



Pelham Water Distribution System  
**ANNUAL SUMMARY REPORT**

January 1, 2018 to December 31, 2018

**Preamble**

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

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## 2 GLOSSARY

ATP	Adenosine Triphosphate
DWQMS	Drinking Water Quality Management Standard
HAA	Haloacetic Acids
MECP	Ontario Ministry of the Environment, Conservation and Parks
OIC	Operator-in-Charge, as per Ontario Regulation 128/04
OIT	Operator-in-Training, as per Ontario Regulation 128/04
ORO	Overall Responsible Operator, as per Ontario Regulation 128/04
QMS	Quality Management System
THM	Trihalomethanes
WTP	Water Treatment Plant

### 3 PURPOSE

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

As legislated, Council is responsible as Owner of the water system for ensuring these reports are prepared and available to the public (before February 28, 2018 for the MOECC Annual Report and before March 31, 2018 for the Summary Report).

The MECP Annual Report has been prepared and submitted as an attachment to the Pelham Distribution System, 2018 Summary Report.

This is the municipal summary report.

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

### 4 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 has an approximate area of 14 square km 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.

## 5 LEGISLATIVE COMPLIANCE

### 5.1 Water Haulers

Drinking water haulage vehicles often supply water to homes in areas not serviced by the distribution system. The Town of Pelham owns and operates one bulk water loading station where water haulers may purchase bulk water from the Town.

All water haulers wishing to access the water loading station must provide a current Niagara Region Public Health Department inspection report that exhibits no non-compliance issues. All haulage vehicles are also required to be inspected once each year by the Niagara Region Public Health Department.

### 5.2 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 2018 as prescribed by legislation.

The Town was granted relief under Schedule 15.1 of Ontario Regulation 170/03. The Town is no longer required to take samples from residential or non-residential plumbing for the community lead testing program; however, reduced sampling must still take place in four locations within the distribution system on a three year cycle. As such, the Town has continued with its lead testing program in the distribution system under the relief regime as required, 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.

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The Town responded to **13** water quality/supply complaints in 2018. All were resolved promptly, 5 related to low pressure concerns, and 4 to colour/odour.

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** shows the testing requirements and results.

**Table 1 – 2017 Testing Summary**

Parameter	# Samples Required	Actual # Samples Taken	Legislated Requirement	Guideline	Actual # Samples Exceeding Limit
Escherichia Coli (bacteriological)	22 per month	~ 44 per month	Not detected - 0 CFU/100mL	--	0
Total Coliform (bacteriological)	22 per month	~ 44 per month	Not detected - 0 CFU/100mL	--	0
HPC (heterotrophic plate count - bacteriological)	6 per month (25% of 26)	~ 44 per month	--	< 500 CFU/100mL (AWWA C651-05)	None
Trihalomethanes	1 per quarter	3 per quarter	100 ug/L (annual running average)	--	None
Free chlorine	7 per week	14 per week	>=0.05 mg/L, <=4.0 mg/L	--	None

SUMMARY REPORT PELHAM WATER DISTRIBUTION SYSTEM

<b>Parameter</b>	<b># Samples Required</b>	<b>Actual # Samples Taken</b>	<b>Legislated Requirement</b>	<b>Guideline</b>	<b>Actual # Samples Exceeding Limit</b>
pH	4 per semi-annual test period	4 per semi-annual test period	--	6.5 – 8.5 O.G.	None
Alkalinity	4 per semi-annual test period	4 per semi-annual test period	--	30 – 500 mg/L O.G.	None
Lead	4 per applicable semi-annual test period, 8 per applicable year of test cycle	4 per applicable semi-annual test period, 8 per applicable year of test cycle	0.01 mg/L	--	None
Haloacetic Acids	1 per quarter	1 per quarter 2 additional in the fourth quarter	There is no limit for HAA running average at this time	--	None
Pressure	None	5 per month including 1 sample in each pressure zone	--	>=28psi	None

O.G. – operational guideline

### 5.3 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 2018.

### 5.4 MECP Drinking Water System Inspection Report

In November 2018, the Town’s distribution system underwent an unannounced focused annual inspection by a MECP Drinking Water Inspector. The inspection covered the period January 1, 2018 to November 15, 2018.

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

The Pelham Distribution System Inspection Report has not yet been received by council as it was in a state of transition at the time of the inspection. A report will be provided at a future meeting.

### 5.5 Regulatory Updates

No regulatory changes occurred that will have a major effect on water operations.

### 5.6 Competency, Licensing and Training

Operator training is required by law to maintain water licenses and ensure competency. In 2018, training records were reviewed for all licensed operators in an ongoing effort to ensure that staff remain competent, and participate in training opportunities that are engaging and relevant to Town operations.

