



# 2023

## Water quality report

**Palgrave, Caledon  
East, Centreville,  
and Cedar Mills**

---

**Palgrave and Caledon  
East Drinking Water  
System**

## Table of Contents

<b>Executive summary</b> .....	<b>4</b>
<b>1. Water management in Peel Region</b> .....	<b>6</b>
<b>2. General drinking water system information</b> .....	<b>8</b>
2.1 Where does the water come from?.....	8
2.2 Expenditure information .....	9
<b>3. How is water treated?</b> .....	<b>11</b>
3.1 Palgrave Wells Number 2 and 3 .....	11
3.2 Palgrave Well Number 4 .....	12
3.3 Caledon East Wells Number 3 .....	13
3.4 Caledon East Wells Number 4 and 4A.....	15
<b>4. Peel Region and drinking water compliance in Ontario</b> .....	<b>17</b>
4.1 Annual water reports .....	17
4.2 Sampling and testing .....	17
4.3 Certified water operators .....	18
4.4 Water quality notification .....	19
4.5 Water system inspections.....	19
4.6 Peel Region Water By-law .....	20
<b>5. How well did we do?</b> .....	<b>21</b>
5.1 Operation.....	21
5.2 Customer service quality and efficiency .....	22
<b>6. Drinking water programs</b> .....	<b>24</b>
6.1 Municipal Drinking Water Licensing Program .....	24
6.2 Source water protection .....	24
6.3 Private Well Abandonment Program.....	24
6.4 Watermain renewal program .....	26
6.5 Community Lead Testing Program .....	27
6.6 Watermain flushing program .....	28
6.7 Hydrant inspection program .....	28
6.8 Drinking water sampling station program.....	29
6.9 Maintenance program and activities .....	29
6.10 Continual improvement process .....	30
6.11 Monitoring equipment calibration and maintenance .....	31
<b>Appendix A</b> .....	<b>32</b>
<b>Water safety indicators information</b> .....	<b>32</b>
<b>Summary of 2023 Water testing results</b> .....	<b>34</b>
<b>Appendix B</b> .....	<b>45</b>
<b>Frequently asked questions and answers on water quality</b> .....	<b>45</b>
<b>Water quality at home tips</b> .....	<b>49</b>
<b>Report accessibility</b> .....	<b>51</b>
<b>Other sources of information about drinking water</b> .....	<b>52</b>

## 2023 Palgrave and Caledon East water quality report

The Regional Municipality of Peel (Peel) takes pride in ensuring that its residents, businesses, and visitors are provided with clean and safe drinking water.

Peel treats its source water to remove contaminants and regularly tests the water quality to ensure its consumers are provided with high quality drinking water.

Thousands of water samples are collected throughout the year and tested for a variety of parameters. The results of the tests performed in 2023 confirm high quality of drinking water and have been consolidated in this annual report.

### Our Commitment

To supply our customers with safe and clean drinking water while maintaining compliance with all applicable legislative requirements and to continually improve our Quality Management System.

If you're having trouble understanding or interpreting the data, or if you have any general feedback about the report, please contact our Water Quality and Compliance Team at 905-791-7800 extension 4685 or by email at [PublicWorksCustServ@peelregion.ca](mailto:PublicWorksCustServ@peelregion.ca).

## Executive summary

The Palgrave and Caledon East Drinking Water System, located in the town of Caledon is owned, and operated by Peel region. This drinking water system holds water treatment class 1 (Caledon East Wells 3, 4 and 4A), water treatment class 2 (Palgrave Wells 2, 3 and 4), and water distribution class 2 certification under the Ontario [Regulation 128/04](#) of the [Safe Drinking Water Act, 2002](#).

The Palgrave and Caledon East Drinking Water System is operated to meet daily, seasonal, and other operational demands, such as fire fighting efforts. Palgrave and Caledon East's six supply wells have a combined rated capacity of 19,259 m<sup>3</sup>/day and serve just over 14,000 people. Municipal drinking water systems in Ontario are legislated by the Ministry of the Environment, Conservation and Parks (Ministry) through acts, regulations, and system-specific legal instruments (permits and licences).

### 2023 Highlights

- Palgrave and Caledon East Drinking Water System received a Ministry inspection score of 100%
- 100% of laboratory analyzed samples met Ontario Drinking Water Quality Standards and confirm the Peel Region's high-quality drinking water
- \$333,700 was invested into major maintenance, repairs, and upgrades

This annual water quality report has been completed to satisfy the requirements under section 11 of [Ontario Regulation 170/03 Drinking Water Systems](#).

The report summarizes various drinking water system performance metrics, such as:

- Water treatment and distribution process overview
- Laboratory test results
- Operational challenges
- Repairs and maintenance on major infrastructure
- Continual Improvement Process

## 2023 summary

### Peel Region

Brampton, Caledon, and Mississauga

**1.5 million**

residents

**175,000**

businesses

provided with water and wastewater services

### Palgrave Caledon East Drinking Water System



There were

**2**

watermain breaks;

**0**

reportable events



**1,468,484 m<sup>3</sup>**

of water produced by

**4**

water treatment plants



**100%**

of sample results met Ontario Standards

**100%**

Ministry inspection score



**\$31,670**

treatment chemicals

**0.91 kWh/m<sup>3</sup>**

power for product

**\$268,875**

electrical



**137 km**

of watermain in the distribution system; serving over

**14,600**

## 1. Water management in Peel Region

Peel Region owns the water and wastewater systems that serve its population. This includes water treatment, storage and distribution, and wastewater collection, pumping and treatment.

Peel has two drinking water sources: Lake Ontario and groundwater wells in Caledon. Peel retains services of the Ontario Clean Water Agency (OCWA) under a contract to operate, maintain and manage the lake-based drinking water treatment facilities and its water storage and pumping system. Peel operates the groundwater-based water treatment systems and distribution watermain networks. Similarly, on the wastewater side, OCWA is contracted to operate the large wastewater treatment plants on the shore of Lake Ontario, while Peel operates the wastewater collection system, pumping stations, and the treatment facility in the community of Inglewood.

This water cycle, shown in [Figure 1](#), starts when source water is pumped into our water treatment plants and undergoes treatment to meet the [Ontario Drinking Water Quality Standards](#). Treated drinking water is distributed through a network of pipes, storage facilities and pumping stations to homes and businesses. Used water goes down the drains into the wastewater collection system, where a series of pipes collect and convey wastewater to the treatment plants. Although a predominantly gravity-based network, pumping stations are needed to move wastewater from low lying areas. Wastewater undergoes multi-stage treatment to comply with the strict provincial and federal standards before release to the environment. Peel is committed to high standards of treated wastewater quality since it gets discharged directly or indirectly into Lake Ontario, which is a source of drinking water for Peel and many neighbouring municipalities.

Figure 1. Water and wastewater cycle



For more information, refer to the [annual water quality reports](#) for our other drinking water systems and our [annual wastewater reports](#).



## 2. General drinking water system information

### 2.1 Where does the water come from?

Palgrave Wells Number 2 and 3 are deemed groundwater. Well Number 2 is screened within the Oak Ridges Aquifer Complex while Well Number 3 is screened within the Lower Aquifer Complex. Raw water from Well Number 2 is pumped to the Well Number 3 facility for treatment. The facilities are classified by the Ministry as a class 2 water treatment subsystem.



Palgrave Well Number 4 is screened within the deep Thorncliffe Aquifer Complex and deemed groundwater. The facility is classified by the Ministry as a class 2 water treatment subsystem.

Caledon East Well Number 3 is screened within the confined Caledon East Meltwater Channel and is deemed groundwater. The facility is classified by the Ministry as a class 1 water treatment subsystem.

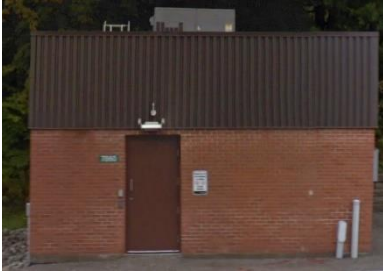
Caledon East Wells Number 4 and 4A are screened in the lower sediments of the confined Thorncliffe Aquifer Complex and also deemed groundwater. The facility is classified by the Ministry as a class 1 water treatment subsystem.

The water treatment facilities are equipped with a stand-by power generator or configured in a way that can accept power from a stand-by power generator to ensure continuity of water treatment and supply in the event of a power failure. See Section 3 for details about how the water is treated.

Palgrave and Caledon East Drinking Water System is controlled through a computerized supervisory control and data acquisition (SCADA) system that is monitored 24 hours per day, 7 days a week. Online analyzers continuously monitor the water quality within the treatment facilities and distribution system. Any significant process upset, or potential water quality issue generates an alarm and, when applicable, the SCADA system automatically shuts down the treatment



process(es) until staff investigate and appropriate action is taken to restore normal operational conditions.



The Old Church Booster Pumping Station interconnects Palgrave and Caledon East distribution networks allowing both water systems to serve as backup water supply to each other, to meet drinking water supply demands.

Palgrave and Caledon East distribution networks are interconnected classified by the Ministry as a single class 2 water distribution subsystem. Water infrastructure consists of 15 sampling stations, 799 hydrants, 891 valves and 137 kilometres of watermain.

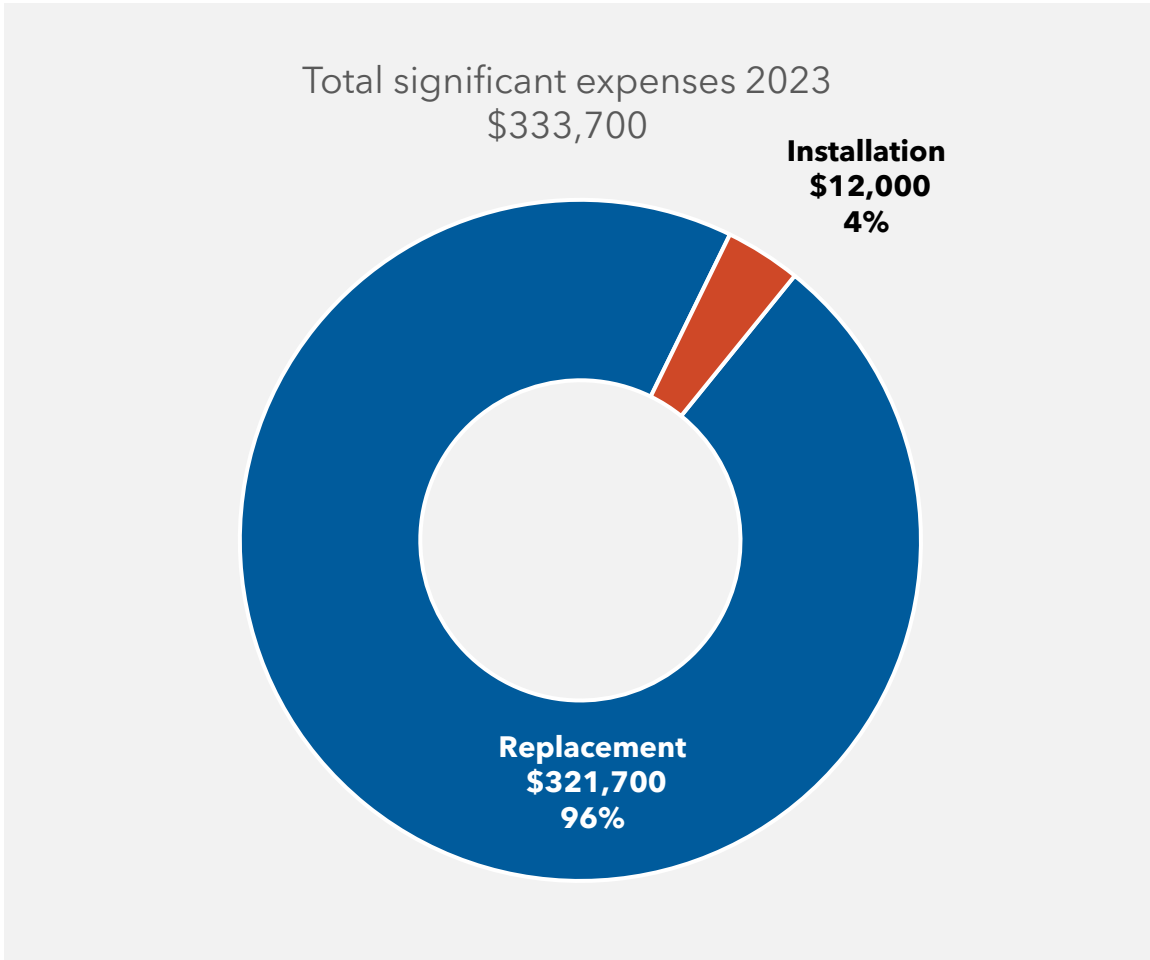
## 2.2 Expenditure information

Peel Region staff determine capital spending priorities to eliminate unnecessary expenditures while maintaining infrastructure. Major expenditures are listed in [Table 1](#) and presented in [Figure 2](#).

