

2023

**Wastewater Collection System
annual report**



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Wastewater Collection System annual report

The Regional Municipality of Peel (Peel) is committed to providing a high level of service in the collection, treatment, and management of wastewater. Peel diligently monitors its sewer network and operates its treatment processes effectively to meet or surpass discharge quality criteria, to protect the environment now and into the future.

Our commitment

- Protecting and preserving the environment, including the prevention of pollution, through effective operation and management of the Wastewater Systems that incorporates quality assurance and control practices
- Acting promptly and responsibly in addressing incidents or conditions that pose a risk to the public or environment
- Collaborating with internal and external stakeholders to ensure our services consider their environmental and quality concerns

If you have any questions about this report, please contact the Wastewater Compliance team at 905-791-7800 extension 4685 or [email at publicworkscustserv@peelregion.ca](mailto:publicworkscustserv@peelregion.ca).

Executive summary

The Wastewater Collection System (collection system) collects wastewater from the customers in the cities of Mississauga, Brampton, and parts of Town of Caledon. The collection system is owned and operated by the Peel Region and classified by the Ministry of the Environment, Conservation and Parks (the Ministry) as a class 3 wastewater collection facility, under [Ontario Regulation 129/04](#). This collection system was operated under Environmental Compliance Approval (Approval) number 009-W601.

This report summarizes the monitoring results for the collection system required by the Approval and describes the operational performance.

In 2023, Peel met all regulatory requirements prescribed in the Approval.

Peel received 873 complaints and requests for information associated with the collection system, of which 102 were associated with sewer back-ups. In addition, there were 6 complaints regarding odour issues, and 765 related to maintenance holes, including loose or damaged covers. Peel staff have investigated and satisfactorily addressed the reported concerns, as described in [section 4.3.10](#).

There were 4 spill events within the collection system during the reporting period, as described in [section 4.4](#).

2023 Summary

Peel Region

Brampton, Caledon, and Mississauga

1.5 million
residents

175,000
businesses

provided with water and wastewater services

Wastewater Collection System



3,759km

of **sewage pipes** throughout Peel's collection system



250

billion litres of wastewater treated in 2023

Equivalent to volume of

274

Olympic size swimming pools



\$113 Million

Infrastructure expenditure



56,856

Maintenance holes inspected



0.1 GJ

(gigajoules)

energy used per million litres of wastewater treated

\$42

of chemicals used **per million litres** of wastewater treated

Glossary of terms and abbreviations

Chemical scrubber: A pollution control device that injects chemicals to remove unwanted pollutants from gas.

Ferrous chloride: A chemical compound added to wastewater to control odours.

Forcemain: A pipe that conveys wastewater under pressure out of a swage pumping station.

Inflow and Infiltration (I&I): Inflow is the water that enters the sewer system through improper connection such as foundation drains, downspouts, manhole covers, etc. Infiltration is the water that enters sewer system through defective (leaky) pipes, joints, connections, or manholes.

m³: cubic metres. One m³ equals 1000 litres.

ML: megalitres. 1 ML is 1000 m³.

MLD: megalitres per day. 1 ML = 1 million litres.

Lateral sewer: A smaller sewer that collects wastewater directly from homes and buildings and conveys it to a larger connector sewer.

Mainline sewer: A pipe that collects wastewater from smaller laterals and conveys it to a larger trunk sewer.

Maintenance hole (MH): A structure that provides access to a sewer system for inspection, cleaning, maintenance, sampling, or flow monitoring.

Overflow: A controlled discharge of wastewater to the environment from a location designed for this purpose.

pH: Measure of alkalinity or acidity in water.

Spill: An unplanned discharge of wastewater to the environment from any location that is not specifically designed for this purpose.

Total ammonia nitrogen (TAN): A measure of the amount of ammonia in wastewater.

Total phosphorous (TP): An essential nutrient used by microorganisms for growth.

Total suspended solids (TSS): Suspended particles (organic and inorganic material) present in the water sample.

Trunk sewer: A large sewer that collects wastewater from mainline sewers and conveys it to a pumping station or directly to the wastewater treatment plant.

Wastewater: Water that has been used and discharged by homes, businesses, and industries. Everything we flush down a toilet or pour down a drain, collectively.

WWTP: Wastewater treatment plant.