Operators and key water staff participated in a number of diverse course offerings aimed at broadening their knowledge. This included training in alternative disinfection

## SUMMARY REPORT PELHAM WATER DISTRIBUTION SYSTEM

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techniques, confined space entry & rescue, pumps and pumping systems, , QMS awareness, and many other topics.

The Town of Pelham owns and operates a Class 2 Water Distribution System and a Class 2 Wastewater Collection System. Town of Pelham Water Distribution and Wastewater Collection System Operators are working towards obtaining or maintaining Class 2 Licenses in both water and wastewater disciplines.

The Town water group currently has a complement 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.

## 6 FLOWS AND USAGE

### 6.1 Flow Data

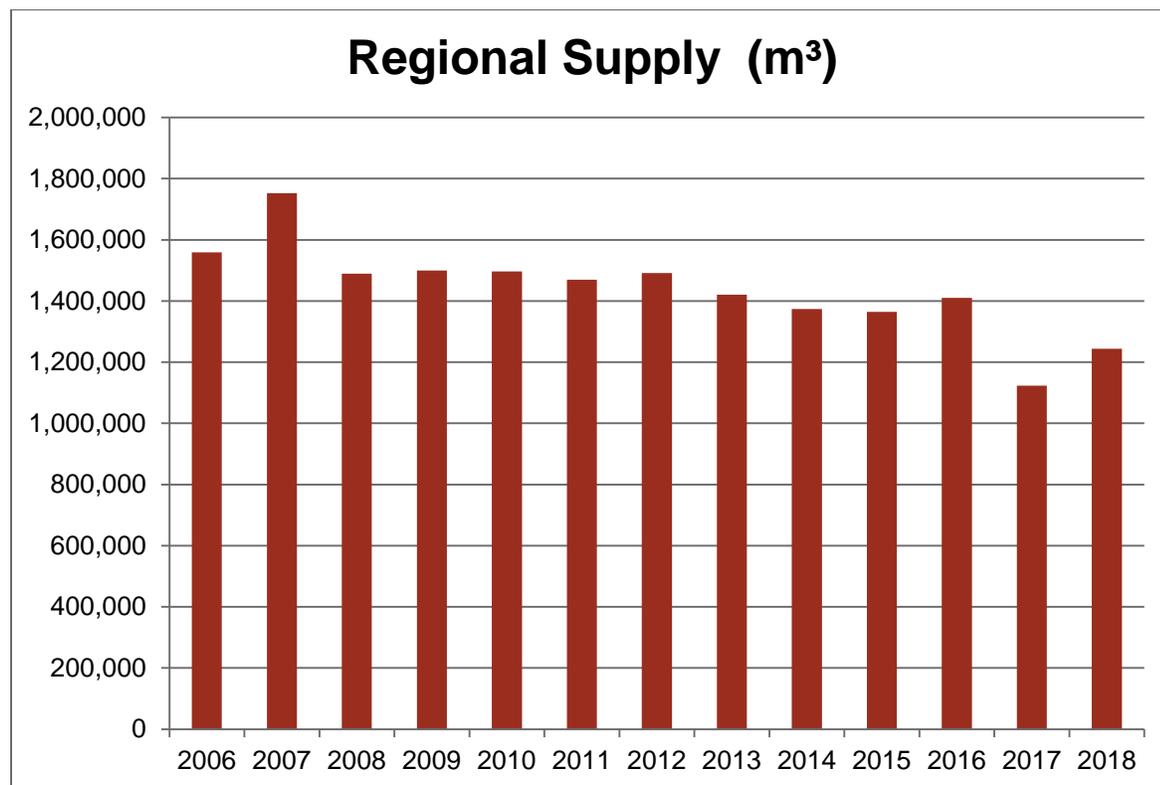
Water consumed by the Town of Pelham is measured by the Niagara Region, and provided monthly to the Town. In 2018, a total of 1,243,900 cubic meters (m<sup>3</sup>) of water flowed to the Town of Pelham in total. (1 cubic meter of water = 1,000 litres). This quantity continues to decrease since 2006, as shown in **Table 2**.

**Table 2 – Annual Totals**

Year	Supply (m <sup>3</sup> )
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
<b>2018</b>	<b>1,243,900</b>

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

**Figure 1 –2017 Total Water Supplied by the Region of Niagara**



It is anticipated that the decreasing general demand may be generally attributed to decreasing customer demand, and social conservation initiatives.

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 or flows to the Town, so a comparison to license limits is not required. The 2018 average daily consumptions are shown in **Table 3**, along with the maximum daily flows for each month.