**Table 1. Significant expenses for Palgrave and Caledon East Drinking Water System**

Activity type	Activity description	Approximate expenditure
Replacement	Chlorine injection quills (Caledon East Wells 3 and 4, and Palgrave Wells 3 and 4)	\$7,000
	Chlorine tank upgrade (Caledon East Well 3)	\$3,000
	Uninterrupted power supply replacement (Old Church Booster Pumping Station and Palgrave Well 2)	\$3,700
	Flow meters (Caledon East Wells 3 and 4, Palgrave Wells 2, 3, and 4, Old Church Booster Pumping Station and Palgrave Reservoir)	\$308,000
Installation	Fuel tank level sensors (Caledon East Wells 3 and 4, and Palgrave Wells 3 and 4)	\$6,000
	Chlorine tank level sensors (Caledon East Wells 3 and 4, and Palgrave Wells 3 and 4)	\$6,000

**Figure 2. Significant expenditures for Palgrave and Caledon East Drinking Water System**



### 3. How is water treated?

#### Palgrave and Caledon East Drinking Water System (Drinking Water Works number 220003993)

##### 3.1 Palgrave Wells Number 2 and 3

Water from Palgrave Well Number 2 is pumped to Palgrave Well Number 3 treatment facility where it combines with the raw water from Well Number 3. Sodium hypochlorite (chlorine) is first applied to oxidize dissolved iron into a particulate (solid) form which is later removed physically through a greensand media filter. When needed, the filter media is backwashed (cleaned). Clean water is pumped through the filter media, in a reverse flow, lifting and flushing out the iron particles that have accumulated in the filter. The backwash water is pumped into a supernatant tank and allowed to settle. Clear water from the top of the supernatant tank is then returned to the starting point of the treatment process and sludge collected at the bottom of the tank pumped into a hauler truck for off-site disposal.

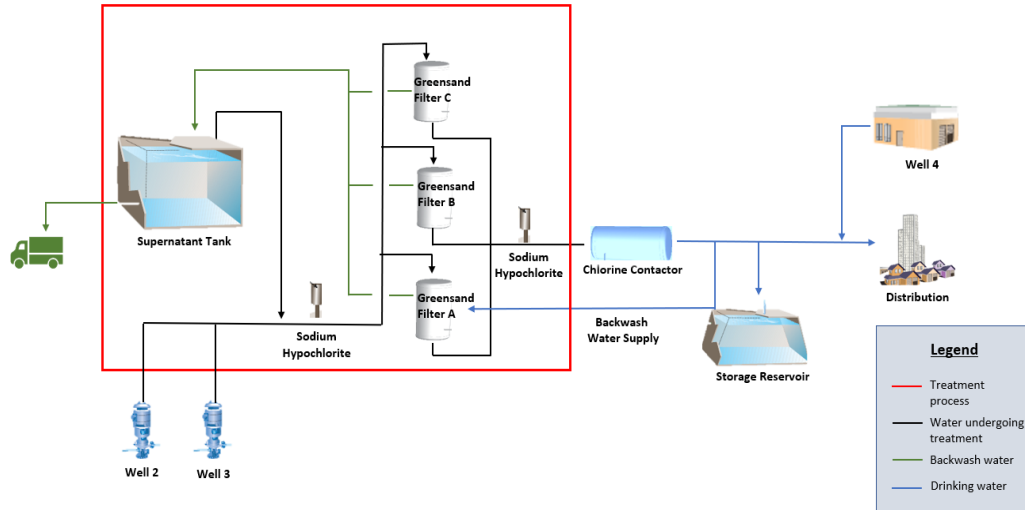
Filtered water is then treated with sodium hypochlorite (chlorine) for primary and secondary disinfection. Disinfection is the process of killing or inactivating disease-causing microorganisms, like bacteria, to prevent waterborne illness and protect public health. The treated water is allowed to remain in contact with sodium hypochlorite for a period of time to ensure effective disinfection before reaching the first consumer. Water is pumped to the Palgrave Reservoir, which provides adequate storage and system pressure to maintain drinking water supply demands.



Palgrave Wells Number 2 and 3 treatment process and water distribution are presented in [Figure 3](#)

**Figure 3. Palgrave Wells Number 2 and 3 water treatment process and distribution process flow**

Palgrave Wells No. 2 & 3



### 3.2 Palgrave Well Number 4

Groundwater is brought into the treatment facility by a submersible water pump installed in the well. Sodium hypochlorite is applied to the raw water to oxidize iron into a particulate (solid) form which is physically removed through the greensand media filter. When needed, the filter media is backwashed (cleaned). Clean water is pumped through the filter media in a reverse flow, lifting and flushing out the iron particles that have accumulated in the filter. The backwash water is pumped into a supernatant tank and allowed to settle. Clear water from the top of the supernatant tank is then returned to the starting point of the treatment process and sludge collected at the bottom of the tank is pumped into a hauler truck for off-site disposal.

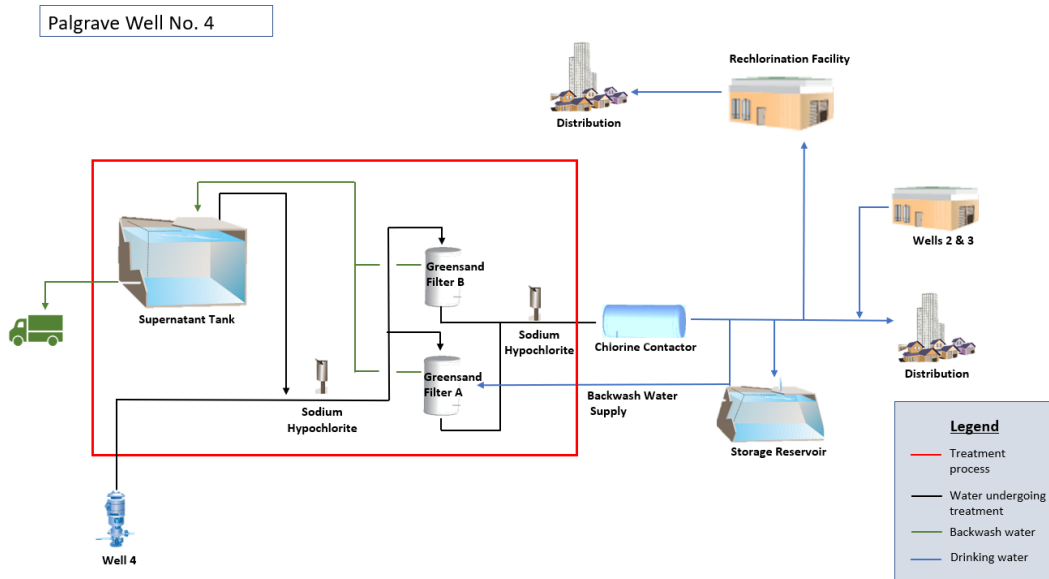


Filtered water is treated with sodium hypochlorite (chlorine) and ultraviolet (UV) light for primary disinfection. Disinfection is the process of killing or inactivating disease-causing microorganisms, like bacteria, to prevent waterborne illness and protect public health. The treated water remains in contact with sodium hypochlorite for a period of time to ensure effective secondary disinfection before serving the first consumer in the distribution system. Water is pumped to

the Palgrave Reservoir, which provides adequate storage and system pressure to maintain drinking water supply demands.

Palgrave Well Number 4 treatment process and water distribution are presented in [Figure 4](#)

**Figure 4. Palgrave Well Number 4 water treatment process and distribution process flow**



### 3.3 Caledon East Wells Number 3

Groundwater is brought to the treatment facility by a submersible water pump installed in the well. Raw water is treated with sodium hypochlorite (chlorine) for primary and secondary disinfection. The treated water is allowed to remain in contact with sodium hypochlorite (chlorine) for a period of time to ensure effective disinfection before reaching the first consumer. Water is pumped to the Caledon East Reservoir, which provides adequate storage and system pressure to maintain drinking water supply demands.

Caledon East Well Number 3 treatment process and water distribution are presented in



