> </ul>	None
<p><b><u>Other appurtenances – operating &amp; capital budget needs, other</u></b></p> <ul style="list-style-type: none"> <li>Bulk Station was discussed (identified 50-year life span); no short-term concerns / no implications to capital request.</li> <li>5 low pressure issues (same as last year) have been reported as part of customer complaints (up from last 2 years); 5 complaints related to colour (average number), 2 leaky with no impact to capital requests</li> <li>No Best Management Practices identified</li> </ul>	None
<p><b><u>Inventory and Tools – operating &amp; capital needs, other</u></b></p> <ul style="list-style-type: none"> <li>MPW identified potential need to begin replacing existing colorimeters (4 in total) with new units in 2018 <ul style="list-style-type: none"> <li>replaced 2 in 2019 addressing 2018 action</li> </ul> </li> </ul>	None
<p><b><u>Software / hardware – capital needs, other</u></b></p> <ul style="list-style-type: none"> <li>Water Model upgrade in draft in 2018 are now completed</li> <li>Work order software (all Public Works Departments) was approved for 2018 and now waiting for assets to be uploaded.</li> </ul>	None
<p><b><u>Pumping Station</u></b></p> <ul style="list-style-type: none"> <li>Region attends the site once / month and contacts the Town in the event of an issue. A redundant pump is in place in the event of issues with the duty pump.</li> <li>The Region does intend on moving the Water Tower, at which point the pumping station will become obsolete. Related to Risk Assessment Outcomes #s 1 and 2.</li> </ul>	None
<p><b><u>Staffing</u></b></p> <ul style="list-style-type: none"> <li>No implications to capital requests. New staff member in 2018 now OIT</li> </ul>	None

## Appendix B - Management Review

Input	Details / Discussion Points / Issues Identified /Decisions Made	Action Item(s)
1)	<p>Incidents of regulatory non-compliance:</p> <p><b>MPW stated last MECP Inspection took place 17-Dec-2019 and report has not been issued yet.</b> Issues addressed included backflow and HAAs.</p> <p>No non-compliances and a 100% score for <a href="#">MECP Inspection Report dated 16-Nov-2018</a> led to 4 recommendations (also discussed at review of infrastructure meeting 28-Oct-2019) documented and managed within <a href="#">QMS LIST 006</a>:</p> <p><b>1</b> - Create a new <b>heading for non-certified people in the logbook</b> or add a note besides the person's name to indicate that he/she is not a certified Operator (<b>2018-OFI-14 / 2017-IA-03 In Progress</b>, new log template has not yet been used).</p> <p><b>2</b> - Complete the implementation of its proposed <b>backflow program</b> as its topography makes it more prone to backflow (<b>also raised 2016-09-01 and 11-Jan-2018 via other MECP Inspections – In Progress</b>).</p> <p><b>3</b> - Use an <b>alternate sampling station for HAAs in 2019</b> in order to comply with the requirements from the Ministry's 9-May-2018 letter titled "Re: Haloacetic Acids (HAAs) Sampling Concerns". (<b>2018-OFI-16 COMPLETE with updated QMS LIST 003 (rev.4)</b>)</p> <p><b>4</b> - The ORO agreed to include the HAA's running annual average in the 2018 Annual Report (<b>2018-OFI-17 COMPLETE</b>).</p>	<p><a href="#">QMS LIST 006</a> to be shared with MECP for updates on 2019 issues raised left in the event same issues raised</p>
2)	<p>Incidents of <a href="#">adverse drinking-water tests</a>:</p> <p><b>No AWQIs</b> since 4 incidents in 2015 as per '<a href="#">Current Combined Water Ops 2015 onward spreadsheet</a>' 'Maintenance Activities' tab.</p>	<p>Not applicable (N/A)</p>
3)	<p>Deviations from critical control point limits and response actions:</p> <p><b>Last deviation from the identified CCL took place 10-Nov-2017</b> as per logbook (Town of Pelham W D System #260001604 Water Distribution System System Operation Record for 24-Aug to 17-Jan-2018) – linked to <b>2017-IA-03 (In Progress)</b> where logbook template has been developed for appropriate recording and is to be implemented when new logbook is issued (anticipated to be 2021).</p>	<p>N/A</p>
4)	<p>The effectiveness of the <a href="#">risk assessment process</a>:</p> <p>Last QMS LIST 001 review was completed 28-Oct-2019 as a precursor to review of infrastructure – no changes identified. Next Re-Assessment scheduled with review of infrastructure Q1 2020 to coincide with 2020 budget process to be completed by end of summer (refer to 'DWQMS Timeline' tab of <a href="#">QMS LIST 006</a>).</p>	<p>Meeting notice went out 27-Dec-2019 to MPW, DPW and Supervisor – W/WW</p>
5)	<p><a href="#">Internal</a> / <a href="#">third-party</a> audit results:</p> <p>Reviewed results of the internal audit completed by Tavares Group Consulting. 1 NC + 4 OFIs were identified (elements 5 and 13 resurfaced again). 2019 findings have been added to <a href="#">QMS LIST 006</a>, root cause, actions, timelines and personnel responsible discussed and updated. <b>Proposed that 2020 audit be over a 2-day period – November 5/6, 19/20 or 26/27.</b></p> <p>All 2018 identified and addressed and verified via internal audit except for 2018-OFI-18 (Element 3 i) Consider: b. documenting the process for ensuring OA awareness of all applicable legislative and regulatory requirements and the tracking (e.g. <a href="#">QMS LIST 006</a>) of any identified changes remains open and</p>	<p>2019 findings to be addressed.</p>