**Table 3 –2017 Daily Water Usage**

<b>Month</b>	<b>Average Daily Quantity (m<sup>3</sup>)</b>	<b>Max Flow in One Day (m<sup>3</sup>)</b>
January	2860	3800
February	3028	3750
March	2818	3760
April	2749	3710
May	3428	5900
June	4487	7020
July	<b>5528</b>	<b>8120</b>
August	4086	6600
September	3433	4880
October	2947	3620
November	2686	3360
December	2853	3660

The 2018 highest demand day occurred in July, which aligns with the typical high monthly demands in the summer. (especially observed with filling swimming pools, lawn watering and construction).

No servicing concerns are noted. The Niagara Regional Master Servicing Plan (MSP - 2016) lists 2016 firm capacity of the Shoalts high & low lift stations at 19,400 m<sup>3</sup>/day. The MSP also identifies the projected 2041 maximum daily demand at 11,500 m<sup>3</sup>/day, and pump upgrades are thus planned for this pump station.

## 7 INFRASTRUCTURE

### 7.1 Capital Projects and Purchases

The Town updated the 20-year capital plan. Although efforts to ensure that 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 Hurricane Road watermain originally built in 1960 was replaced from Chestnut Street to Hwy 20.

The 50mm Copper and PVC Rice Road watermain (North of HWY 20) was replaced to bring the system up to standard and provide greater fire-fighting ability to the street.

Design of watermain replacement on Station Street and Haist Street was also underway in 2018. The replacement of Station Street between Hwy 20 and Port Robinson Road began in 2018 and will be completed in 2019.

Developments involving construction of new watermain by developers included Saffron Meadows, Saffron Commons, and Summerside Drive.

### 7.2 Rehabilitation and Repairs

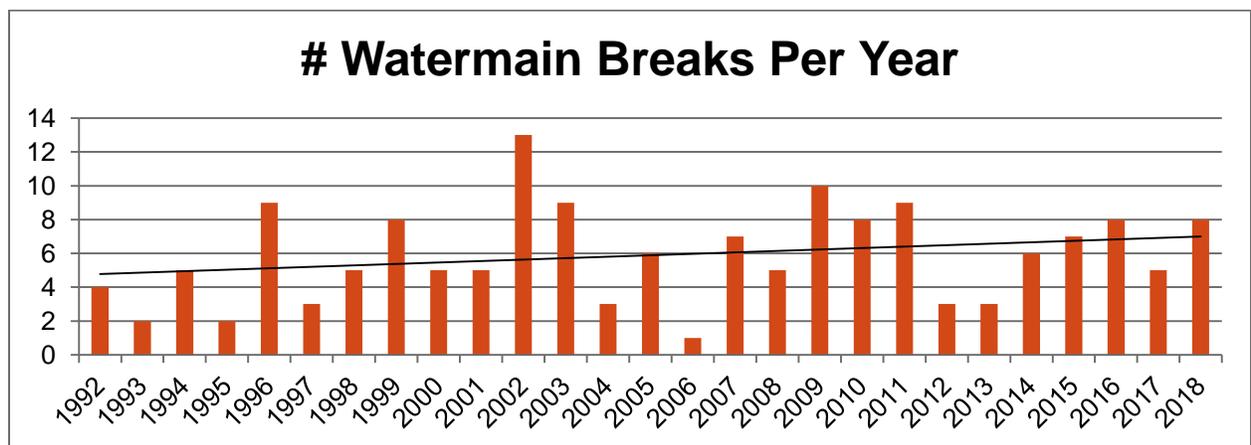
#### **7.2.1 Water Main**

A total of eight main breaks occurred in 2018, summarized in **Table 4**. **Figure 2** shows the overall trend for the total number of water main breaks.

**Table 4 – Water Main Break Summary**

Date	Location	Type of Pipe	Suspected Cause	Replacement in 20-year Capital Plan
1/24/18	1582 Pelham Street	Cast Iron	Pressure, Age, Condition	2019 Proposed
1/24/18	1622 Pelham Street	Cast Iron	Pressure, Age, Condition	2019 Proposed
2/11/18	6 Strathcona	Cast Iron	Age, Rock in Pipe Bedding	Beyond 2026
2/20/18	1017 Pelham Street	Cast Iron	Pressure, Age, Condition,	2023 Proposed
2/21/18	1027 Pelham Street	Cast Iron	Age, Condition	2023 Proposed
11/27/18	1435 Station Street	Cast Iron	Condition	2018 (in construction)
12/3/18	165 Welland Road	Cast Iron	Pressure, Condition	2019 (design 2018)
12/3/18	1441 Station Street	Cast Iron	Main Stop Blow-out Age, Pressure, Condition	2018 (in construction)

**Figure 2 – Town of Pelham - Water Main Breaks**



The trend line suggests the general number of breaks is increasing. The following should be noted:

1. The likelihood of breaks increases where the water main pipe material is cast iron. Approximately 16% of the distribution system is made up of cast iron pipe with an average age of 60 years.
2. The likelihood of breaks increases where the diameter of the cast iron pipe is 150mm - most of the cast iron in the system is of this size.
3. The likelihood of breaks increases where the normal operating pressure of the watermain is 65psi or greater - the average system pressure is 71.6psi. The lowest recorded pressure in the system is 42psi and the highest is 95psi.
4. Risk of property damage increases where breaks occur in urban areas without storm water infrastructure. All of the remaining cast iron is located in areas without storm water infrastructure.