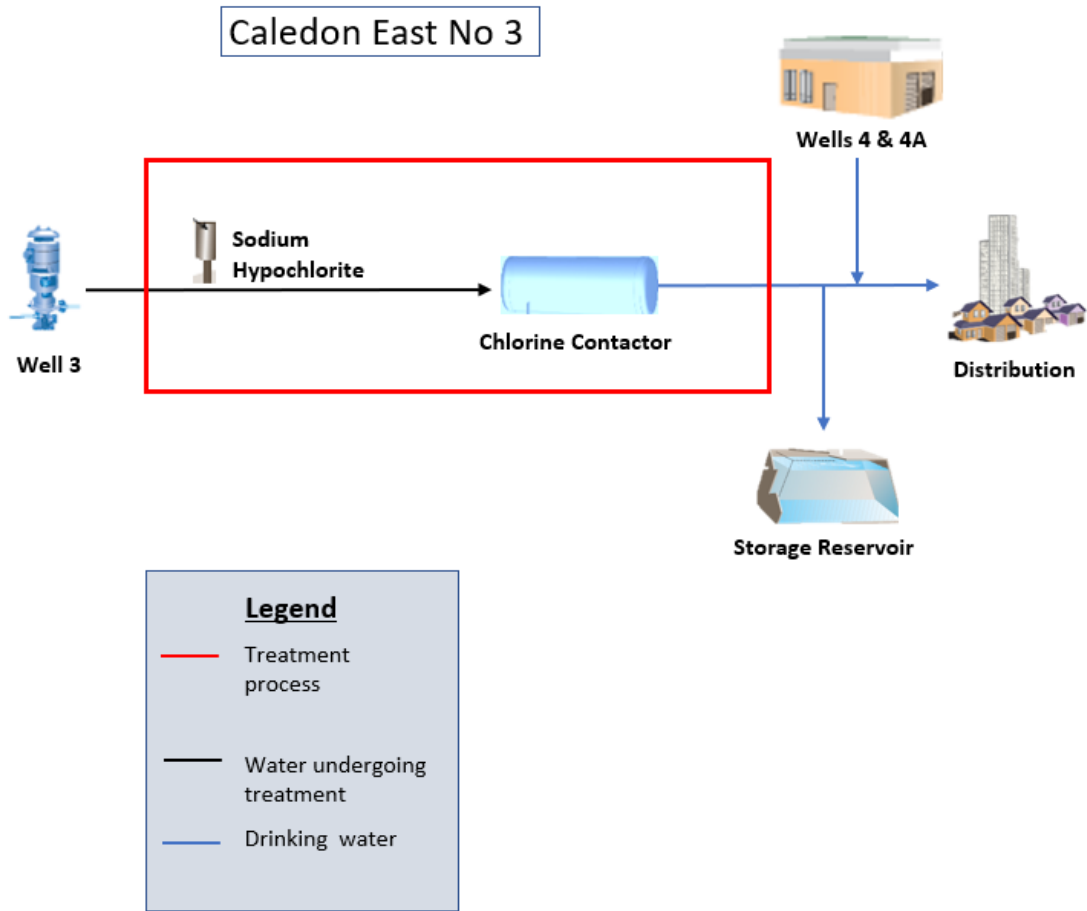
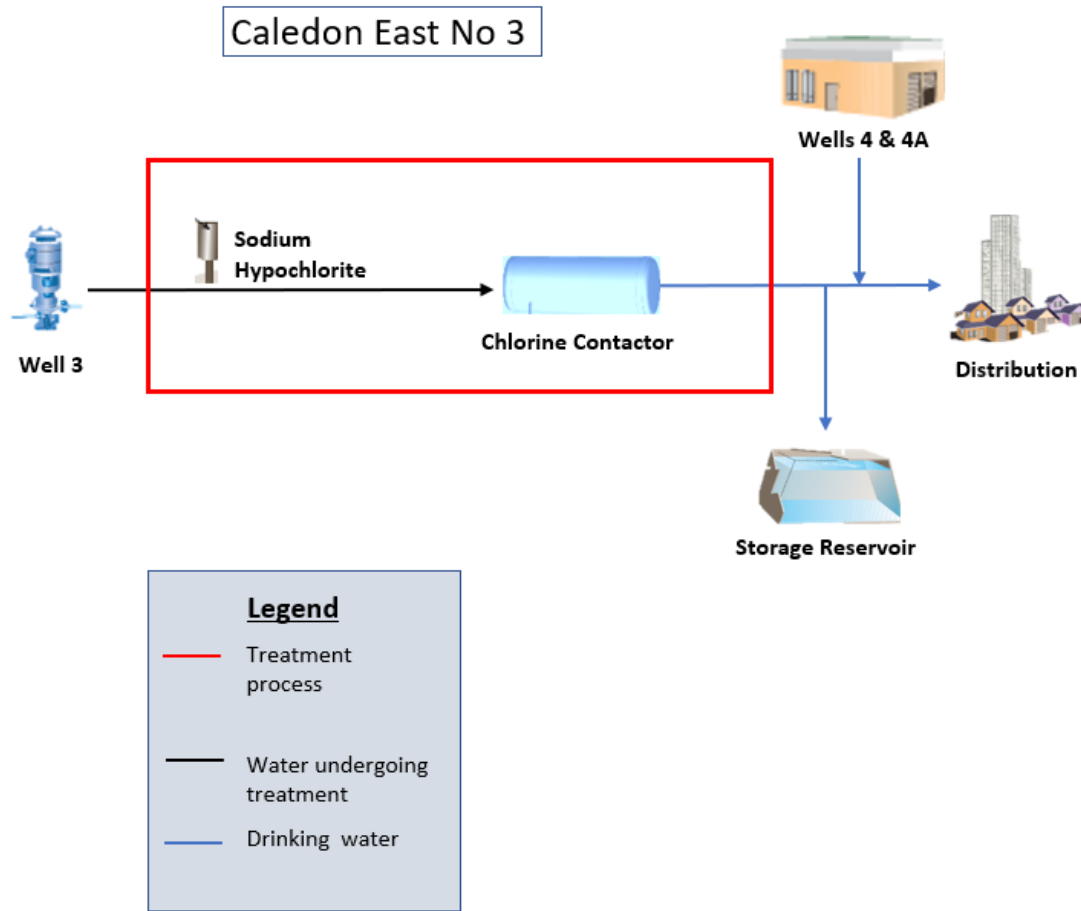


Figure 5





**Figure 5. Caledon East Well Number 3 water treatment process and distribution process flow**

### 3.4 Caledon East Wells Number 4 and 4A

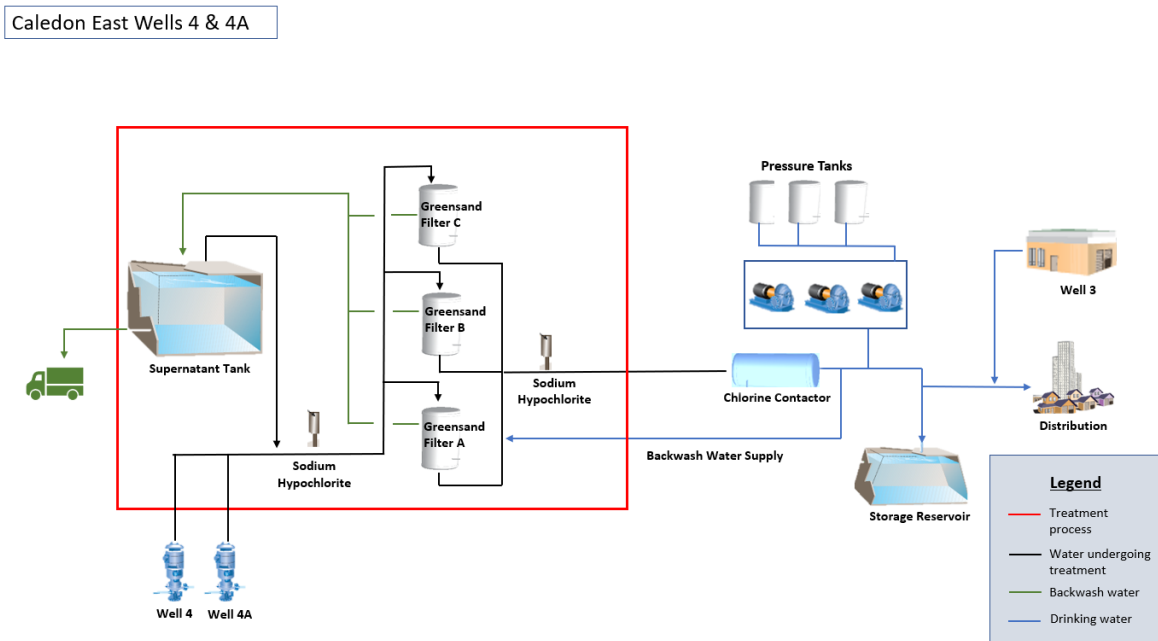
Water from Caledon East Well Number 4A is pumped to Caledon East Well Number 4 treatment facility where it combines with the raw water from Well Number 4. Sodium hypochlorite (chlorine) is first applied to oxidize dissolved iron into a particulate (solid) form which is later removed physically through greensand media filter. When needed, the filter media is backwashed (cleaned). Clean water is pumped through the filter media in a reverse flow, lifting and flushing out the iron particles that have accumulated in the filter. The backwash water is pumped into a supernatant tank and allowed to settle. Clear water is then returned to the starting point of the treatment process and sludge collected at the bottom of the supernatant tank pumped into a hauler truck for off-site disposal.

Filtered water is then treated with sodium hypochlorite (chlorine) for primary and secondary disinfection. The treated water is allowed to remain in contact with sodium hypochlorite for a period of time to ensure effective disinfection before reaching the first consumer. The treatment facility houses booster pumps and pressure regulating tanks to service an adjacent subdivision (Granite Stones), which is situated at a higher elevation.

Caledon East Wells Number 4 and 4A treatment process and water distribution are presented in [Figure 6](#).

A water treatment poster is available for download from our [website](#).

**Figure 6. Caledon East Wells Number 4 and 4A water treatment process and distribution process flow**



## 4. Peel Region and drinking water compliance in Ontario

Drinking water quality in Peel is regulated by the Ontario government through the Ministry of the Environment, Conservation and Parks (Ministry). Ontario drinking water legislation sets requirements for municipal water system owners and operating authorities with regards to operation and management, level of treatment, sampling and testing, training and certification of staff, and water quality notification.

### 4.1 Annual water reports

To comply with the [Drinking Water Systems Regulation \(Ontario Regulation 170/03\)](#) under the [Safe Drinking Water Act, 2002](#), every year, Peel Region prepares water quality reports that provide information on quality of water supplied and a summary report covering the operation and overall performance of the drinking water systems.

The summary report under Schedule 22 of [Ontario Regulation 170/03](#) includes a statement of compliance with the [Safe Drinking Water Act, 2002](#), the regulations, and the terms and conditions of all the approvals for Peel Region's drinking water systems. It also includes a summary of the quantities and flow rates of water supplied to assess the capability to meet the existing and planned uses of the water systems. This report is made available to Regional Council by March 31 of each year.

The water quality reports, and the summary report are made available to the public to ensure that our consumers are kept informed. Each year, the [reports](#) are posted on Peel Region's website and their electronic or paper copies may be obtained upon request by [emailing](#) Peel Region or calling at 905-791-7800 extension 4685.

Additionally, a notice is placed in the local newspapers to inform the public about the availability of Peel's water quality reports.

### 4.2 Sampling and testing

In compliance with legislation, quality of drinking water must be monitored to ensure it meets provincial standards.

Peel regularly samples and tests raw, treated and distribution system water for a number of microbiological, chemical, physical, and radiological parameters. Peel has an extensive water sampling and monitoring program extending beyond the minimum regulatory requirements. This helps staff better understand the quality of source water, to ensure effectiveness of treatment processes, and to diligently monitor and protect the drinking water supply. Sampling and testing are done by trained and qualified operators, who collect water samples from representative sampling sites throughout Peel and immediately test them for first indicators of water safety. As part of Peel's water quality monitoring programs, samples are collected for laboratory analysis for a vast number of health-related, operational, and aesthetic parameters.

The Ministry requires that all drinking water testing laboratories be accredited by the Standards Council of Canada (SCC) based on proficiency evaluation conducted by the Canadian Association for Laboratory Accreditation as well as licensed by the Ministry for all drinking water tests performed. All laboratories used by Peel are accredited by the SCC, licensed by the Ministry, and adhere to strict drinking water sample collection, handling, and transport protocols as well as analytical methods and reporting procedures.

### **4.3 Certified water operators**

Persons who operate Peel Region's water systems hold appropriate water treatment, water distribution and/or water distribution and supply certification, as required by the Ontario drinking water legislation. The Ministry mandated training and certification program ensures that all operators are certified to industry recognized standards.

Peel Region has established a continuing education program for all staff responsible for operating drinking water systems and whose role has an impact on drinking water quality. The program features in-house training that addresses Peel's specific needs with focus on the operation and management of Peel-owned drinking water systems and that offers the benefits of increased staff engagement through a custom designed training toolkit tailored to our business directives. This helps the operators to gain knowledge of the latest industry practices, technologies, and advanced processes and to effectively maintain system water quality and quantity.

#### 4.4 Water quality notification

In compliance with the regulatory requirements, Peel reports every event of adverse water quality to the Medical Officer of Health and the Ministry and initiates timely corrective action to address and resolve the issue and implement control measures to prevent its reoccurrence. Peel has established a notification protocol for reporting of adverse water quality events and makes these reports and data publicly available in the water quality reports.

During the period of January 1 through December 31, 2023, there were no adverse water quality events for Palgrave and Caledon East Drinking Water System.

#### 4.5 Water system inspections

On an annual basis, Peel Region's drinking water systems undergo the Ministry inspection program to confirm compliance with provincial drinking water legislation. The Ministry's annual inspection program is an important aspect of drinking water systems oversight. Through these inspections, the Ministry ensures that Peel meets the sampling, testing and disinfection requirements, treatment standards, terms and conditions of all Ministry approvals and staff certification and training requirements as stated in the Ontario Regulations [170/03](#), [169/03](#), and [128/04](#) under the [Safe Drinking Water Act, 2002](#). Ministry inspections also include checks of control measures in place to maintain protection of sources of drinking water under the [Ontario Water Resources Act](#) and [Clean Water Act, 2006](#).