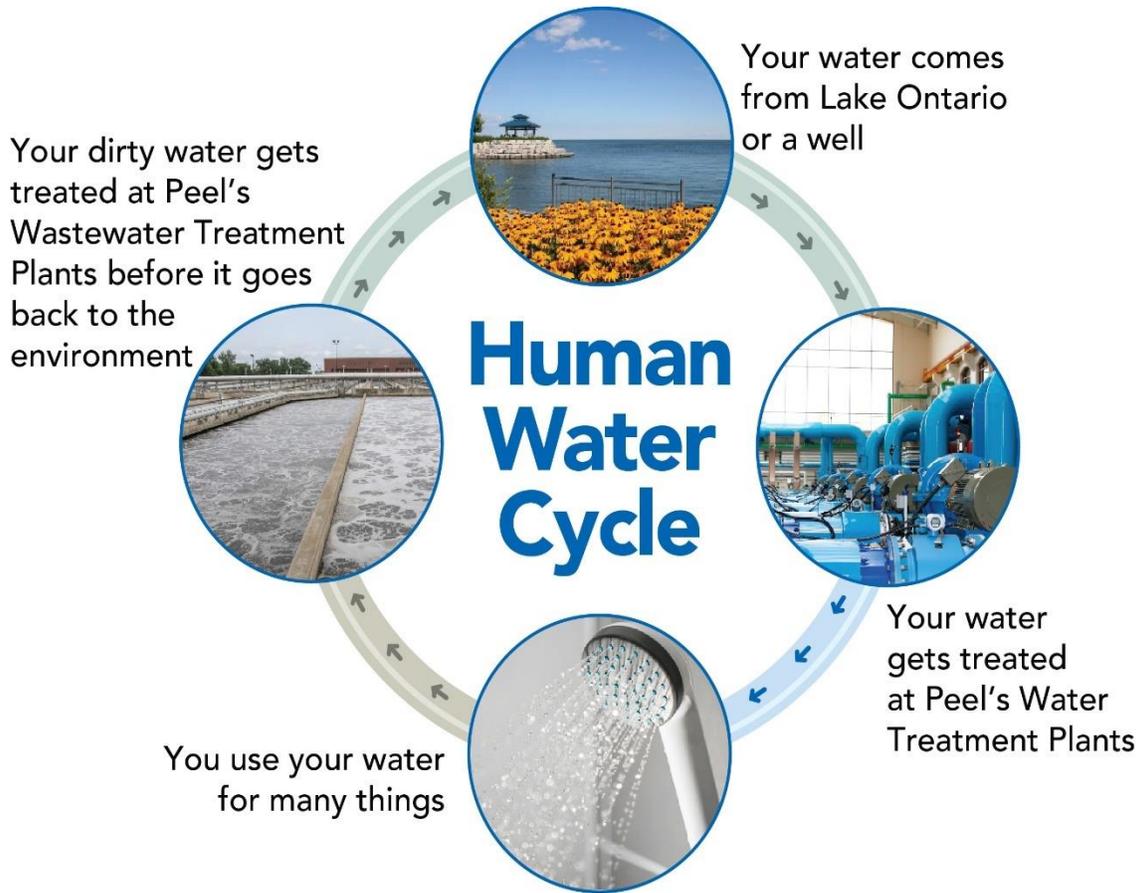
1. Water management in Peel Region

Peel owns and operates 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 Region operates the wastewater collection system, pumping stations, and the treatment facility in the community of Inglewood, in the Town of Caledon.

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 into Lake Ontario, which is the source of drinking water for Peel and many neighbouring municipalities.

Figure 1. Water and Wastewater Cycle



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

2. Introduction

Wastewater systems in Ontario are governed by the Ministry of the Environment, Conservation and Parks (Ministry) and are also subject to federal legislation.

The wastewater collection system receives wastewater from residences and businesses that are connected to the municipal sewer pipe network and conveys it to the wastewater treatment plant where it is treated to reduce contaminants, nutrients, and pathogens before it is released to the environment. The Environmental Compliance Approval (Approval), issued under the [Environmental Protection Act](#), is a facility-specific document through which the Ministry sets discharge quality limits for that facility based on the sensitivity of the receiving waters. To comply with the Approval, Peel Region prepares an annual report covering the operation and overall performance of the wastewater system.

This report provides a performance summary for the period from January 1 to December 31, 2023, for the Wastewater Collection Systems, to fulfill the annual performance reporting requirements set out in the Approval number 009-W601.

The collection system is comprised of two separate collection systems: South Peel Wastewater Collection system, a class 3 wastewater collection system, and the Inglewood Wastewater Collection system, a class 1 wastewater collection system under [Ontario Regulation 129/04](#), and serves over 1.5 million customers across Mississauga, Brampton, and parts of the Caledon. It is owned and operated by Peel Region. This system collects municipal wastewater from residences and businesses, as well as landfill leachate from the Chinguacousy Landfill and former Britannia Landfill and conveys it to the Peel's three wastewater treatment plants (G. E. Booth Wastewater Treatment Plant (WWTP), Clarkson WWTP or Inglewood WWTP). Peel also receives wastewater from the City of Toronto and York Region through inter-municipal servicing agreements.

All of Peel's wastewater collection system assets are captured within a single Approval. The portion of the collection system that serves the community of Inglewood (in Caledon) directs Inglewood's communal wastewater to the Inglewood WWTP and the portion of the collection system that serves Mississauga, Brampton, and the east side of Caledon is connected to the Peel's larger South Peel collection system that directs wastewater south to the G. E. Booth WWTP and Clarkson WWTPs on the shore of Lake Ontario. Refer to [Figure 2](#) for a map of the Peel's wastewater collection system.

2.1 Compliance

The Approval is a facility-specific document and is the legal instrument that sets requirements for municipal system owners and operating agencies with regards to operation and management, level of treatment, monitoring and recording, routine and event reporting, and effluent quality notification. In accordance with the Approval, major changes to treatment process or equipment are communicated to the Ministry.

The Ministry performs periodic inspections on all wastewater systems, comprised of facility visits and review of information and data for the inspection period. Inspection scope generally covers procedural documentation review, staff competency, process operation and monitoring, and corrective actions to operational events. Peel is committed to ensuring environmental protection and compliance with legislative requirements. We maintain transparency by reporting all findings of potential non-compliance incidents and outcomes of internal assessment to the Ministry local district office.