**Table 5** shows the overall downward trend for the total remaining amounts of cast iron still in service in the system. Replacement of remaining cast iron watermains is based on break history, and risk which may include the number of customers affected by watermain disruption, location of Industrial, Commercial, and Institutional (ICI) users, and other location based factors (storm sewer drainage & flood potential, safety of workers, disruption of transportation)

**Table 5 – Remaining Cast Iron in Water Distribution System**

<b>Year</b>	<b>Approximate kilometers of Cast Iron Remaining</b>	<b>Approximate % Cast Iron Remaining</b>
2010	21	26%
2011	21	26%
2012	20	25%
2013	19	23%
2014	14	17%
2015	14	17%
2016	13.8	17%
2017	13.8	17%
2018	13.3	16%

***7.2.2 Booster Pumping Stations***

Regular maintenance and repairs are required at our Chestnut Ridge Booster Pump Station. Since installation these have been completed by the Niagara Region 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.

***7.2.3 Water Loading Station***

Minor maintenance tasks were also performed at the water loading station including backflow prevention device testing and improvements to site drainage.

## 8 MONITORING AND IMPROVEMENT INITIATIVES

In 2018, staff continued to place an increased emphasis on proactive measures to ensure the Town's continued ability to efficiently deliver safe drinking water.

Town Of Pelham Water Distribution Operators are engaged in new self-directed research and program implementation initiatives including Water Loss Management, inventory reviews, quality management improvements and improving the Hydrant & Valve Maintenance Program and Water Sampling.

### 8.1 Backflow Prevention

The Ontario Building code requires backflow prevention devices 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 change in Building Code to ensure that backflow preventers are installed in new buildings.

As approved in the 2018 budget, plans have commenced for the creation of a backflow program. The creation of a backflow program requires a comprehensive review of MECP recommendations, CSA standards and successes and failures of other municipalities of similar size. The program will involve the clear definition of program goals and requirements, drafting of a policy, bylaw or other enforceable documents, an implementation and public education program, enforcement program and roll-out schedule.

Program details and recommendations will be presented to council for consideration at a later date. The MECP has been strongly encouraging the Town of Pelham to develop such a program for a number of years.

### 8.2 Leak Detection

Flowmetrix Technical Service Inc. provided a small water leak detection survey for the Town Of Pelham in 2018. A total of 13.5km of watermain of various diameters, including all cast iron, as well as all valves and fire hydrants within the stipulated area were included in the survey.

The 2019 budget includes funding for continuing the leak detection program.

### 8.3 Hydraulic Water Model

Detailed discussions to create a distribution system model for the Town's water system were initiated, with budgetary needs integrated into the 2017 operating budget. This project was completed and calibrated in 2018.

An up-to-date computer model of the Town's water infrastructure can accurately calculate and show how the system operates under all types of conditions. This is likely the most powerful engineering tool available to water staff. The water model can be used to:

- enhance sampling programs,
- study chlorine residual loss,
- evaluate risk and vulnerability
- plan and improve each system's hydraulic performance,
- assist with pipe, pump, and valve placement and sizing,
- perform fire flow analysis, and
- train staff.

It will be regularly used to view changes in the system that may result, or may be needed, related to proposed developments.

Regular updates to the model are required to ensure pressure and flows are maintained as significant changes to the system are made through growth.

9 MUNICIPAL DRINKING WATER LICENSING PROGRAM

The Municipal Drinking Water Licensing Program is a five-stage initiative by the MOECC 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 are in place. Table 6 lists the status of the key elements for water licensing.

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

Stage	Status
License	Renewal Application Initiated - Expires July 24, 2019 (originally issued Sept 21 2009)
Permit	Active and current – no expiry (originally issued Sept 17 2009)
Operational Plan	Update to version 2.0 completed (including supporting procedures and forms) The Operational Plan will be presented to the new Council in early 2018 for endorsement
Accreditation	Maintained full accreditation, following a full accreditation audit by NSF in May 2018 - This accreditation certificate expires in May 2021.
Financial Plan	A Council approved financial plan covering at six years is required for the renewal of the Town of Pelham’s Municipal Drinking Water Licence. The plan is being prepared by consultant through the Corporate Services Department. An extension for the submittal of an approved plan has been granted by the MECF until March 6th, 2019.