	to be addressed at next OP revision.) and 2018-OFI-23 requiring a longer verification time.	
	2019 external audit findings 2019-OFI-02 and -03 have been addressed.	
6)	Results of emergency response testing: Last conducted <a href="#">17-Nov-2017</a> (watermain break). As per 2018-OFI-10 from the external audit, the next mock-up scenario (due by 2020) will be weather-related relating to QMS SOP 020 Frozen Service.	Meeting notice went out 27-Dec-2019 to MPW, DPW and Supervisor – W/WW
7)	Operational Performance: As per <b>Supervisor-W/WW</b> : <ul style="list-style-type: none"> <li>• Sampling results is being inputted within an excel spreadsheet, <a href="#">2019 Chlorine Residual Sampling Summary</a> to enable easier annual reporting; no trends / incidents were identified.</li> <li>• Maintenance as per '<a href="#">Current Combined Water Ops 2015 onward spreadsheet</a>' was reviewed: <ul style="list-style-type: none"> <li>- PRVs (completed 5-Sep-2019 for the Region with pressure zone readings done monthly as per 'Pressure Test' tab), booster station through the Region of Niagara, and Town-owned backflow devices (observed using Backflow Prevention Assembly Testing and Inspection Report QMS FORM 006 as requested by contractor pertaining to sprinkler system, with program to be rolled out Spring 2020 as per MECF backflow recommendation)</li> <li>- 2018/2019 annual valve maintenance (refer to <a href="#">QMS LIST 006</a> 2018-NC-03 for closure of this item; Q1 started in 2018 and finished Jun-2019 utilizing QMS FORM 14; Q2 was done in 2019 as well, Q3 scheduled for Fall 2020 and Q4 in 2021)</li> <li>- 2018/2019 annual hydrant maintenance (including flushing, greasing, repair if needed) is also completed in 4 quadrants in one year; completion of individual hydrants are tracked using QMS FORM 002 (refer to OFI 2018-IA-03) and also observed in logbook dated 22-Nov-2019</li> <li>- 2019 dead end blow off flushing was completed in the Spring (10-26-Apr) and Fall (30-Sep to 31-Oct) and is documented on QMS FORM 001.</li> </ul> </li> <li>• Completion of valve maintenance/exercising program and frequency set in SOP 014 was discussed (2018-OFI-24 COMPLETED and confirmed valve maintenance every 4 years is feasible)</li> <li>• Supervisor W/WW signs off and repairs listing completed for hydrants and valves through work orders</li> </ul>	Annual Valve and Hydrant Maintenance was added to the 'DWQMS Timeline' tab of <a href="#">QMS LIST 006</a> .
8)	Raw water supply <a href="#">reports</a> & drinking water trends: Follow-up with Region of Niagara by MPW to confirm communication of any/all water quality issues 2018-OFI-25 was COMPLETE 4-Mar-2019; Region of Niagara reports reviewed Jan-2019 by MPW identified no issues.	N/A
9)	Follow-up on actions from <a href="#">previous Management Reviews</a> : 2018-OFI-24 through -26 complete	N/A
10)	Status of management actions items identified between reviews:	N/A