Ministry inspections provide Peel with an overview of how well our drinking water systems are doing and how well we meet the province's stringent regulations. They also provide an opportunity to review our best management practices and, if necessary, implement new practices to continually improve the operation and management of Peel's drinking water systems.

For an overview of all the work the Ministry is doing to protect drinking water in Ontario, please visit the Ministry website for the [Minister's annual report on drinking water 2023](#) and the [2022-2023 Chief Drinking Water Inspector annual report](#).

## 4.6 Peel Region Water By-law

[Water By-law 6-2017](#), in effect since April 1, 2017, manages and enforces the use of Peel's municipal drinking water systems. It aligns with drinking water legislation such as the [Safe Drinking Water Act, 2002](#) and Peel's operational management practices by ensuring that the uses of the water system do not adversely impact the operation, repair, maintenance, supply, or quality of the water system. The Water By-law also sets fixed water billing rates and charges.

Here is a high-level overview of activities governed by the Water By-law:

- Installation and maintenance of water services
- Use of fire hydrants and control valves
- Installation and maintenance of water meters
- Prohibits unauthorized use of and tampering with the drinking water system
- Access to property for inspection and maintenance of Peel's assets
- Prohibits obstruction of fire hydrants and water meters
- Protection of the distribution system integrity

### Who is affected by this By-law?

This By-law applies to all water customers, including builders, developers, landscapers, and contractors who are involved with Peel in the construction and maintenance and whose work directly impacts the integrity of our drinking water systems and quality of our drinking water.

### How does this By-law affect me?

Since the passing of this By-law, it is "business as usual" for most current customers. Those who are in violation of the provisions of the By-law (e.g. obstruction or unauthorized use of a fire hydrant) are expected to take corrective action as soon as reasonably possible or be subjected to monetary penalty.

To learn more about backflow prevention and cross-connection surveys, visit our [website](#).



## 5. How well did we do?

### 5.1 Operation

#### Ensuring water system safety

To protect the health of the public and to ensure clean and safe drinking water, the Ministry of the Environment, Conservation and Parks (Ministry) enforces the Ontario Drinking Water Quality Standards. These standards are set to ensure the water is free of disease-causing organisms and harmful chemicals. The province reviews the standards from time to time based on new science and to keep provincial criteria aligned, where reasonable, with the Canadian Drinking Water Quality Guidelines.

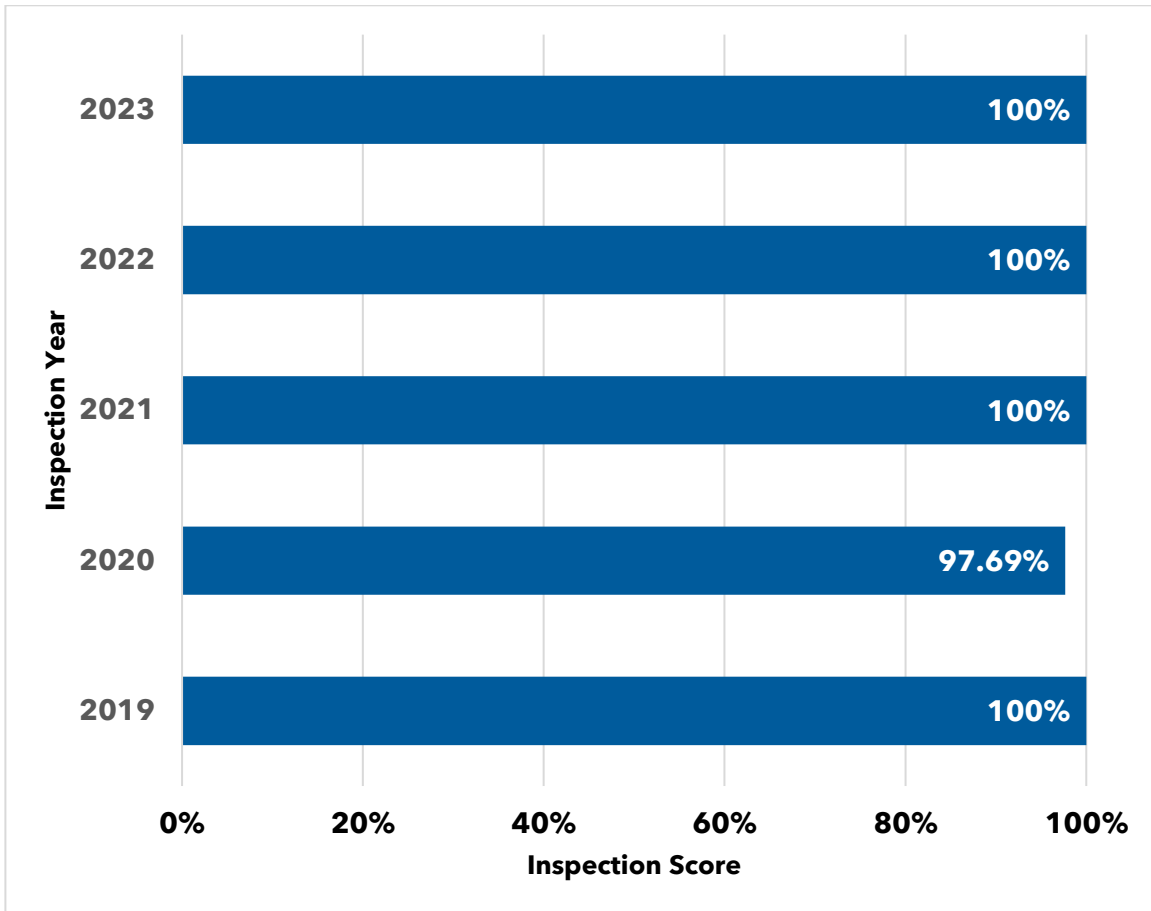
In 2023, Peel monitored water quality by undertaking tens of thousands of samples and tests to ensure a safe and clean water supply. [Appendix A](#) of this report provides a summary of the water quality test results.

#### Ministry inspections

The Ministry performs annual inspections on all municipal drinking water systems, comprised of physical inspection of facilities and review of information and data for the inspection period. Scope of inspection includes review of documentation, staff competency, process operation and monitoring, water quality monitoring and corrective actions in response to events. Inspection findings are assessed for compliance with legislation, upon which, the Ministry issues the system an inspection score card.

The Palgrave and Caledon East Drinking Water System inspection in 2023 scored 100% and the systems overall performance has been excellent the past five inspection years, as presented in [Figure 7](#).

**Figure 7. Palgrave and Caledon East Drinking Water System Ministry inspection score graph**



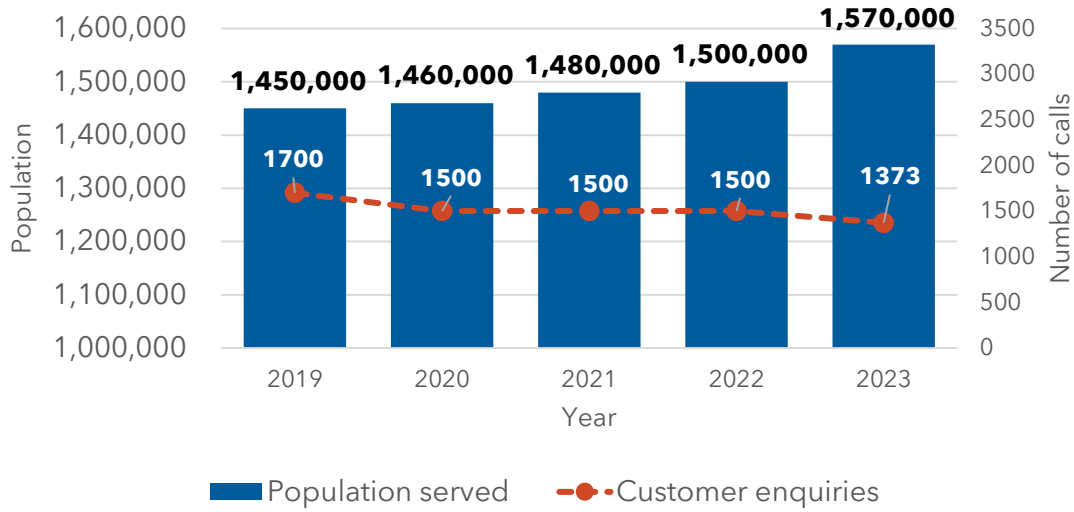
Scores below 100% do not reflect unsafe drinking water and generally reflect inspection findings that are administrative in nature and that do not compromise the quality of the water supply.

For more information on the Ministry inspection methodology, please visit the [Ministry’s website](#).

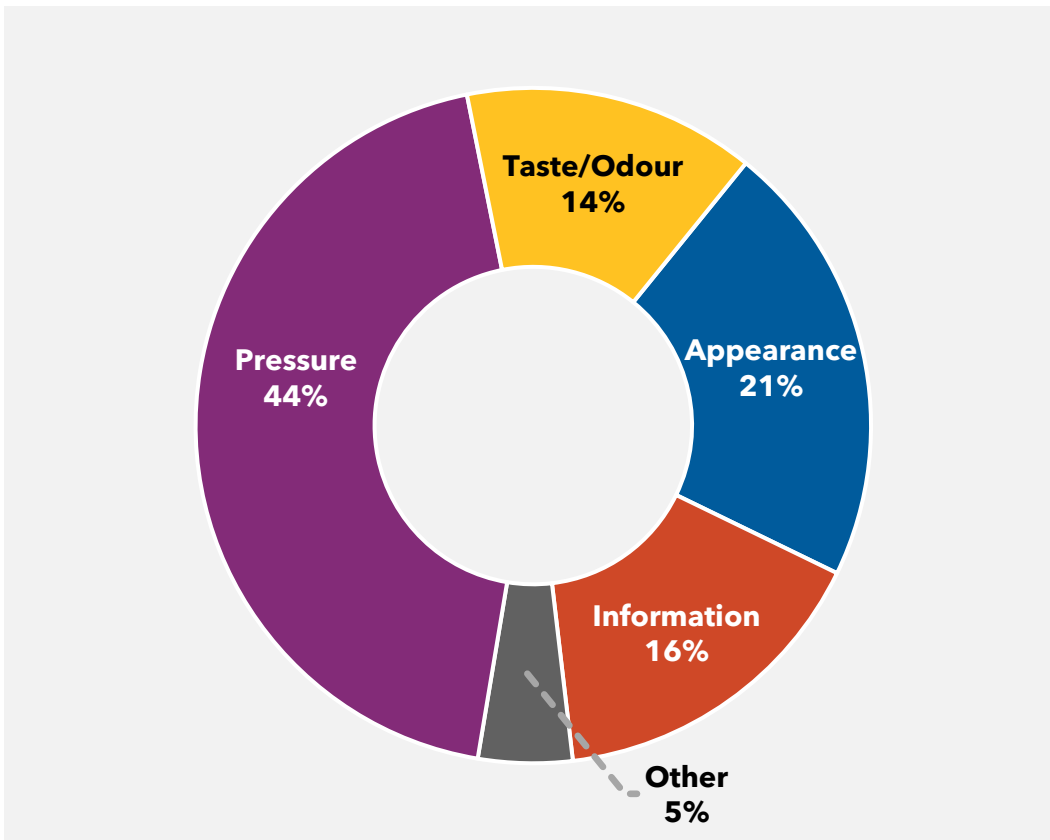
## 5.2 Customer service quality and efficiency

In 2023, Peel staff attempted to respond to and satisfactorily address all customer enquiries in a timely manner. Records of calls received about water quality and supply, and actions taken, are logged in Peel’s database. [Figure 8](#) illustrates the water quality enquiries over the past five years, compared to the population served. In 2023, Peel received 1,373 enquiries. [Figure 9](#) breaks down the enquiries by category.