3. Collection system overview

The collection system consists of a series of underground pipes that collect wastewater from residences and businesses throughout Peel Region and depending on location, convey the wastewater to one of three treatment facilities, i.e., G.E. Booth WWTP and Clarkson WWTP located in the City of Mississauga, on the shore of Lake Ontario, or Inglewood WWTP in the Town of Caledon. [Figure 2](#) shows a map of Peel's wastewater collection.

Table 1. South Peel Wastewater Collection System sanitary sewers

Pipe diameter (millimetres)	Length (kilometres)
1 to 300	2,882
301 to 500	316
501 to 950	298
951 to 1,650	166
Greater than 1,650	46

Table 2. South Peel Wastewater Collection System forcemains

Pipe diameter (millimetres)	Length (kilometres)
1 to 300	26
301 to 500	8
501 to 950	17

Table 3. Inglewood Wastewater Collection System sanitary sewers and forcemains

System type	Pipe diameter (millimetres)	Length (kilometres)
Sanitary sewers	1 to 300	4
Forcemains	1 to 300	0.39

Sewage Pumping Stations (SPS) and facilities, listed in Appendix A, are equipped with stand-by power generators to ensure critical equipment can continue to operate in the event of a power failure.

The collection system is comprised of two separate systems:

1. The South Peel Wastewater Collection System conveys sewage to G.E. Booth WWTP and Clarkson WWTP for treatment prior to its final discharge to Lake Ontario. The South Peel Wastewater Collection System consists of:
 - 3,759 km of sewers and forcemains

- 56,856 maintenance holes
 - 32 sewage pumping stations (see [Appendix A](#))
 - One odour/corrosion control facility
 - Two septage receiving stations
 - Two leachate pumping stations
2. The Inglewood Wastewater Collection System conveys sewage from the community of Inglewood to the Inglewood WWTP for treatment prior to its final discharge to the Credit River. The Inglewood Wastewater Collection System consists of:
- 4 km of sewers and forcemains
 - 77 maintenance holes
 - 1 sewage pumping station (see [Appendix A](#))

The South Peel Wastewater Collection System is further divided into East and West trunk sewer systems.

- The East trunk sewer system conveys sewage to the G.E. Booth WWTP for treatment prior to its final discharge to Lake Ontario. The East trunk sewer system services the east side of Mississauga, Brampton, and parts of Caledon, including Bolton.
- The West trunk sewer system conveys sewage to the Clarkson WWTP, discharging its treated effluent to Lake Ontario. The West trunk sewer system services the west side of Mississauga, Brampton, and Caledon.

The East and West trunk sewer systems are partially connected by the West to East diversion trunk sewer. This sewer can divert some flows during wet weather events to utilize available system capacity and reduce potential for overflow. It is also used to divert flows during plant shutdowns, and to balance volumes between G.E. Booth WWTP and Clarkson WWTP. The South Peel Wastewater Collection System also receives wastewater from the City of Toronto and York Region through inter-municipal servicing agreements, as described below:

- York-Peel Servicing Agreement: Wastewater from York Region is pumped from the Humber SPS to Peel Region's collection system through 14 km twin 900-millimetre forcemains at Highway 427 and Steeles Avenue East. The forcemains discharge to Peel's gravity sewer network, which ultimately flows to the G.E. Booth WWTP. As wastewater from York is received in Peel, it passes through the York-Peel Odour Control Facility (see description below). In 2023, Peel Region received 13,639,070 m³ of wastewater from York Region.

- **Toronto-Peel Servicing Agreement:** There are currently three locations where wastewater flows across the municipal boundary from the City of Toronto to Peel's wastewater collection system. In 2023, Peel Region received 10,870,218 m³ of wastewater from Toronto.

York-Peel Odour Control Facility

The York-Peel Odour Control Facility, located at Steeles Avenue (between Airport Road and Torbram Road) in the City of Brampton, treats odours caused by hydrogen sulphide generated in wastewater along the 14 km journey through the forcemains from York Region. There are two odour control technologies used at this facility:

- A counter current packed bed tower wet chemical scrubber is used to remove particles and chemicals from the air. Sodium hydroxide and sodium hypochlorite solutions are sprayed within the scrubber to help eliminate odours.
- An injection system adds a small amount of ferrous chloride into the wastewater stream downstream of the scrubber for hydrogen sulfide control to reduce odours and pipe corrosion as the wastewater continues its journey through the sewer system.

Sampling is performed at this facility to understand the composition of the wastewater coming from York Region. The samples are sent to an accredited laboratory for analysis.