	Refer directly above																																											
11)	<p>Changes that could affect the Quality Management System:</p> <p>i) As per MPW, discussion ensued during the 2019 MECP Inspection pertaining to <b>Ontario's Watermain Disinfection Procedure</b> DRAFT which has been released but a copy has not been received.</p> <p>ii) DPW followed up re: status of requirements under O.Reg. 588/17 Asset Management Planning for Municipal Infrastructure which at this time is not determined as having an impact on the DWQMS.</p> <p>iii) 2-hr Standard of Care / DWQMS Awareness presentation to Council and Sr. Leadership Team took place 1-Feb-2019 prior to annual reporting deeming 2018-OFI-26 complete.</p>	<p>i) Obtain a copy of the draft Ontario Watermain Disinfection Procedure.</p> <p>ii) Confirm dates of training for admin staff and annual calibration in 2020 as per meeting notice sent 27-Dec-2019 and DWQMS timeline</p>																																										
12)	<p>Consumer feedback (incl. <a href="#">complaints</a>):</p> <p>Annual summary in 'Complaint Summary' tab of '<a href="#">Current Combined Water Ops 2015 onward spreadsheet</a>' was reviewed by Supervisor W/WW:</p> <table border="1"> <thead> <tr> <th></th> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> <th>TOTAL</th> </tr> </thead> <tbody> <tr> <td><b>Air Complaints / Year</b> – tied to watermain breaks (incl. approx. 75% contractor issues, natural watermain breaks dropped to 2-3 / year related to Haist, Welland and Pelham Sts.) and colour</td> <td>3</td> <td>1</td> <td>1</td> <td>2</td> <td>7</td> </tr> <tr> <td><b>Colour Complaints / Year</b> – internal plumbing issues have led to an increase in 2019 (e.g., rusty water tanks)</td> <td>4</td> <td>7</td> <td>3</td> <td>12</td> <td>26</td> </tr> <tr> <td><b>Leaky Service Complaints / Year</b> – replacement of water mains has reduced this number</td> <td>5</td> <td>22</td> <td>3</td> <td>2</td> <td>32</td> </tr> <tr> <td><b>Low Pressure Complaints / Year</b> – moves from one area to another</td> <td>9</td> <td>13</td> <td>5</td> <td>6</td> <td>33</td> </tr> <tr> <td><b>Odour Complaints / Year</b></td> <td>1</td> <td>2</td> <td>1</td> <td>2</td> <td>6</td> </tr> <tr> <td><b>TOTAL</b></td> <td><b>22</b></td> <td><b>45</b></td> <td><b>13</b></td> <td><b>24</b></td> <td><b>104</b></td> </tr> </tbody> </table>		2016	2017	2018	2019	TOTAL	<b>Air Complaints / Year</b> – tied to watermain breaks (incl. approx. 75% contractor issues, natural watermain breaks dropped to 2-3 / year related to Haist, Welland and Pelham Sts.) and colour	3	1	1	2	7	<b>Colour Complaints / Year</b> – internal plumbing issues have led to an increase in 2019 (e.g., rusty water tanks)	4	7	3	12	26	<b>Leaky Service Complaints / Year</b> – replacement of water mains has reduced this number	5	22	3	2	32	<b>Low Pressure Complaints / Year</b> – moves from one area to another	9	13	5	6	33	<b>Odour Complaints / Year</b>	1	2	1	2	6	<b>TOTAL</b>	<b>22</b>	<b>45</b>	<b>13</b>	<b>24</b>	<b>104</b>	N/A
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13)	<p>The resources needed to maintain the QMS:</p> <p>MPW and DPW identified assistance services an asset and to continue into 2019. Ok with number of operators and work required on the system. DWQMS Timeline tracks significant annual activities.</p>	N/A																																										
14)	<p>The result of the <a href="#">infrastructure review</a>:</p> <p>Draft Water 20-Year Projected Capital Budget was communicated to the Senior Leadership Team (this information drove their inclusion within the Standard of Care training in early 2019). Projects were documented within the updated Infrastructure Review Meeting Minutes (QMS FORM 026). Risk Assessment, Review of Infrastructure including Tailgate Meeting and Budget Submission was conducted 28-Oct-2019 with risk assessment review with no risk assessment outcomes affecting budget with the following projects updated since meeting - Haist Street: Welland Rd to Beckett Cres, including Welland Rd Haist to Edward is now complete. Timeline for budget has shifted and proposed to Q1 2020 to initiate the process (budgets to be in by end of summer).</p>	N/A																																										