10 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.

10.1 Infrastructure Review

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 2018 review (performed in Nov 2018) were translated accordingly into the 2019 water operational and capital budget requests, and into the 20-year Capital Plan updates, and are communicated in this report below.

Infrastructure Review Meeting Minutes	
Details / Discussion Points / Issues Identified	Recommendation (for budget ask) / Action Items (to be tracked via QMS LIST 006)
Outcomes of the risk assessment	No additional recommendations or action items.
<ul style="list-style-type: none"> <li>Reviewed the Town of Pelham's 1 Critical Control Point (Loss of chlorine residual) and associated Critical Control Limit (0.20 mg/L after routine flush) and processes in place to maintain (Spring/Fall flushing and watermain flushing) and monitor (weekly distribution system cl2 sampling). There have been no deviations from the CCL to date in 2018; no current implications to the capital request.</li> <li>Additional infrastructure areas related to the risk assessment's hazards have been identified below (i.e. watermain break - replacement program). Individual</li> </ul>	

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Infrastructure Review Meeting Minutes	
Details / Discussion Points / Issues Identified	Recommendation (for budget ask) / Action Items (to be tracked via QMS LIST 006)
<p>WTR xx-xx sheets also point to Strategic Plan Initiatives such as Goal 4: Better Manage Risk and Goal 5: Protect People and Property and provide additional context to the project.</p>	
<p>Watermain – servicing, replacement, monitoring, operating &amp; capital needs, other</p>	<p><b>Recommendations:</b></p> <ul style="list-style-type: none"> <li>To be updated</li> </ul> <p><b>Action Items (tracking via inclusion on 20-Year Capital rather than QMS LIST 006):</b></p> <ul style="list-style-type: none"> <li>Include Pelham St. North watermain project to the 20-Year capital (initially put forward 2015/2016 and not approved however was not replaced to a subsequent year in the capital plan).</li> </ul>
<ul style="list-style-type: none"> <li>Reviewed 2017 Infrastructure Review Summary 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>Clare Avenue Watermain Replacement - development driven (<b>development section has been completed by Developer – Town of Pelham portion was not approved</b>)</li> <li>Haist Street: Welland Rd to Beckett Cres, including Welland Rd Haist to Edward (<b>not approved</b>)</li> <li>Station Street: Hwy 20 to Port Robinson, Watermain Replacement - trench only (<b>WTR 02-18 in progress</b>)</li> <li>Water System Repair Equipment (<b>WTR 03-18 approved</b>)</li> <li>Backflow Prevention Program (<b>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 set to go out within the coming weeks – linked to risk assessment outcome #11</b>)</li> </ul> </li> </ul>	

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<b>Infrastructure Review Meeting Minutes</b>	
<b>Details / Discussion Points / Issues Identified</b>	<b>Recommendation (for budget ask) / Action Items (to be tracked via QMS LIST 006)</b>
<ul style="list-style-type: none"> <li>Reviewed 2018 break histories to date: 6 in total (1 pulled by contractor on Hurricane [risk assessment outcome 8]) 2x Pelham St N, 2x Pelham St S, 1 Strathcona Drive) and compared to previous years (still slight upward trending; main replacement is still a focus and depends on various factors such as funding/available reserves, wastewater needs, and roads needs). Reviewed the 2018 projected 20-Year Capital and identified Pelham St S (Welland St. to south limit) is projected for 2023 however Pelham N (originally recommended for 2016 but was not approved) was not added back in a later year (Action Item). Preliminary 2019 working 20-Year Capital was reviewed (includes annual request for inventory, Clare Ave and Haist Street identified above from 2017) but is in flux; meetings are still on-going with DPW, MPW, Engineering and Roads department to determine common needs (Recommendation to the right to be updated once 2019 Capital request has been formalized).</li> <li>Reviewed Action Item identified during 2017 Infrastructure Review re: addition of ATP to existing sampling [related to risk assessment outcome #9]. MPW noted that resources are not available currently for the program however, water sampling results indicate no biofilm issues – QMS LIST 006 has been updated and the Action Item will not be implemented.</li> </ul>	
Hydrants – monitoring, servicing, operating & capital needs, other	
<ul style="list-style-type: none"> <li>No hydrant needs have been identified by Fire Chief since Pelham St. Merrit to Quaker (see 2017 Infrastructure Review).</li> <li>No implications to capital requests.</li> </ul>	No additional recommendations or action items.
Main valves – monitoring, servicing, operating & capital needs, other	
<ul style="list-style-type: none"> <li>No implications to capital requests.</li> <li>Discussed NC-2018-03 re: 2017 delinquent hydrant and valve maintenance activities. Review/confirmation of maintenance activities is to be completed early-mid December and shall be</li> </ul>	No additional recommendations or action items.