Leachate Pumping Stations

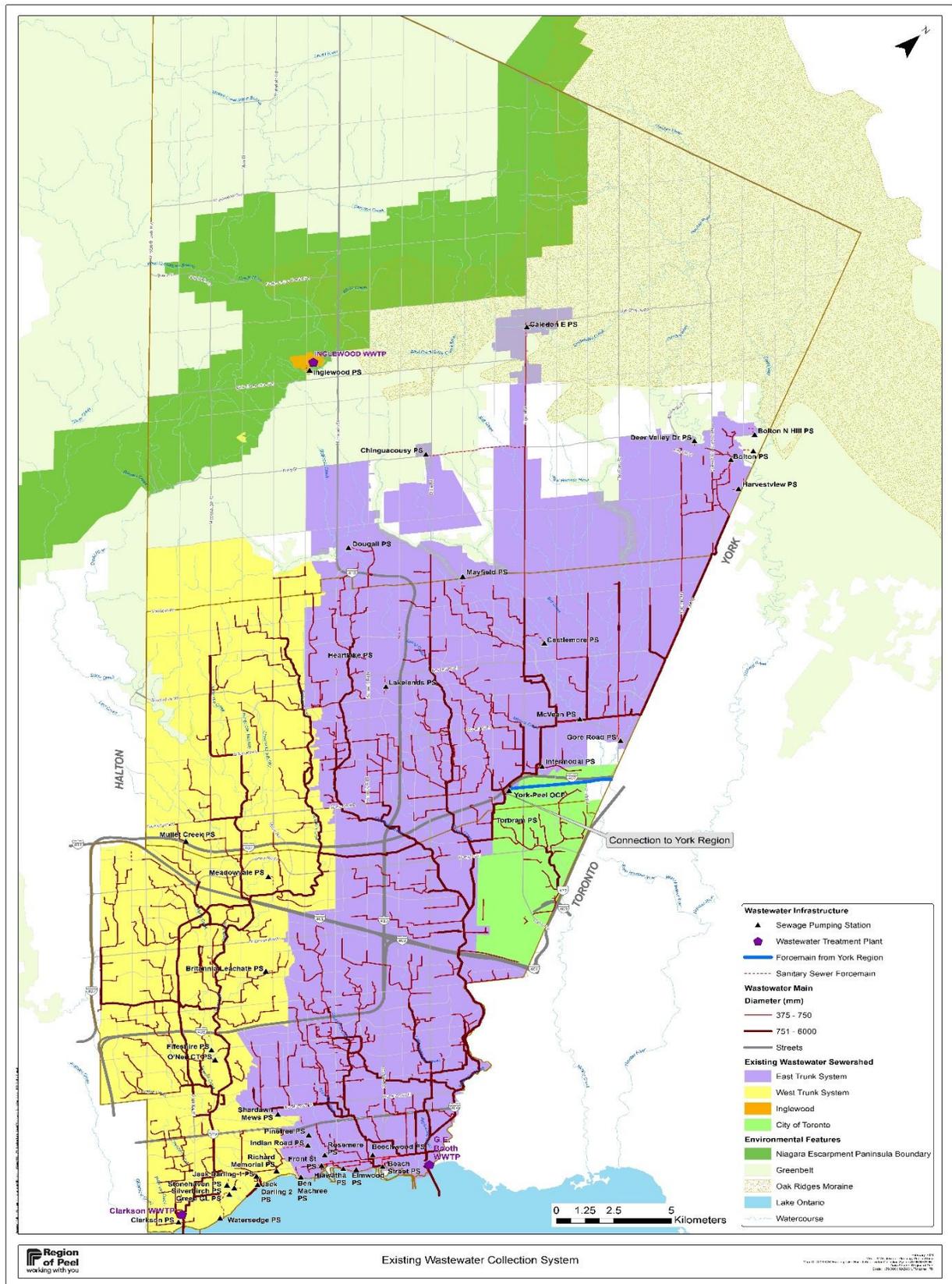
Leachate is a liquid that forms when landfill waste breaks down and water, usually rainwater, runs through the landfill material, possibly picking up chemicals and toxins. There are two locations from which landfill leachate is discharged into the Peel's wastewater collection system.

Britannia Leachate Pumping Station is located at the former Britannia Sanitary Landfill at Terry Fox Way and Britannia Road East in the City of Mississauga. The landfill was in operation from 1980 until its ultimate capacity was reached and the landfill closed in 2002. Leachate from the former landfill's underdrains discharges into a leachate collection system, which then flows by gravity to the Britannia Leachate Pumping Station where it is pumped into the wastewater collection system. The Britannia Leachate Pumping Station operates under a separate Approval (number 2185-B8BMW6).

Chinguacousy Leachate Pumping Station is located at the Chinguacousy Landfill at Lot 27 & 28, Concession 3 East to 6 East, in the Town of Caledon. The leachate is pumped to the sanitary sewer at King Street and Airport Road. The Chinguacousy

Leachate Pumping Station operates under a separate Approval (number 1372-7RUUP4).

Figure 2 Wastewater Collection System map



4. Operational performance

4.1 Summary and interpretation of monitoring data

The following indicators have been selected to provide an overview of collection system performance:

- Peel's compliance with the Approval requirements, which include emergency response to overflow and spill events, associated monitoring, and reporting.
- Temporary/mobile flow monitoring alarms that indicate when sections of the collection system are operating at 75% and 100% full.

4.1.1 Compliance with Approval requirements

In 2023, Peel complied with all Approval requirements. Relevant Approval requirements include:

- Overflow and spill event reporting to the Ministry's Spills Action Centre (SAC) and the Medical Officer of Health, as required.
- Sewage pumping station overflow quarterly reports including details of sampling results (if performed) and corrective actions taken.
- Maintenance of the collection system operations and maintenance manual.
- Documenting collection system modifications by completing Forms SS1, SS2 and A1 and submitting Director Notification Forms, as described in Section [4.5](#).
- Assessment of wet weather flows compared to dry weather flows submitted to the Director on November 21, 2023.