**Figure 8. Water quality and supply enquiries, customer service index**



**Figure 9. Water quality and supply customer enquiries by category**



In addition to customer support related to water quality, staff also actively respond to questions or concerns about construction of watermains and water facilities. In 2023, close to 700 enquiries were received related to water system capital projects in Peel Region. Staff promote sign-up for electronic notices regarding ongoing and upcoming work.

## 6. Drinking water programs

### 6.1 Municipal Drinking Water Licensing Program

Under the Safe Drinking Water Act, 2002 (SDWA), all municipal residential drinking water system owners in Ontario must operate their system(s) under a valid Municipal Drinking Water Licence (Licence) to operate their system(s). Peel's drinking water systems operate under valid Licences that are maintained and renewed every five years, as required. Peel is accredited to operate its systems through internal and external audits that are supported by in-house checks and Ministry inspections. To learn what is required to be issued a Licence and other associated information, refer to Peel's Municipal Drinking Water Licensing Program [webpage](#).

### 6.2 Source water protection

The [Clean Water Act, 2006](#) and associated regulations aim to protect existing and future sources of drinking water from contamination or depletion. Source water protection is intended to be a shared responsibility of all stakeholders and is a key element of the province's safety net and multi-barrier approach to protect municipal drinking water from source to tap.

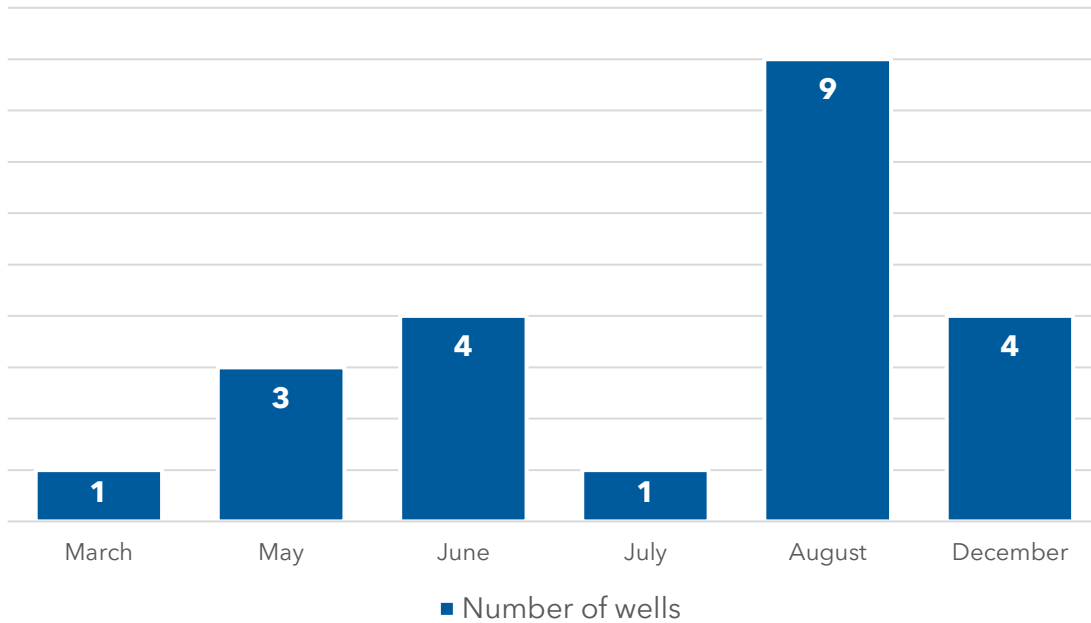
Visit Peel's [website](#) to view Peel's source protection plans and learn more about our source water protection program.

### 6.3 Private Well Abandonment Program

Peel administers a [Private Well Abandonment Program](#) for decommissioning of old, unused private wells within Peel Region. The Program intends to gradually eliminate potential pathways of groundwater contamination in areas where groundwater is a source for drinking water.

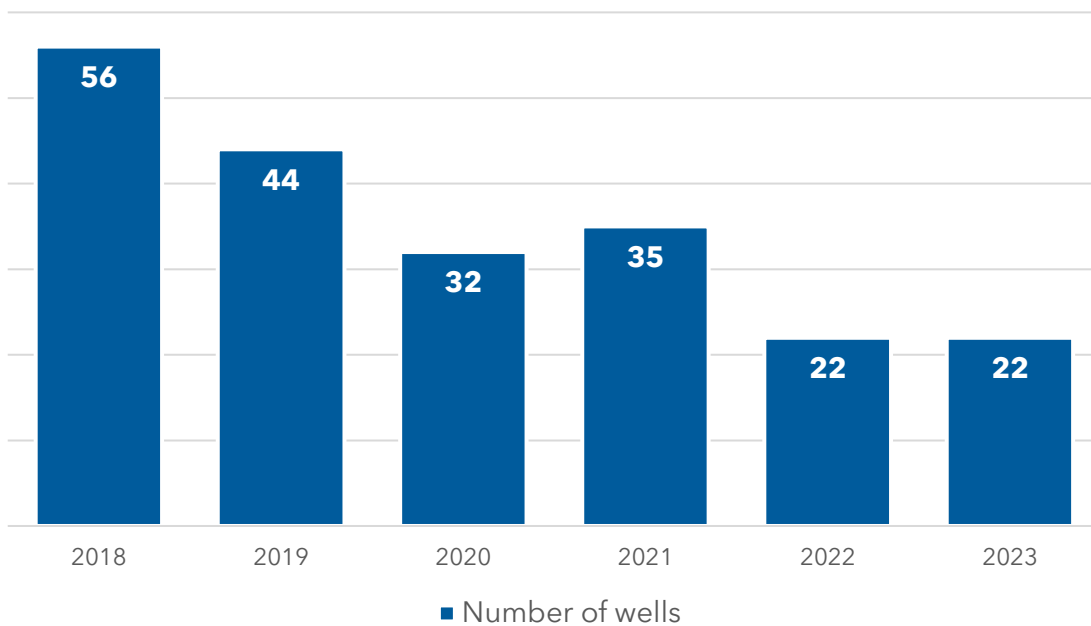
A total of 22 private wells were decommissioned under this program throughout 2023 (see [Figure 10](#)). Program criteria, seasonal conditions and funding determine scheduling and completion of work. A total of 15 well abandonment requests were not carried out in 2023 due to resident withdrawal from the program or construction implications preventing approval. Seven requests were waitlisted and pending decommissioning in 2024.

**Figure 10. Number of decommissioned wells 2023**



Successes of the program over the last 6 years, with total number of wells decommissioned, are presented in [Figure 11](#).

**Figure 11. Historical number of wells decommissioned**



Annually, the program is advertised using various methods to promote program participation. This includes mobile signs in Caledon, and announcements in local newspapers and through social media platforms.

Visit Peel's [Private Well Abandonment Program](#) website for more information or e-mail us directly at [welkenquiries@peelregion.ca](mailto:welkenquiries@peelregion.ca).

## 6.4 Watermain renewal program

Peel's overall infrastructure is aging, requiring more investment in preventive and planned maintenance. In response, Peel has established a comprehensive asset management program, which includes watermain assessment and renewal. The program is an ongoing plan of upgrading watermains to ensure long term integrity and sustainability. The program involves repair or replacement of existing water pipes and water services to improve water flow and quality, and upsize, if required, to meet future planning needs; all to provide higher level of service to our consumers.

Peel determines priority of watermains replacement based on the following factors:

- Watermain age
- Water quality trend and customer feedback
- Watermain size and material type
- Watermain breaks and leak history
- Hydraulic performance of watermain
- Planned municipal and city projects related to water, wastewater and road assets
- Cost of replacement
- Operational demands

The majority of the watermain replacement projects are undertaken in partnership and coordination with road re-construction and sanitary sewer renewal projects for improved cost effectiveness and minimized public inconvenience. Using these criteria, Peel plans the watermain renewal program in a financially responsible manner. For more information about this program, please see the [2023 Enterprise Asset Management Plan](#).

Every year, the watermain renewal program is allocated funding to replace a significant length of watermain with nearly \$35 million being allocated to this in 2023. In 2023, 1.5 km of watermain was replaced throughout the Caledon Village and Alton Distribution System.



## 6.5 Community Lead Testing Program

Established in 2007, Peel's Community Lead Testing Program fulfills the legislative requirements under Schedule 15.1 of [Ontario Regulation 170/03](#). The scope of the program includes sampling and testing of drinking water for lead from private residential and non-residential taps as well as municipal water hydrants or sampling stations.

Early year of sampling in Palgrave and Caledon East Drinking Water System yielded excellent results, and this water system is now exempted from sampling for lead from within residential and commercial premise plumbing.

Peel continues to test the Palgrave and Caledon East distribution system for alkalinity and pH twice annually to confirm stability of the water chemistry. As required by the Regulation, the distribution system is sampled and tested for lead every three years with sampling conducted in the winter (December 15 to April 15) and the summer (June 15 to October 15). The distribution system was tested for lead in 2021 and is next scheduled for 2024.

Peel's water supply is consistently below Ontario's lead standard of 0.01 mg/L (10 micrograms per litre). On the rare occasion that a higher lead concentration is found, Peel investigates to determine the type of pipe material and to find the source of elevated lead result. If the pipe is found to be lead, the municipal portion is immediately replaced. Property owner is advised of the appropriate steps they can take to reduce exposure, such as implementing a daily flushing at the tap regimen, use of water filter or, most effectively, replacing the privately-owned service pipe.

Risk of exposure to lead ranking from highest to lowest includes:

- Dwellings built prior to 1960
- Dwellings built between 1960 to 1986 (lead piping banned 1975 and solder banned in 1986)
- Dwellings built after 1986 that may have lead-bearing fixtures

For more information, refer to Peel's [Community Lead Testing Program website](#), or contact us at 905-791-7800, extension 4685.

## 6.6 Watermain flushing program

Peel’s watermain flushing program is another element of the multi-barrier approach to ensuring safe drinking water. The primary objective of the watermain flushing program is to maintain adequate chlorine residuals in the water distribution system. Flushing is also conducted to improve water aesthetics by removing any mineral deposits that may have settled on the bottom of the watermains over time.



[Ontario Regulation 170/03](#) and [Procedure for Disinfection of Drinking Water in Ontario](#) stipulate the acceptable range of chlorine residual in the distribution system.

Certified water operators measure and record the chlorine residual at each flush.

Flushing is conducted at locations where a low water demand may occur, such as dead-ends and new (partly occupied) subdivisions and at greater frequency in areas where the water demand is lower. Flushing is also conducted following water system repairs and other situations where a check of chlorine residual is warranted.

## 6.7 Hydrant inspection program

In addition to fire fighting purposes, hydrants in Peel have important uses related to monitoring and maintaining Peel’s water distribution system, including flushing to maintain disinfectant levels and water aesthetics, and providing water sampling points. An annual inspection is necessary to confirm the functionality of each fire hydrant and hydrant branch valve to ensure they are operable for fire suppression needs. Fire hydrant components that need repair are identified during the inspection. Deficiencies that affect the hydrant’s operability are handled as a priority due to its primary function of fire protection. Hydrant inspection program yielded minor and major repairs to eight hydrants in the Palgrave and Caledon East distribution system in 2023.



Peel’s hydrants are installed with hydrant flow identifiers on the side ports. These markers are colour-coded based on the recommended colour coding scheme by the [National Fire Prevention Association](#) and designed to let the fire department know what the available flow is at the hydrant closest to the fire. The markers are reflective, making them highly visible at night.

If you notice a damaged fire hydrant, please report it to Peel Region at 905-791-7800.

## 6.8 Drinking water sampling station program

Peel has drinking water sampling stations throughout Caledon, Mississauga and Brampton for drinking water quality monitoring. Sampling stations are located at strategically selected points within the distribution system to provide water sampling locations that represent the water supplied to the consumers. The use of sampling stations has reduced the impact on customers by decreasing the need to enter homes or business facilities where hours of operation can limit access. In addition to unlimited access, Water Operations also benefit by having added control over important sampling conditions such as sample site cleanliness and security.