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Infrastructure Review Meeting Minutes	
Details / Discussion Points / Issues Identified	Recommendation (for budget ask) / Action Items (to be tracked via QMS LIST 006)
discussed as input to Management Review. <ul style="list-style-type: none"> <li>Discussed existing PRVs – no short-term concerns (2018 Final 20-Year Capital identifies projected needs in 2034 and 2035)</li> </ul>	
Other appurtenances – operating & capital budget needs, other	
<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> </ul>	No additional recommendations or action items.
Inventory and Tools – operating & capital needs, other	
<ul style="list-style-type: none"> <li>MPW identified potential need to begin replacing existing colorimeters (4 in total) with new units.</li> <li>HACH DPD Secondary Standard Verification kit was purchased (operating budget) for monthly verification.</li> </ul>	<b>Recommendations (Operating Budget):</b> <ul style="list-style-type: none"> <li>Investigate the purchase 2 new colorimeters.</li> </ul>
Software / hardware – capital needs, other	
<ul style="list-style-type: none"> <li>Water Model upgrade is currently in draft</li> <li>Work order software (all Public Works Departments) was approved for 2018 – awaiting IT to link the system. Beginning phase will be road infrastructure with water/wastewater added in future.</li> </ul>	No additional recommendations or action items.
Pumping Station	
<ul style="list-style-type: none"> <li>Reviewed details of the pumping station with the DPW – Town of Pelham owns the pumping station (located near tower) and it is operated and maintained by the Region (monitored via SCADA system). 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. The Region does intend on moving the Water Tower, at which point the pumping station will become obsolete.</li> <li>Related to Risk Assessment Outcomes #s 1 and 2.</li> </ul>	<b>Recommendations:</b>  No additional recommendations or action items.
Staffing	

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<b>Infrastructure Review Meeting Minutes</b>	
<b>Details / Discussion Points / Issues Identified</b>	<b>Recommendation (for budget ask) / Action Items (to be tracked via QMS LIST 006)</b>
<ul style="list-style-type: none"> <li>• No implications to capital requests. 2 new personnel have been added:                             <ul style="list-style-type: none"> <li>○ existing Public Works staff member yet to receive DWQMS awareness training however has not begun any water-related activities at the moment (OIT certificate posted at Tice Road)</li> <li>○ new staff member, previously certified water operator (will be applying for OIT as previous certificate expired) is not performing any activities only operators can perform. Has received DWQMS awareness training.</li> </ul> </li> </ul>	<p>No additional recommendations or action items.</p>

## 10.2 Management Review

Management review is a required component of the DWQMS. In Nov 2018, 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 were translated accordingly into the 2019 water operational and capital budget requests, and into the 20-year Capital Plan updates, and are communicated in this report below.

<b>Management Review Meeting Minutes</b> (completion of Action Items to be tracked via QMS LIST 006)				
<b>Input</b>	<b>Details / Discussion Points / Issues Identified /Decisions Made</b>	<b>Action Item(s)</b>	<b>Responsibility</b>	<b>Proposed Due Date</b>
1.)	<p>Incidents of regulatory non-compliance:</p> <p>Reviewed MECP Inspection Report dated 16-Nov-2018. No non-compliances were found resulting in a 100% score. 4 recommendations were identified:</p> <p>1 - The Town is encouraged to either create a new heading for non-certified people in the logbook or add a note besides the person's name to indicate that he/she is not a certified operator.</p> <p>2 - The Town is encouraged to complete the implementation of its proposed backflow program as its topography makes it more prone to backflow.</p> <p>3 - The Town is reminded to use an alternate sampling station for HAAs in 2019 in order to comply with the requirements from the Ministry's May 9, 2018 letter titled "Re: Haloacetic Acids (HAAs) Sampling Concerns".</p> <p>4 - The ORO agreed to include the HAA's running annual average in</p>	All MECP recommendations to be documented and managed within QMS LIST 006.	TGC / MPW	Inclusion within QMS LIST 006 and consideration to be completed by 31-Jan-2018.

# SUMMARY REPORT PELHAM WATER DISTRIBUTION SYSTEM

## Management Review Meeting Minutes (completion of Action Items to be tracked via QMS LIST 006)

Input	Details / Discussion Points / Issues Identified /Decisions Made	Action Item(s)	Responsibility	Proposed Due Date
	the 2018 Annual Report.			
2.)	Incidents of adverse drinking-water tests: No additional details reviewed.	N/A		
3.)	Deviations from critical control point limits and response actions: No additional details reviewed.	N/A		
4.)	The effectiveness of the risk assessment process: No additional details reviewed.	N/A		
5.)	Internal / third-party audit results:  Reviewed results of the internal audit completed by Tavares Group Consulting's Sandra Tavares. 6 OFIs were identified (preventive actions):  Element 3: i) Consider: a. including printed names of OA personnel endorsing the OP. b. documenting the process for ensuring OA awareness of all applicable legislative and regulatory requirements and the tracking (e.g. QMS LIST 0006) of any identified changes (e.g. from quarterly QMS meetings, newsletters, Association emails, etc.) affecting the QMS.  ii) There is an opportunity to include Council and OA endorsement as part of the OP (e.g. Appendix) and reference within the OP.	All preventive actions are to be documented within QMS LIST 006 for consideration / tracking of implementation.	TGC / MPW	Inclusion within QMS LIST 006 and consideration to be completed by 31-Jan-2018.