4.1.2 Flow monitoring

Peel has a temporary (mobile) flow monitoring program comprised of several hundred flow monitors strategically located throughout the collection system. These flow monitors are moved from one location to another or reduced or increased in numbers to meet operational, construction and development needs. Also, they serve as tools to calibrate the Peel's hydraulic model and assist in identifying inflow and infiltration issues.

These flow monitors trigger alarms when sewer pipes are 75% and 100% full. These warnings allow staff to respond accordingly, to mitigate and reduce risk of potential overflows before they occur. The 75% alarms are warnings to alert staff that a full pipe

condition might be developing. For every 100% pipe level alarm, an operator is dispatched to investigate.

In 2023, Peel had a total of 258 alarms for 75% pipe level and 63 alarms for 100% full pipes. These numbers do not include false alarms (those dispatched in error). The number of alarms in 2023 were lower than in 2022, as Peel experienced a relatively dry summer, with generally small volume and intensity storm events.

Peel also has several strategically placed flow monitors that will produce 60% pipe level alarms that are used to determine when to divert flows from the West trunk to the East trunk. This is necessary to optimize the flows conveyed to G.E. Booth and Clarkson WWTPs.

Some of the flow monitors throughout the system also serve other purposes: to assist construction works, new development, and inflow and infiltration monitoring (see section [4.2.2](#)).

4.2 Operating problems encountered and corrective actions taken

4.2.1 Sewage pumping station (SPS) bypasses

As sewage pumping stations continue to age, temporary bypassing of these stations is necessary for a variety of activities including rehabilitation or upgrade projects.

During an SPS bypass, sewage is temporarily conveyed around the station and back into the collection system (see [Figure 3](#)). Pumping station bypasses are operated by third-party contractors, who hold the necessary qualifications and licences to operate within Peel's wastewater collection system. Bypass systems can consist of pumps, piping, and equipment capable of diverting the flow of sewage from upstream of the station to sewer lines downstream of the work area. The number of homes that are serviced in the area, the number and types of local businesses, and flow characteristics are just some of the many factors considered in determining the proper pumps and equipment required for a well-designed bypass system to be successful.

Bypassing the station allows for the work activities to occur on the infrastructure without causing environmental discharges and minimizing impacts to the flow of sewage in the immediate or surrounding areas, while maintaining service levels.

Without the use of a bypass system, the large amount of rehabilitation or upgrades needed on aging systems would not be possible. There was one sewage pumping station bypass in 2023 (see [Table 4](#)).

Figure 3. Sewage pumping station bypass

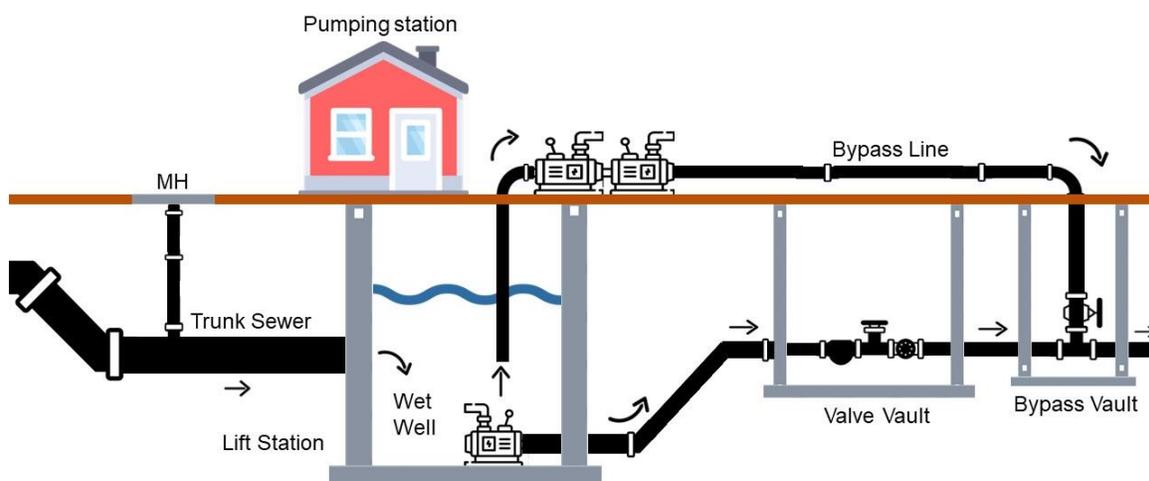


Table 4. Summary of sewage pumping station bypass

Sewage pumping station	Bypass start date	Bypass end date	Disinfected Reason for bypass
Silverbirch SPS	December 12	December 21	To test bypass for long term bypass in the next year

4.2.2 Inflow and Infiltration (I&I)

The inflow and infiltration (I&I) remediation strategy divided Peel into 40 distinct sewersheds, also known as blocks. The blocks are prioritized based on their likelihood of sewage overflow into the environment, sanitary sewage back up into basements, and capacity constraints for future development. The three blocks with the highest priority were targeted for first round of work between 2019 and 2022. The second-round of work is underway with the next set of blocks. The I&I work consists of investigative activities, studies, and remedial measures. These remedial measures include downspout disconnection, removing cross connections, sealing maintenance holes, and sewer lining, as well as construction of storage tanks and larger pipes to hold more flow. Remedial measures with the highest return-on-investment are implemented first. Also, to prevent I&I issues in the future Peel is continuously updating its design and construction guidelines to improve new infrastructure. A summary of initiatives that Peel is undertaking to address I&I issues were submitted to the Ministry on November 21, 2023, in the form of the Assessment of Wet Weather Flows Compared to Dry Weather Flows report.