## 6.9 Maintenance program and activities

Planned maintenance can be either predictive or preventive. Under predictive maintenance, early warning signs of potential equipment failure are used to identify and correct problems to reduce that risk. Preventive maintenance consists of scheduled maintenance activities performed on a regular basis to maintain assets in good working order.

Unplanned maintenance is either corrective or emergency driven and can draw heavily on the available resources and potentially affect drinking water quality. Corrective maintenance consists of scheduled repairs to problems identified under planned maintenance. Emergency maintenance includes repairs performed in response to critical equipment failure where immediate action is required.

Peel has implemented a planned maintenance program to reduce breakdowns and the need for corrective or emergency maintenance thereby minimizing system costs. The program improves reliability by minimizing the time equipment is out of service, increases the useful life of equipment; thereby avoiding costly premature replacement, improves personnel utilization, and can prevent potential non-compliance and adverse drinking water conditions.

Many major maintenance activities were carried out in the Palgrave and Caledon East System in 2023, as listed in section [2.2](#).

## **6.10 Continual improvement process**

Through implementation of a continual improvement process (CIP), Peel strives to enhance the operation of its drinking water systems by identifying best practices and opportunities. Tools such as root cause analysis, after action reviews and risk assessments are strategically utilized after notable events occur to identify both successes and gaps, share the outcomes with the stakeholders, and implement changes to reduce risk. CIP helps ensure Peel maintains compliance with applicable drinking water regulations as well as conformance to the Ontario Drinking Water Quality Management Standard through the application of inventive solutions and employment of new technologies. CIP also encourages integration of ideas, helps facilitate adaptation to change, promotes transparency, increases staff engagement and communication as well as improves reliability of services.

Some of Peel's CIP highlights for 2023 include:

- Peel is continuing to shift towards digital forms for data entry on specific activities. The benefits include improved legibility, eliminated risk of lost papers, reduced environmental impact, and instantaneous results sharing.
- Improvements are being made to the management of water systems by implementing software that will further simplify document control and streamline document review, update, and approval process. The use of a built-in scheduler and resolution tracker will allow tasks to be organized and easily managed, significantly reducing manual effort.
- Peel began working on a water quality model update. Field work and associated water quality testing were completed for both the groundwater-based systems and lake-based system. Data analysis, reports and water quality model are to be completed in 2024.

## 6.11 Monitoring equipment calibration and maintenance

Calibration, verification, and maintenance of field instruments and monitoring equipment is done by certified operators, or third-party specialists, at a frequency specified by the regulatory requirements and equipment manufacturer manuals. Each piece of equipment or instrument has a unique asset identification number by which calibrations and verifications are tracked. To further improve data quality and verification frequency, Peel has implemented a digital verification application for hand-held chlorine analyzers that includes automated reminders to staff and escalates notification of overdue verifications. Monitoring equipment that are considered “critical”, as they relate to regulated parameters and pose risk of non-compliance when not managed properly, include:

- Chlorine analyzers (primary and secondary disinfection monitoring)
- pH and temperature meters (primary disinfection effectiveness)
- Turbidity analyzers (primary disinfection effectiveness)
- Flow meters (raw water pumping and treated water limits)
- UV monitoring parameters (primary disinfection monitoring)
  - UV transmittance analyzers
  - UV intensity sensors
  - Dose calculations

**Figure 12. Staff calibrating level transmitter and verifying handheld chlorine analyzer and online turbidity analyzer**



## Appendix A

### Water safety indicators information

#### Escherichia coli (E. coli)

*Escherichia coli* (*E. coli*) is a species of fecal coliform bacteria that can be detected using approved lab methods. *E. coli* is present in fecal matter and prevalent in sewage but is easily inactivated by chlorine. It is a strong indicator of recent fecal pollution. If *E. coli* is detected in a sample of drinking water, immediate corrective action needs to be taken including confirmatory sampling.

#### Total coliform

Total coliforms are part of a family of bacteria called enterics. Coliform bacteria grow under the same conditions as disease-causing bacteria, which makes them useful *indicator organisms*. Presence of coliform bacteria in a sample of drinking water signifies potential contamination. If coliforms are detected in a sample of drinking water, corrective action needs to be taken including confirmatory sampling.

#### Heterotrophic plate count

Heterotrophic plate count (HPC) results give an indication of the overall quality of the water immediately following treatment and in the distribution system. HPC is not an indicator of water safety but is used as an indicator of water integrity within the distribution system.

#### Disinfection by-products

Disinfection of drinking water is essential to protect the public from waterborne infectious and parasitic diseases. Disinfection inactivates bacteria and other microorganisms in the water and protects the water from any subsequent contamination during storage and distribution. The most commonly used drinking water disinfectant is chlorine. Chemical disinfectants can combine with naturally occurring organic compounds in the water, potentially leading to the formation of disinfection by-products, including trihalomethanes, haloacetic acids, and bromate.



## Terms you need to know when reviewing the water testing results in this report

**MAC:** Maximum Acceptable Concentration

**IMAC:** Interim Maximum Acceptable Concentration

**Aesthetic Objectives (AO):** AO are established for substances that affect the taste, odour and appearance of water or may interfere with water quality control practices. These substances do not affect health.

**Operational Guidelines (OG):** OG are established for substances that need to be controlled to ensure the efficient treatment and distribution of water

**NTU:** Nephelometric Turbidity Unit

**CFU/mL:** Colony Forming Units per millilitre

**CFU/100mL:** Colony Forming Units per 100 millilitres

**umho/cm:** micro mhos per centimetre (equivalent to microSiemens per centimetre)

**L:** litre

**ug/L:** micrograms per litre. This is a measure of concentration of a substance in water, also called parts per billion (ppb).  $1000 \text{ ug/L} = 1 \text{ mg/L}$

**mg/L:** milligrams per litre. This is a measure of concentration of a substance in water, also called parts per million (ppm).

**<:** less than laboratory analytical detection limit

**>:** greater than

**Running Annual Average (RAA):** The 12-month running average of quarterly results

## Summary of 2023 Water testing results

Table 2. Groundwater - Caledon Village and Alton Wells

Water parameters	Units	Palgrave results range	Caledon East results range	Parameter information
Total Ammonia Nitrogen	mg/L	<0.050 to 0.110	<0.050 to 0.068	Natural decay of organic matter
Chloride	mg/L	11 to 18	21 - 200	Non toxic material naturally present in drinking water
Conductivity at 25°C	umho/cm	480 to 500	550 to 1300	Related to inorganics such as minerals dissolved in water
Hardness	mg/L (CaCO <sub>3</sub> )	240 to 250	270 to 370	Naturally occurring; related to mineral content
Hardness in US units	grains/ US Gallon	14.0 to 14.6	15.8 to 21.6	Naturally occurring; related to mineral content
pH	pH units	7.32 to 8.00	7.34 to 7.84	Indicates water acidity
Sulphate	mg/L	29 to 42	36 to 44	Naturally occurring
Temperature	Degrees Celsius	7.9 to 9.6	8.5 to 9.8	Varies seasonally
Total Kjeldahl Nitrogen	mg/L	<0.10 to 0.63	<0.10 to 0.32	Comprised of ammonia-nitrogen and organically bound nitrogen. Related to natural decay of organic matter.
Turbidity	NTU	0.05 to 0.78	0.06 to 0.66	Tiny, suspended particles of organic or inorganic matter

**Table 3. Summary of routine microbiological testing for Palgrave and Caledon East Drinking Water System**

Test location	Number of samples	Range of <i>E. coli</i> results (CFU/100mL) (min to max)	Range of total coliform results (CFU/100mL) (min to max)	Range of HPC results (CFU/mL) (min to max)
Palgrave Well Number 2 raw	50	0 to 0	0 to 0	0 to 600
Palgrave Well Number 3 raw	52	0 to 0	0 to 0	0 to 1
Palgrave Well Number 2 and 3 treated <sup>1</sup>	51	0 to 0	0 to 0	0 to 2
Palgrave Well Number 4 raw	52	0 to 0	0 to 0	0 to 9
Palgrave Well Number 4 treated <sup>1</sup>	52	0 to 0	0 to 0	0 to 2
Palgrave distribution <sup>1</sup>	201	0 to 0	0 to 0	0 to 4
Caledon East Well Number 3 raw	52	0 to 0	0 to 0	0 to 3
Caledon East Well Number 3 treated <sup>1</sup>	52	0 to 0	0 to 0	0 to 2
Caledon East Well Number 4 raw	52	0 to 0	0 to 0	0 to 3
Caledon East Well Number 4A raw	43	0 to 0	0 to 2	0 to 4
Caledon East Well Number 4 treated <sup>1</sup>	51	0 to 0	0 to 0	0 to 0
Caledon East Well Number 4A treated <sup>1</sup>	40	0 to 0	0 to 0	0 to 1
Caledon East distribution <sup>1</sup>	126	0 to 0	0 to 0	0 to 2

<sup>1</sup> Ontario Drinking Water Quality Standards: *E. coli* = 0 CFU/100mL; Total Coliform = 0 CFU/100mL in treated water

**Table 4. Summary of results for inorganic parameters per Schedule 23 of O. Reg. 170/03 tested on annual grab samples of treated water**

Test parameter	Units	MAC	Palgrave result(s)	Caledon East result	Parameter Information
Antimony	ug/L	6	<0.50	<0.50	Naturally occurring metalloid rarely detected in Ontario drinking water
Arsenic	ug/L	10	<1.0	<1.0	Sometimes found in high concentrations in ground water in hard rock areas through the natural dissolution of arsenic-containing minerals
Barium	ug/L	1000	140, 150	110 to 150	Common in sedimentary rocks
Boron	ug/L	5000	<10, 12	15 to 34	Normally found in very small levels in drinking water
Cadmium	ug/L	5	<0.09	<0.09	Rare element unlikely to be present as natural contaminant in drinking water
Chromium	ug/L	50	<5.0	<5.0	Trivalent chromium naturally occurs and is not considered toxic
Mercury	ug/L	1	<0.00010	<0.00010	Sources in drinking water can be air pollution, waste incineration and metal refining operations
Selenium	ug/L	50	<2.0	<2.0	Naturally occurs in water at trace levels
Uranium	ug/L	20	<0.10	<0.10 to 0.5	Normally occurring in granite and other mineral deposits, leaches into water

**Table 5. Summary of Community Lead Testing Program results per Schedule 15.1 of O. Reg. 170/03 tested on distribution water samples**

Test and location	Units	MAC	Range of results min to max	Number of samples	Number of exceedances	Parameter information
Lead	ug/L	10	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	Present as a result of corrosion of lead solder, lead containing brass fittings, or lead pipes
pH <sup>3</sup>	pH units	N/A	7.50 to 7.68	12	N/A	Indicates water acidity
Alkalinity <sup>3</sup>	mg/L	N/A	200 to 260	12	N/A	Water resistance to effects of acids added to water

<sup>2</sup> N/A means not applicable. As required by the regulation, Palgrave and Caledon East distribution system is sampled and tested for lead every three years. Refer to section [6.5](#) community lead testing for more information.