# SUMMARY REPORT PELHAM WATER DISTRIBUTION SYSTEM

## Management Review Meeting Minutes (completion of Action Items to be tracked via QMS LIST 006)

Input	Details / Discussion Points / Issues Identified /Decisions Made	Action Item(s)	Responsibility	Proposed Due Date
	<p>Element 4: Consider including the QMS Representative Appointment MoU and associated bylaw as part of the OP, including its reference in the documentation.</p> <p>Element 5: There is an opportunity to ensure documents are controlled. For example, QMS FORM 002 Hydrant Maintenance and Inspection being used was rev.6 whereas rev.5 was identified on QMS LIST 010 Document Management List.</p> <p>Element 10: There is an opportunity to include all external training (e.g. conferences, etc.) in the Operator Training Summaries.</p> <p>Element 13: There is an opportunity to ensure the Statement of Qualifications / Accreditations for Instrumentation Verification / Calibration Services is available (confirmed by MPW and Supervisor of Waste &amp; Wastewater as recently reviewed).</p> <p>Element 21: Consider reviewing and considering applicable best management practices as part of the Review of Infrastructure process (Element 14).</p>			
6.)	Results of emergency response testing:			

# SUMMARY REPORT PELHAM WATER DISTRIBUTION SYSTEM

## Management Review Meeting Minutes (completion of Action Items to be tracked via QMS LIST 006)

Input	Details / Discussion Points / Issues Identified /Decisions Made	Action Item(s)	Responsibility	Proposed Due Date
	No additional details reviewed.			
7.)	Operational Performance: No additional details reviewed. TGC has begun inputting all sampling results within an excel spreadsheet to enable easier annual reporting. Maintenance activities were reviewed; completion of valve maintenance/exercising program and frequency set in SOP 014 was discussed.	SOP 014 to be updated to better reflect current operational capabilities; to be tracked within QMS LIST 006.	TGC / MPW	Inclusion within QMS LIST 006 and update of the SOP to be completed by 31-Jan-2018.
8.)	Raw water supply & drinking water trends: No additional details reviewed. Cannot recall if Regional sodium exceedance was communicated to MPW/ORO.	Follow-up with Region of Niagara QMS Rep. to confirm any/all water quality issues to be communicated to MPW; to be tracked via QMS LIST 006.	TGC/MPW	Inclusion within QMS LIST 006 and e-mail to be sent by 31-Jan-2018.
9.)	Follow-up on actions from previous Management Reviews: No additional details reviewed. Previous actions are being managed appropriately.	N/A		
10.)	Status of management actions items identified between reviews: No additional details reviewed.	N/A		
11.)	Changes that could affect the Quality Management System: No additional details reviewed; Ontario's Watermain Disinfection Procedure DRAFT has been	2-hr Standard of Care / DWQMS Awareness presentation to Council and Sr. Leadership Team to take place in early	TGC / DPW	Date TBD; tracked within QMS LIST 006 as a preventive action.

# SUMMARY REPORT PELHAM WATER DISTRIBUTION SYSTEM

<b>Management Review Meeting Minutes</b> (completion of Action Items to be tracked via QMS LIST 006)				
<b>Input</b>	<b>Details / Discussion Points / Issues Identified /Decisions Made</b>	<b>Action Item(s)</b>	<b>Responsibility</b>	<b>Proposed Due Date</b>
	released. DPW is following up re: status of requirements under O.Reg. 588/17 (outside of scope of QMS). Need for more focused Standard of Care / DWQMS Awareness to Council and Sr. Leadership Team was disused.	2019, ideally prior to annual reporting.		
12.)	Consumer feedback (incl. complaints):  No additional details reviewed.; complaints are down from previous years.	N/A		
13.)	The resources needed to maintain the Quality Management System:  MPW and DPW identified assistance services an asset and to continue into 2019.	N/A		
14.)	The result of the infrastructure review:  Draft Water 20-Year Projected Capital Budget is set to be communicated to the Sr. Leadership Team (this information is driving inclusion of Sr. Leadership Team within the Standard of Care training in early 2019). Projects have been documented within the updated Infrastructure Review Meeting Minutes (QMS FORM 026 updated 21-Dec-2018).	N/A		
15.)	Operational plan currency, content and updates (incl. need for re-endorsement):  Operational Plan to be re-endorsed in early 2019 (linked to inputs 11 and 5).	See inputs 5 and 11; information being tracked within QMS LIST 006.	TGC / DPW	Inclusion within QMS LIST 006 to be completed by 31-Jan-2018; implementation dependant upon Action from input 11.
16.)	Personnel suggestions:  No additional details reviewed;	N/A		