4.3 Summary of maintenance activities and expenditures

4.3.1 Maintenance of linear infrastructure

Maintenance of the linear infrastructure involves performing inspections, sewer cleaning, and repairs. A summary of the maintenance activities completed in 2023 is provided in [Table 5](#).

Inspections are conducted on both sewers and maintenance holes. The sewers are inspected using closed circuit television (CCTV) units. When a structural issue is identified in the sewer main, sewer lateral or maintenance hole, it is triaged and repaired according to the level of risk and priority.

In 2023, a total of 311 km of sewer pipe, or approximately 10% of the South Peel wastewater collection system, was inspected using CCTV and a total of 13,665 maintenance holes were inspected. There was one lateral repaired in the Inglewood wastewater collection system during the reporting period. A summary of the length of pipe either relined or replaced in 2023 is provided in [Table 6](#).

Table 5. Linear maintenance performed in 2023

Description	Quantity in South Peel wastewater collection system	Quantity in Inglewood wastewater collection system
Length of sewer inspected using CCTV	311 km	None
Length of sewer flushed	670 km	4 km
Minor sewer main repairs	8	None
Laterals repaired	94	1
Laterals replaced	14	None
Trouble spots cleaned	17 km	None
Maintenance holes inspected	13,665	None
Maintenance holes repaired	1,266	None

Table 6. Length of pipe relined and replaced in 2023

Description	South Peel wastewater collection system	Inglewood wastewater collection system
Sewer main relining	8 km	None
Sewer main replacement or new connection	14 km	None

4.3.2 Collection system facilities

The wastewater collection system facilities under Approval number 009-W601 include:

- York-Peel Odour Control Facility

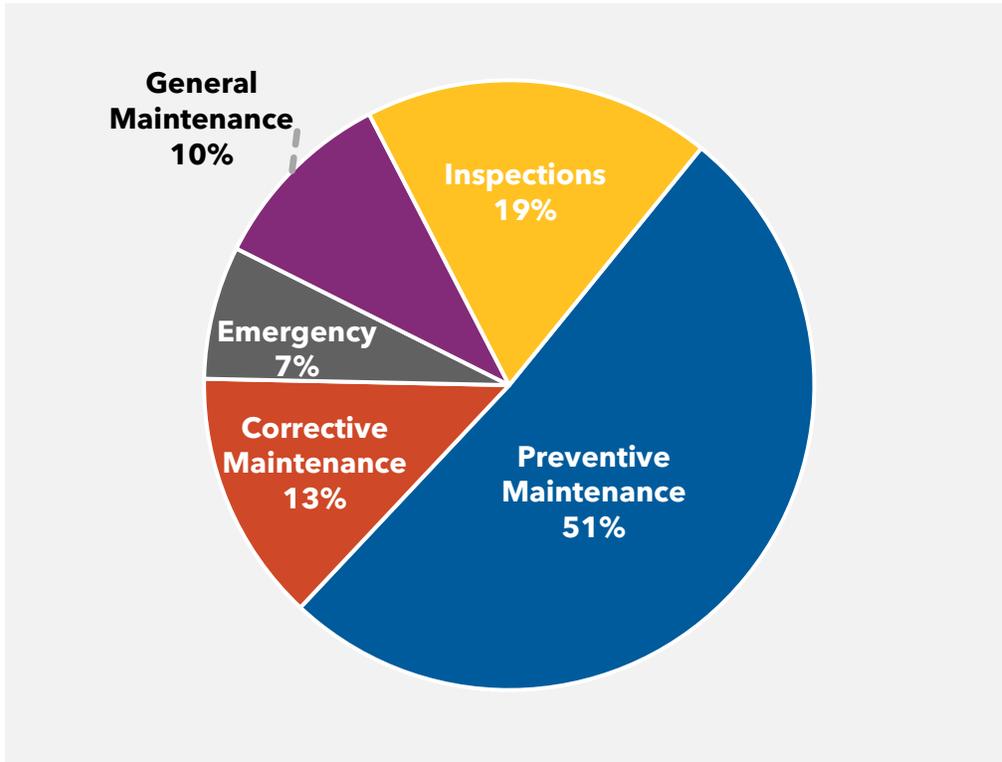
- 33 sewage pumping stations
- Two septage receiving stations

Peel Region has the following maintenance programs for these facilities:

1. Preventive maintenance is conducted on a routine basis to maintain the equipment in good working order and lessen the likelihood of failure,
2. Corrective maintenance is conducted to correct deficiencies discovered during routine inspections or preventive maintenance activities and return equipment to working order,
3. Unplanned (emergency) maintenance is conducted in response to equipment failure.