<sup>3</sup> pH and alkalinity are operational parameters. Alkalinity aesthetic objective is set at 500 mg/L. Optimal range for drinking water pH is 6.5 to 8.5

**Table 6. Summary of results for organic parameters tested per Schedule 24 of O. Reg. 170/03 on annual grab samples of treated water**

Test parameter	Units	MAC	Palgrave result(s)	Caledon East result	Parameter information
Alachlor	ug/L	5	<0.50	<0.50	Herbicide for weeds control banned in 1985
Atrazine + N-dealkylated metabolites	ug/L	5	<0.10	<0.10	Herbicide on corn for annual grass control. It is highly persistent and moderately mobile in soil
Azinphos-methyl (guthion)	ug/L	20	<2.0	<2.0	Insecticide against foliage-feeding insects
Benzene	ug/L	1	<0.10	<0.10	Present in gasoline and other refined petroleum products
Benzo(a)pyrene	ug/L	0.01	<0.0050	<0.0050	Formed during the incomplete burning of organic matter and poorly adjusted diesel exhaust
Bromoxynil	ug/L	5	<0.50	<0.50	Herbicide for control of specific weeds
Carbaryl	ug/L	90	<5.0	<5.0	Insecticide used in agriculture and forestry
Carbofuran	ug/L	90	<5.0	<5.0	Insecticide used in agriculture
Carbon tetrachloride	ug/L	2	<0.10	<0.10	Only found in ground water from old chlorinated solvent industry sites
Chlorpyrifos	ug/L	90	<1.0	<1.0	Common insecticide for insect control
Diazinon	ug/L	20	<1.0	<1.0	Insecticide for dwelling pests, flies, ants and cockroaches
Dicamba	ug/L	120	<1.0	<1.0	Herbicide for weed in grains
1,2-Dichlorobenzene	ug/L	200	<0.20	<0.20	Used in chemical blends
1,4-Dichlorobenzene	ug/L	5	<0.20	<0.20	Was widely used in toilet pucks and mothballs, banned in 1988
1,2-Dichloroethane	ug/L	5	<0.20	<0.20	Used as a solvent and fumigant
1,1-Dichloroethylene (vinylidene chloride)	ug/L	14	<0.10	<0.10	Used in the food packaging industry and the textile industry for furniture and automotive upholstery
Dichloromethane (methylene chloride)	ug/L	50	<0.50	<0.50	Industrial solvent for paint and degreasing agent
2-4 Dichlorophenol	ug/L	900	<0.25	<0.25	Present in drinking water only as a result of industrial contamination

Test parameter	Units	MAC	Palgrave result(s)	Caledon East result	Parameter information
2,4-Dichlorophenoxy acetic acid (2,4-D)	ug/L	100	<1.0	<1.0	Herbicide for cereal crop and lawn weed control
Diclofop-methyl	ug/L	9	<0.90	<0.90	Herbicide grass control in grains and vegetables
Dimethoate	ug/L	20	<2.5	<2.5	Miticide and insecticide
Diquat	ug/L	70	<7.0	<7.0	Herbicide used as a crop desiccant in seed crops
Diuron	ug/L	150	<10	<10	Herbicide for control of vegetation in crop and non-crop areas
Glyphosate	ug/L	280	<10	<10	Herbicide for weed control
Malathion	ug/L	190	<5.0	<5.0	Insecticide used in fruits and vegetables
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	ug/L	100	<10	<10	Herbicide used on agriculture sites, fine turf, forestry applications and at industrial sites
Metolachlor	ug/L	50	<0.50	<0.50	Selective herbicide for pre-emergence and pre-plant broad leaf weed control
Metribuzin	ug/L	80	<5.0	<5.0	Herbicide for control of weed and grasses
Monochlorobenzene	ug/L	80	<0.10	<0.10	Industrial solvent
Paraquat	ug/L	10	<1.0	<1.0	Highly toxic herbicide used for desiccation of seed crops
Pentachlorophenol	ug/L	60	<0.50	<0.50	It is rarely found today but was extensively used as a pesticide and wood preservative
Phorate	ug/L	2	<0.50	<0.50	Insecticide for sucking insects and larvae
Picloram	ug/L	190	<5.0	<5.0	Herbicide for broad leaf weed and brush control on roads
Polychlorinated Biphenyls (PCBs) (total)	ug/L	3	<0.05	<0.05	Primarily produced by the reaction of chlorine and natural organics
Prometryne	ug/L	1	<0.25	<0.25	Herbicide used on select grass and weeds
Simazine	ug/L	10	<1.0	<1.0	Herbicide for pre-emergence weed control
Terbufos	ug/L	1	<0.50	<0.50	Insecticide
Tetrachloroethylene	ug/L	10	<0.10	<0.10	Industrial solvent

Test parameter	Units	MAC	Palgrave result(s)	Caledon East result	Parameter information
2,3,4,6-Tetrachlorophenol	ug/L	100	<0.50	<0.50	Was normally used to preserve wood
Triallate	ug/L	230	<1.0	<1.0	Herbicide for wilds oat control in crops
Trichloroethylene	ug/L	5	<0.10	<0.10	Industrial solvent
2,4,6-Trichlorophenol	ug/L	5	<0.50	<0.50	Pesticide
Trifluralin	ug/L	45	<1.0	<1.0	Herbicide for summer weed control
Vinyl chloride	ug/L	1	<0.20	<0.20	Synthetic chemical used in making PVC plastic

Note: Organic parameters are present to some degree in all water supplies. Peel tests these parameters to ensure the water meets the Ontario Drinking Water Quality Standards.

**Table 7. Summary of results for organic parameters tested per Schedule 24 of O. Reg. 170/03 on annual grab samples of distribution water**

Test parameter	Units	MAC	Distribution system result <sup>4</sup>	Parameter information
Haloacetic acids (HAA)	ug/L	80	<5.0	Primarily produced by the reaction of chlorine and natural organics
Total Trihalomethanes (THM)	ug/L	100	13.37	Primarily produced by the reaction of chlorine and natural organics

Note: Organic parameters are present to some degree in all water supplies. Peel tests these parameters to ensure the water meets the Ontario Drinking Water Quality Standards.

During the reporting period, no test parameters included in Schedules 23 and 24 of O. Reg. 170/03 were subject to increased sampling frequency. None of the test results exceeded half of the maximum acceptable concentration.

<sup>4</sup> Running annual average of samples collected quarterly



**Table 8. Operational parameters - annual minimum, maximum, and mean (average) results**

Operational parameter and location	Number of samples	Units	Acceptable range or upper limit	Minimum	Maximum	Mean (average)
Raw water turbidity at Palgrave Well Number 2	72	NTU	N/A	0.06	0.52	0.20
Raw water turbidity at Palgrave Well Number 3	67	NTU	N/A	0.10	0.69	0.94
Raw water turbidity at Palgrave Well Number 4	86	NTU	N/A	0.05	0.78	0.25
Raw water turbidity at Caledon East Well Number 3	68	NTU	N/A	0.09	0.77	0.27
Raw water turbidity at Caledon East Well Number 4	72	NTU	N/A	0.05	0.66	0.19
Raw water turbidity at Caledon East Well Number 4A	49 <sup>5</sup>	NTU	N/A	0.05	0.40	0.16
Free chlorine residual for primary disinfection at Palgrave Wells Number 2 and 3	8760 <sup>6</sup>	mg/L	0.05 to 4.00	0.87	2.85	1.64
Free chlorine residual for	8760 <sup>6</sup>	mg/L	0.05 to 4.00	0.77	2.38	1.66

<sup>5</sup> Caledon East Well Number 4A was out of service October to December

<sup>6</sup> 8760 represents continuous monitoring which sample at a minimum frequency of once per minute. Occasional outlying results occur due to equipment maintenance, programming updates, SCADA alarm signal anomalies.

Operational parameter and location	Number of samples	Units	Acceptable range or upper limit	Minimum	Maximum	Mean (average)
primary disinfection at Palgrave Well Number 4						
Free chlorine residual for primary disinfection at Caledon East Well Number 3	8760 <sup>6</sup>	mg/L	0.05 to 4.00	0.85	1.90	1.27
Free chlorine residual for primary disinfection at Caledon East Wells Number 4 and 4A	8760 <sup>6</sup>	mg/L	0.05 to 4.00	0.97	2.57	1.57
Free chlorine residual for secondary disinfection	408 <sup>7</sup>	mg/L	0.05 to 4.00	0.62	1.76	1.29

<sup>7</sup> Represents number of samples collected per Ontario Regulation 170/03 Schedule 7 Section 7-2 (3) to (4)

**Table 9. Summary of results for other parameters tested on grab samples of treated water**

Test parameter	Units	Type of objective	Acceptable range or upper limit	Palgrave result or range	Caledon East result(s) or range	Parameter information
Alkalinity	mg/L	OG	30 to 500	280	170 to 230	Water resistance to effects of acids added to water
Conductivity at 25°C	umho/cm	N/A	N/A	490 to 510	560 to 1300	Related to inorganics such as minerals dissolved in water
Fluoride	mg/L	MAC	1.5	<0.10	<0.10	Naturally occurring
Hardness <sup>8</sup>	mg/L (CaCO <sub>3</sub> )	OG	80 to 100	240 to 250	270 to 370	Naturally occurring; related to mineral content
Hardness in US units	grains/US Gallon	OG	4.7 to 5.8	14.0 to 14.6	15.8 to 21.6	Naturally occurring; related to mineral content
Iron	ug/L	AO	300	<100	<100	In groundwater as a result of mineral deposits and chemically reducing underground conditions
Lead	ug/L	MAC	10	<0.50	<0.50	Present as a result of corrosion of lead solder, lead containing brass fittings or lead pipes

<sup>8</sup> Hardness is typically dissolved calcium and magnesium in the water measured as calcium carbonate (CaCO<sub>3</sub>). Hardness levels between 80 mg/L and 100 mg/L are considered to provide an acceptable balance between corrosion and incrustation. Water supplies with hardness greater than 200 mg/L are considered tolerable while those in excess of 500 mg/L are unacceptable for most domestic uses. Refer to [Appendix B](#) for answers to some frequently asked questions related to water hardness.

Test parameter	Units	Type of objective	Acceptable range or upper limit	Palgrave result or range	Caledon East result(s) or range	Parameter information
Manganese	ug/L	AO	50	<2.0	<2.0 to 13	In groundwater as a result of mineral deposits and chemically reducing underground conditions
Nitrate <sup>9</sup>	mg/ L as N	MAC	10.0	<0.10	<0.10	Present in ground water as a result of plant or animal material decay, fertilizers, sewage or treated wastewater
Nitrite <sup>9</sup>	mg/ L as N	MAC	1.0	<0.010	<0.010 <sup>10</sup>	Present in ground water, and is oxidized to nitrate when chlorinated
pH	pH units	OG	6.5 to 8.5	7.80 to 8.46	6.97 to 7.93	Indicates water acidity
Sodium <sup>11</sup>	mg/L	AO	200	7.0 to 8.3	8.6 to 110	Naturally occurring or due to water softening
Sulphate	mg/L	AO	500	34 to 37	9.3 to 29	Naturally Occurring
Total dissolved solids	mg/L	AO	500	170 to 200	170 to 190	Refers mainly to inorganic substances dissolved in water
Zinc	ug/L	AO	5000	<5.0 to 7.9	<5.0	Can be elevated by corrosion within galvanized pipes or brass fittings

<sup>9</sup> Nitrate and nitrite are sampled quarterly

<sup>10</sup> Where the analytical test result is the same for more than one quarter, then only one value is reported in the table.

<sup>11</sup> The Medical Officer of Health is notified when sodium concentration exceeds 20 mg/L (MAC), per O. Reg. 170/03

## Appendix B

### Frequently asked questions and answers on water quality

#### Is my water safe to drink?

To protect public health, the Ministry has established the [Ontario Drinking Water Quality Standards](#). These standards help ensure that water used by the public is free from disease-causing organisms, harmful amounts of toxic chemicals and radioactive materials.

#### Why do we use chlorine?

Chlorine is used to destroy viruses and kill bacteria and other organisms that can cause illness. [Ontario Regulation 170/03](#) regulates the amount of chlorine that must be added. The regulation states that we must maintain free chlorine residual at a minimum level of 0.05 mg/L and should not exceed 4.0 mg/L.