# SUMMARY REPORT PELHAM WATER DISTRIBUTION SYSTEM

## Management Review Meeting Minutes (completion of Action Items to be tracked via QMS LIST 006)

Input	Details / Discussion Points / Issues Identified /Decisions Made	Action Item(s)	Responsibility	Proposed Due Date
	actions have been given consideration and are being effectively tracked via QMS LIST 006.			
17.)	<p>General assessment of suitability, adequacy and effectiveness</p> <p>Internal audit report identified the following internal audit result trending:</p> <p>2015 – 3 NCs, 5 OFIs</p> <p>2016 – 5 NCs, 13 OFIs</p> <p>2017 – 8 OFIs</p> <p>2018 – 6 OFIs</p> <p>Corrective and preventive actions are being managed effectively. The QMS is deemed to be suitable, adequate and effective.</p>	N/A		
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 QMS LIST 006 and BMPs/ Preventive Actions.</p>	N/A - See Input 1.		

### 10.3 Internal Audit Results

Results from the QMS internal audit performed in November 2017 are summarized. The internal audit must be performed once per year (Annex A, an excerpt summary from the report, is shown on the following page).

No non-conformances were identified.

Mn = minor nonconformance (not in conformity with the drinking water quality management standard)

OFI = opportunity for improvement. These are suggestions from the auditor that may improve the system, and the scope of these suggestions shifts as the QMS matures.

## Annex A – 2018 Internal Audit Findings

ID #	Type of Finding	Element	Description
2018-IA-01	OFI	3 Endorsement	<p>i) Consider:</p> <ul style="list-style-type: none"> <li>a. including printed names of OA personnel endorsing the OP.</li> <li>b. documenting the process for ensuring OA awareness of all applicable legislative and regulatory requirements and the tracking (e.g. QMS LIST 0006) of any identified changes (e.g. from quarterly QMS meetings, newsletters, Association emails, etc.) affecting the QMS.</li> </ul> <p>ii) There is an opportunity to include Council and OA endorsement as part of the OP (e.g. Appendix) and reference within the OP.</p>
2018-IA-02	OFI	4 QMS Representative	Consider including the QMS Representative Appointment MoU and associated bylaw as part of the OP, including its reference in the documentation.
2018-IA-03	OFI	5 Document and Records Control	There is an opportunity to ensure documents are controlled. For example, QMS FORM 002 Hydrant Maintenance and Inspection being used was rev.6 whereas rev.5 was identified on QMS LIST 010 Document Management List.
2018-IA-04	OFI	10 Competencies	There is an opportunity to include all external training (e.g. conferences, etc.) in the Operator Training Summaries.
2018-IA-05	OFI	13 Essential Supplies and Services	There is an opportunity to ensure the Statement of Qualifications / Accreditations for Instrumentation Verification / Calibration Services is available (confirmed by MPW and Supervisor of Waste & Wastewater as recently reviewed).
2018-IA-06	OFI	21 Continual Improvement	Consider reviewing and considering applicable best management practices as part of the Review of Infrastructure process (Element 14).

## 10.4 External Audit Results

In May 2017, the Town engaged NSF as a third party auditor to the QMS, in accordance with the Town's drinking water license requirements.

Summary of Findings	
Requirement	Finding
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 Record Control	C
6. Drinking Water System	OPI
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. Communications	C
13. Essential Supplies and Services	C
14. Review and Provision of Infrastructure	C
15. Infrastructure Maintenance, Rehabilitation & Renewal	C
16. Sampling, Testing & Monitoring	C
17. Measurement & Recording Equipment, Calibration & Maintenance	C
18. Emergency Management	OPI
19. Internal Audits	OPI
20. Management Review	C
21. Continual Improvement	C
<b>MJ</b>	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 conformities; or (c) a minor non-conformity identified in a corrective action request has not been remedied.
<b>Mn</b>	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.
<b>OPI</b>	Opportunity for Improvement. Conforms to requirement, but there is opportunity for improvement.
<b>C</b>	Conforms to requirement.
	Not Applicable to this audit.
*	Additional Comment added by auditor in the body of the report.

No nonconformances were identified. three Opportunities for Improvement were identified. All three were discussed during management review and considered to be minor in nature with no further action being required.