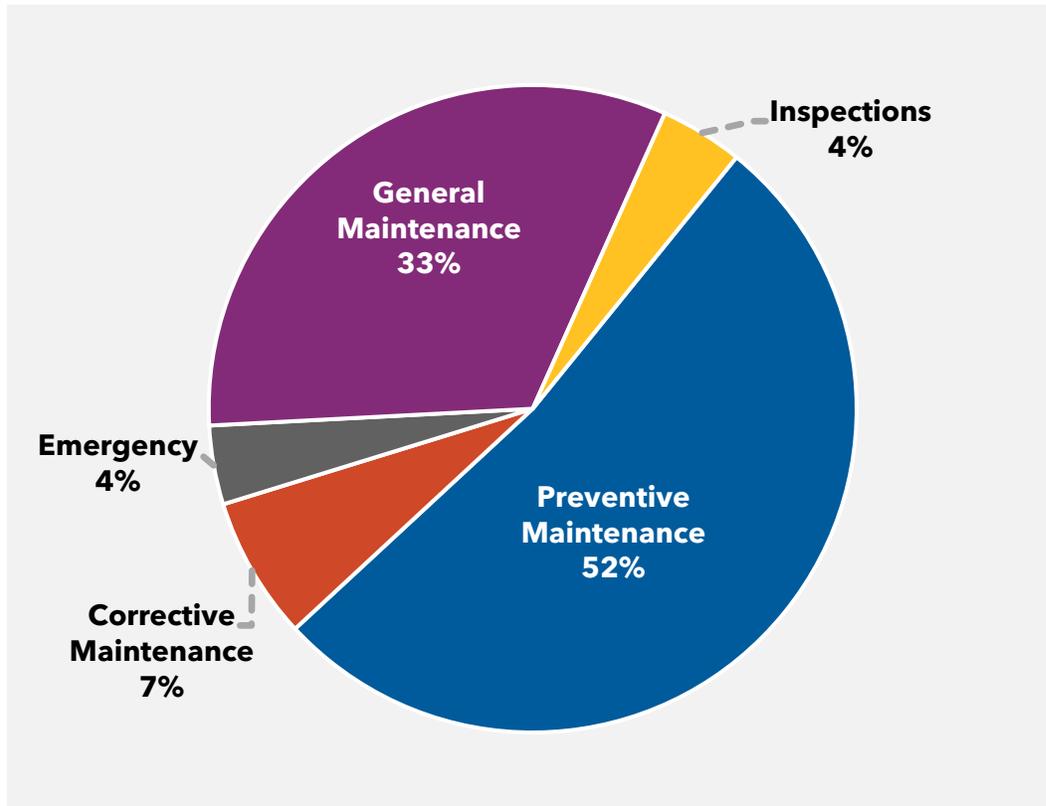
In 2023, a total of 10,955 staff hours was spent maintaining the South Peel wastewater collection system facilities. The largest amount of time (51%) was spent performing preventive maintenance.

Figure 4. Maintenance activities for South Peel wastewater collection system facilities



A total of 279 staff hours were spent maintaining the Inglewood wastewater collection system facilities with most amount of time spent performing preventive maintenance (52%) and general maintenance (33%).

Figure 5. Maintenance activities for Inglewood wastewater collection system facilities



4.3.3 Trouble spot maintenance program

One potential cause of sanitary sewer overflow or odour issues is sewer backup. A sewer backup occurs when the sewer becomes fully or partially blocked by an obstruction. To mitigate issues at locations that regularly become obstructed, Peel has a trouble spot maintenance program. Trouble spots are cleaned using high pressure water spray or mechanical reaming (rotational cutting) on a set schedule to prevent blockages. Mainline sewer pipes that are cleaned as a part of the regular preventive maintenance program are addressed in a prioritized manner. Pipe age and type, and discovery of defects in the sewer pipe are some of the criteria used to determine priority. In 2023, Peel Region cleared 24 blockages.

4.3.4 Sanitary sewer pipe replacement program (State of Good Repair)

Peel Region'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 sanitary sewer pipe assessment and renewal. The program includes ongoing upgrades of the Peel's sanitary sewer system to ensure long-term integrity and sustainability. The program involves repair or replacement of existing mains and sanitary services to improve flow, minimize potential for spills and overflows to the environment, minimize the risk of backups into homes, and upsize if required to meet future planning needs; all to provide an acceptable level of service to our customers.

Peel determines priority of sanitary sewer pipe replacement and rehabilitation based on the following factors:

- Pipe age
- Pipe size and material type
- Pipe breaks and leak history
- Hydraulic performance of the pipe
- Planned municipal and city projects related to water, wastewater and road assets
- Cost of replacement
- Operational demands

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

4.3.5 Sanitary trunk sewer conditions assessment and rehabilitation

Peel's strategy for offsetting wastewater flows from the east side of Mississauga and Brampton includes several major collection system initiatives, with an overall 10-year capital budget of approximately \$420 million. Twinning of the East Brampton and West sanitary trunk sewer is now complete and operational and will provide additional capacity and allow for condition assessment and rehabilitation of the existing trunk sewer to extend its useful life. Peel recently completed a condition assessment of the existing East Brampton sanitary trunk sewer and is working with our consultant on the development of the 30% design to support planned rehabilitation work. Several significant wastewater condition assessment and

rehabilitation initiatives were initiated or continued in 2023, including condition assessments of portions of the West trunk sewer, portions of the Brampton centre sub-trunk, airport trunk, Upper Mimico sub-trunk, Mullet Creek sub-trunk sewer, 407 diversion trunk sewer, and Meadowvale trunk sewer to name a few. The maintenance hole rehabilitation program continued with the completion of additional construction contracts.