#### Is the water in Palgrave and Caledon East hard?

Hardness is typically dissolved calcium and magnesium in the water measured as calcium carbonate. Upon heating, hard water tends to form scale deposits or a white film and can form excessive scum with regular soaps. Conversely, soft water may result in accelerated corrosion of water pipes. Although, Palgrave and Caledon East water is considered hard, it is still acceptable for domestic purposes.

#### Should I buy a water softener?

The purchase of a water softener is based mostly on personal preference. Soap suds are formed more readily with soft water; therefore, less detergent is used. The use of a water softener also reduces the formation of hardness scale in pipes and hot water tanks. Some consumers do not like the feel of soft water. For example, after rinsing with soft water you may still feel a soap film on your skin.

## **Why does my kettle get a white film inside?**

When water is boiled, calcium and magnesium precipitate out of the water and deposits on the heating element and inner surfaces of the kettle. This harmless deposit can be removed by regular rinsing with vinegar or lemon juice.

## **Why does the water sometimes look “cloudy” or “milky”?**

Tiny bubbles of air in the water cause the cloudiness. Those bubbles may also cause the water to appear white or foamy, like the appearance of water in a rushing stream. This does not indicate any problem and clears when the water is left to sit for a few minutes. This is an aesthetic issue, not a health concern. If cloudy water persists, please notify Peel Region so that the matter can be investigated.

## **Is fluoride added to my water?**

Peel Region does not add fluoride to the water in the Palgrave and Caledon East areas. Any fluoride present in the water is naturally occurring.

## **Why does the water sometimes look “rusty”, yellow, or tea-like?**

Yellow water is a common occurrence. Excessive levels of iron in drinking water may impart a yellow to brownish colour, often seen on laundered clothes, plumbing fixtures, or in the water itself. Running your tap for a few minutes can clear the colour. No health risks are associated with this discolouration. If you are experiencing problems and your neighbours are not, the hot water tank or the pipes in your home are likely causing the problem.

## **Does Peel Region knock on the door to test water or leave a bottle to fill?**

Some of our water programs require testing on private premises, such as residential homes or businesses. This would only be done by Peel with prior arrangements with the owner or tenant of the premise. Based on the stringent provincial guidelines, drinking water samples must be collected and handled by qualified persons and analysed at an accredited laboratory, therefore, Peel staff

would not leave a bottle at the door requesting a sample of water for testing and will always carry a Peel Region identification card.

There are many responsible home water treatment businesses that offer products that live up to their claims. Unfortunately, some companies and salespersons resort to grabbing the public's attention and misinforming them about the safety of the municipal drinking water supplies in an effort to sell their products.

Door to door sale of water heaters and treatment devices is prohibited by the government of Ontario. To ensure that you are informed about the water quality in Peel and less likely to become a target for a company trying to sell you costly and inappropriate water treatment equipment, or, if you have any questions or concerns, please contact our water quality team at 905-791-7800 extension 4685 or via [e-mail](#). You can find more information in the door-to-door agents article on our [website](#).

## **Will Peel Region come to my house and take a water sample?**

If your water is supplied by Peel, then you have no reason for concern about the safety of your drinking water. Peel operates, maintains, and monitors its municipal drinking water systems in accordance with strict provincial regulations and Peel's drinking water continually meets the established water quality standards.

When testing on private premises is required or requested, it would only be done by a certified Peel Region operator with prior arrangements made with the owner or tenant.

Peel collects many samples from its drinking water systems to confirm high quality water supply. Peel's operations staff will respond to a customer enquiry or request and undertake sampling at private taps if there is reason to believe that water quality in the building has been impacted by the municipal supply.

Peel staff occasionally sample at residential or commercial taps in conjunction with nearby work in the private or municipal water system or as part of water quality monitoring programs and studies. Peel staff will carry a Peel Region identification card.

## Does Peel Region have a water meter replacement program?

Peel has a water meter replacement program to replace outdated meters that have been in service for 20 years or more. The replacement involves removing the old meter from inside your home and replacing it with a new meter and reading device. Refer to [our website](#) for more information.

## Why is lead sometimes present in water?

Lead is a metal that was used in the past for pipes, fittings, and joint solder material in household plumbing and water distribution systems. If water stays in a piping system that contains lead for long periods of time, lead may dissolve into the water. More information can be found in section [6.5](#) of this report.

## How can I tell if my water issue is internal or from Peel Region's system?

If you are experiencing water issues within your home or business:

Check if the problem is present in the cold water. If it's limited to warm and hot tap water, the issue might be within your water heater. Check a location that does not have a hot water supply pipe (like a hose spout or toilet tank) or go to a faucet that has separate hot and cold handles and test the cold water.

Note: Hot tap water is meant for washing. Water quality can deteriorate within hot water tanks; it is best to use cold water from the tap for preparing your food and drinks. Check if the problem is present at all taps and fixtures. There is usually only one pipe from Peel's watermain into your home or building, so the cold water supply to all taps and fixtures is from the same "source". If the problem is with one or two taps or fixtures only it is most likely an issue within your private plumbing, and you should consult a plumber.

To help you troubleshoot the problem, see the table below titled Water quality at home tips. If the problem affects cold water at all taps and fixtures, you can contact our water quality team at 905-791-7800 extension 4685.



## How can I find out what work is taking place in my neighbourhood?

Peel maintains an interactive mapping tool on our [website](#) where the public can see the status of current and upcoming water projects that could result in water interruption. At this site, you can sign up to receive email notices with project updates.

Similarly, we publish a summary of [water outages](#). If you are unexpectedly without water, you can check this site to learn what is happening and view the answers to frequently asked questions.

## Water quality at home tips

Table 10. Water quality tips

Water quality concern	Possible cause	Suggested solutions
<b>Chlorine odour and taste</b>	<ul style="list-style-type: none"> <li>• Chlorine combining with organics</li> <li>• Chlorination of new water mains</li> <li>• Effects of new plumbing</li> <li>• Change of residency, as chlorine concentration varies from location to location</li> </ul>	<p>Chlorine is necessary to control disease-causing organisms. To minimize chlorine taste and odour in drinking water:</p> <ul style="list-style-type: none"> <li>• Fill a pitcher and let it stand in the refrigerator overnight</li> <li>• Blend the water for 5 minutes or pour between containers about 10 times</li> <li>• Boil the water, let it cool, then refrigerate</li> <li>• Home plumbing may be flushed for a minute before water use (especially in the mornings, after water has remained in pipes overnight)</li> </ul>
<b>Musty or earthy odour</b>	<ul style="list-style-type: none"> <li>• Algae that bloom in the lake in the summer produce a metabolite called geosmin, which causes musty or earthy odour</li> </ul>	<ul style="list-style-type: none"> <li>• Most algae are harmless and although the water may not be aesthetically pleasing, it is safe</li> </ul>
<b>Rotten egg or septic odour</b>	<ul style="list-style-type: none"> <li>• Sink and floor drains</li> <li>• Faucet aerators (screens)</li> <li>• Poorly maintained hot water tanks</li> <li>• Dead-end water mains or areas with low water demand</li> </ul>	<ul style="list-style-type: none"> <li>• Refrain from flushing solids or organics down the drain; stagnant wastewater in the drain may generate foul odours and potentially plug the drain</li> <li>• Clean faucet aerators and screens on frequent basis</li> <li>• Hot water tanks should be flushed periodically (every 2 to 3 years) to remove rust and scale</li> </ul>

Water quality concern	Possible cause	Suggested solutions
<b>Milky or cloudy water</b>	<ul style="list-style-type: none"> <li>• Air trapped in water due to water main breaks, water temperature or pressure change, plumbing work, construction work in the area, water shut-offs</li> <li>• Hot water tank temperature may be set too high</li> </ul>	<ul style="list-style-type: none"> <li>• Water is safe to drink</li> <li>• Run all cold water taps at once for a couple of minutes to flush the lines and release the trapped air</li> <li>• Lower the hot water tank temperature if above 140°F (60°C)</li> </ul>
<b>Blue or green stains on fixtures</b>	<ul style="list-style-type: none"> <li>• Copper in water due to copper plumbing</li> </ul>	<ul style="list-style-type: none"> <li>• Run water for 30 seconds prior to consumption to reduce the effects of local plumbing (metal concentration)</li> <li>• Keep fixtures dry and drip-free</li> </ul>
<b>Brown or dirty water</b>	<ul style="list-style-type: none"> <li>• Change in water flow due to:                             <ul style="list-style-type: none"> <li>• water main break</li> <li>• hydrant use</li> <li>• local fire</li> <li>• dead ends</li> </ul> </li> <li>• Poorly maintained hot water tank</li> <li>• No water use for a longer period of time; return from vacation</li> </ul>	<ul style="list-style-type: none"> <li>• Open cold water faucets and flush water for 5 to 10 minutes, until clear</li> <li>• Refrain from doing laundry to prevent clothes staining</li> <li>• Hot water tank should be flushed periodically (every 2 to 3 years)</li> <li>• Run cold and hot water separately to verify the cause; if hot water is the cause the tank needs a flush</li> <li>• Open several faucets and flush the water standing in pipes that may have dissolved pipe scale material</li> </ul>
<b>White flakes or particles</b>	<ul style="list-style-type: none"> <li>• Flakes are scale caused by hardness</li> <li>• Faulty or disintegrating hot water tank tubing or lining</li> </ul>	<ul style="list-style-type: none"> <li>• Can be reduced by frequent cleaning of faucet aerators (screens) and/or regular flushing of hot water tanks</li> <li>• Contact the hot water tank company</li> </ul>
<b>Pink staining on fixtures</b>	<ul style="list-style-type: none"> <li>• Pink pigmented bacteria called <i>Serratia marcescens</i></li> <li>• Airborne bacteria; not originating from the water</li> </ul>	<ul style="list-style-type: none"> <li>• Scrub surfaces with a brush, disinfect with a strong bleach solution, allow disinfectant to penetrate for 10 to 20 minutes, rinse</li> </ul>

## Report accessibility

The 2023 annual reports can be viewed by the public [online](#), or arrangement made to pick up a paper copy at the Peel Region office at 10 Peel Centre Drive, Brampton by calling 905-791-7800 extension 4685.

Refer to Peel's [Water and Wastewater website](#) for more information regarding services we provide.

## Other sources of information about drinking water



### Water quality

Peel Region

10 Peel Centre Dr, Brampton ON L6T 4B9

Phone: 905-791-7800 extension 4685

E-mail: [Publicworkscustserv@peelregion.ca](mailto:Publicworkscustserv@peelregion.ca)

### Water quality information:

Website: [peelregion.ca/pw/water/quality](http://peelregion.ca/pw/water/quality)

### Lead testing of drinking water information:

Website: [peelregion.ca/pw/water/quality/lead-in-water](http://peelregion.ca/pw/water/quality/lead-in-water)

### Water By-Law:

Phone: 905-791-7800 extension 3101

Website: [peelregion.ca/council/bylaws/bl-6-2017](http://peelregion.ca/council/bylaws/bl-6-2017)

### Peel Public Health:

7120 Hurontario St, 8th Floor Mississauga, ON L5W 1N4

Phone: 905-799-7700

Website: [peelregion.ca/health](http://peelregion.ca/health)



### Water Smart Peel

230 Advance Blvd, Brampton, ON L6T 4T6

Phone: 905-791-7800 extension 4409

Website: [peelregion.ca/watersmartpeel](http://peelregion.ca/watersmartpeel)



**Ministry of the Environment, Conservation and Parks**

Public Information Centre

Phone: 416-325-4000

Toll-Free: 1-800-565-4923

Website: [ontario.ca/environment](https://ontario.ca/environment)



**Environment and Climate Change Canada Inquiry Centre**

Phone: 819-997-2800

Toll-Free: 1-800-668-6767

Website: [ec.gc.ca](https://ec.gc.ca)

**Health Canada**

General Inquiries Telephone: 613-957-2991

Toll free: 1-866-225-0709

Website: [canada.ca/en/health-canada](https://canada.ca/en/health-canada)