15)	<p><a href="#">Operational plan currency, content and updates</a> (incl. need for re-endorsement):</p> <p>Some Operational Plan updates have been identified as a result of audit findings, etc. with no need for re-endorsement in early 2020 at time Annual Report goes to Council as they are not major revisions and do not involve a new Council.</p>	N/A																														
16)	<p>Personnel suggestions:</p> <p>No additional details reviewed; actions have been given consideration and are being effectively tracked via <a href="#">QMS LIST 006</a> - 2018-OFI-13 and 2019-OFI-01 remain open related to backflow and calibration.</p>	N/A																														
17)	<p>General assessment of suitability, adequacy and effectiveness</p> <p>Internal audit report identified the following trending:</p> <table border="1" data-bbox="224 583 997 814"> <thead> <tr> <th></th> <th>2015</th> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> </tr> </thead> <tbody> <tr> <td><b>Internal Audit</b></td> <td>3 NCs, 5 OFIs</td> <td>5 NCs, 13 OFIs</td> <td>8 OFIs</td> <td>6 OFIs</td> <td>1 NC, 4 OFIs</td> </tr> <tr> <td><b>MECP Inspection (OFIs)</b></td> <td>-</td> <td>3</td> <td>4</td> <td>TBA</td> <td></td> </tr> <tr> <td><b>External audit (OFIs)</b></td> <td>4</td> <td>2</td> <td>2</td> <td>3</td> <td>2</td> </tr> <tr> <td><b>TOTAL</b></td> <td><b>3 NCs, 9OFIs</b></td> <td><b>5 NCs, 18 OFIs</b></td> <td><b>16 OFIs</b></td> <td><b>9 OFIs</b></td> <td><b>1 NC, 6 OFIs</b></td> </tr> </tbody> </table> <p>Most findings are generated from internal audits and mostly OFIs. Corrective and preventive actions are being managed effectively. The QMS is deemed to be suitable, adequate and effective.</p>		2015	2016	2017	2018	2019	<b>Internal Audit</b>	3 NCs, 5 OFIs	5 NCs, 13 OFIs	8 OFIs	6 OFIs	1 NC, 4 OFIs	<b>MECP Inspection (OFIs)</b>	-	3	4	TBA		<b>External audit (OFIs)</b>	4	2	2	3	2	<b>TOTAL</b>	<b>3 NCs, 9OFIs</b>	<b>5 NCs, 18 OFIs</b>	<b>16 OFIs</b>	<b>9 OFIs</b>	<b>1 NC, 6 OFIs</b>	N/A
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18)	<p>Review and consideration of applicable best management practices</p> <p>MECP website identified no BMPs. MECP recommendations (see input 1) are to be included within <a href="#">QMS LIST 006</a> as well as BMPs / Preventive Actions.</p>	N/A																														



# Appendix C – Internal Audit Results

## Summary of Findings

Owner & Operating Authority:	The Corporation of the Town of Pelham (Public Works)	
Auditor:	Sandra Tavares, B.Sc., M.Sc., EP(EMS-LA), EP-Sustainability	
Systems Reviewed:	The Pelham Distribution System	
<b>REQUIREMENT ↓</b>	<b>FINDING(S) ↓</b>	
1. Quality Management System	C	
2. Quality Management System Policy	C	
3. Commitment and Endorsement	C	
4. Quality Management System Representative	C	
5. Document and Records Control	OFI	
6. Drinking Water System	C	
7. Risk Assessment	C	
8. Risk Assessment Outcomes	C	
9. Organizational Structure, Roles, Responsibilities and Authorities	C	
10. Competencies	C	
11. Personnel Coverage	C	
12. Communication	C	
13. Essential Supplies and Services	Mn	
14. Review and Provision of Infrastructure	C	
15. Infrastructure Maintenance, Rehabilitation & Renewal	OFI	
16. Sampling, Testing and Monitoring	OFI	
17. Measurement & Recording Equipment Calibration and Maintenance	OFI	
18. Emergency Management	C	
19. Internal Audits	C	
20. Management Review	C	
21. Continual Improvement		
C	Conforms to the requirement – <a href="#">See comments in body of report</a>	
Mj	Major Non-conformity	
Mn	Minor Non-conformity	
OFI	Opportunity for improvement – See <a href="#">Annex A</a>	
OFI *	Opportunity for improvement which may become a nonconformity if not addressed– See <a href="#">Annex A</a>	

## Appendix D - External DWQMS Audit Results



### Executive Summary

Ontario's Drinking Water Quality Management Standard Version 2	DWQMSR is the source & inspiration for the upkeep of the system.
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### Opportunities

Ontario's Drinking Water Quality Management Standard Version 2	Could consider flow charting SOP's- for internal audit, training the new employees and finding Continual improvements.
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### Corrective Action Requests

There is NO Corrective Action Request in this audit.	
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### Site Information

The audit was based on a sampling of the company's management system.

#### Industry Codes

NACE:E 41

#### Scope of Registration

Ontario's Drinking Water Quality Management Standard Version 2 : Pelham Distribution System, 072-OA1, Entire Full Scope Accreditation