The goal of these projects is to assess and rehabilitate sanitary infrastructure to meet target levels of service, which in turn improves system resiliency and longevity, and reduces site-specific infiltration, such as leaking pipe joints. The East trunk sewer and energy dissipation chamber rehabilitation class environmental assessment and detailed design were completed in 2022, and the project is currently midway through construction. This project was also awarded combined federal and provincial funding.

4.3.6 Quality assurance and quality control (QA and QC)

Peel Region operates a QA/QC program for maintenance holes (MH) condition assessment. Approximately 3% of all MH condition assessments are randomly selected to be re-inspected to assess accuracy of the information collected. A 90% accuracy is expected, and those inspections not reaching this threshold are returned for re-assessment and opportunities for staff training are explored.

Peel performs a similar QA/QC program for the sewer main flushing program, with CCTV inspection conducted on 1% of sewer mains flushed over the previous 2-week period by each operator, selected randomly. As with the MH program, a 90% accuracy is expected. This QA/QC program currently applies to sewer mains with a diameter of up to and including 450 millimetres. In the future, this program is expected to expand to sewer mains with a diameter up to and including 675 millimetres.

The CCTV program's QA/QC includes random selection of 10% of the preventive maintenance work per month per operator for review. The inspections are scored based on the details recorded as well as the video portion of the inspection. Any inspections that fall below the 90% expected accuracy will be sent for re-inspection.

4.3.7 Operating costs

The Approval requires that the system and all equipment used to achieve compliance are properly operated and maintained. This includes providing adequate funding. Peel Region funds operational activities and process chemicals to maintain daily operation, as well as capital activities to ensure future system performance.

In 2023, \$283,131 was spent on odour control chemicals such as ferrous chloride, sodium hydroxide and sodium hypochlorite used at the York-Peel Odour Control Facility, with an average cost of \$0.021 per cubic metre of wastewater handled.

Water and wastewater systems are among the highest energy users in Peel. Utilizing the Peel's Energy Dashboard electricity numbers (kWh) and volumes of wastewater handled it is possible to calculate how much energy is required to pump wastewater within the collection system to the treatment facilities. In 2023, the wastewater collection facilities accounted for 0.09 GJ of energy per ML of wastewater handled. Energy usage and performance of energy intensive equipment is monitored, and Peel continues to research ways to optimize and reduce energy use, such as identifying energy-saving opportunities during design of capital improvement and construction projects.

4.3.8 Expenditure information

Staff determine capital spending priorities to eliminate unnecessary expenditures while maintaining infrastructure. [Table 7](#) summarizes the major expenditures in 2023.

Table 7. Significant expense for the South Peel wastewater collection system

Activity type	Description of work	Expenditure
Repair	Sewage pumping station rehabilitation works	\$8,383,300
Repair	Sanitary sewer spot repairs	\$1,139,400
Repair	Maintenance hole rehabilitation	\$4,784,400
Replacement or installation	Sanitary sewer replacement and new construction	\$95,139,800
Inspection	Trunk sewer inspection	\$506,100
Inspection	Maintenance hole inspection	\$185,000

There was no capital expenditure for the Inglewood wastewater collection system during the reporting period.

4.3.9 Summary of calibration and maintenance equipment

Calibration and maintenance are performed annually, according to manufacturer's recommendations, on monitoring equipment including flow meters, level transmitters and pressure transmitters. The monitoring equipment was satisfactorily verified by a third-party agency in 2023 in all stations except Fifeshire, Stonehaven, and Caledon East SPSs due to faults in the flowmeters. Issues with flow meters noted at these three pumping stations were associated with the sensor cables which affected the ability to perform verification. There is a plan to revisit all stations in early 2024 to complete verifications to ensure flows are measured accurately.

4.3.10 Summary of complaints

The Approval requires that Peel log all resident complaints, investigate, and resolve them. Peel makes every effort to respond to customers and satisfactorily address their concerns and enquiries. A database is used to record details including information

collected from the customer on the nature of the enquiry and action taken by Peel. There were 873 complaints recorded in 2023 related to the operation of the South Peel wastewater collection system and one complaint related to Inglewood wastewater collection system, with the vast majority being reports related to condition of maintenance hole covers. These complaints represent 0.08% of the population serviced by Peel (approximately 1.5 million people). A breakdown of public complaints received in 2023 can be found in [Table 8](#).

Peel Region takes proactive action to reduce odours throughout the collection system through the odour control program. Areas that regularly experience collection system odours are investigated and odour control dishes are placed in the maintenance holes to help stop odourous gases from escaping into the environment. Odour control dishes are replaced three times per year. There are currently 44 maintenance holes with odour control dishes across Peel.

Table 8. Summary of complaints received for the collection system in 2023

Type of complaint	Description	Number of complaints received for South Peel wastewater collection system	Number of complaints received for Inglewood wastewater collection system	Corrective actions taken
Mainline sewer back-up	Sewage back-ups due to obstructions in mainline sewers	24	0	Operator was sent out to confirm the location and state of the sewer. Flusher trucks were used to release the backup and flush.
Sewer lateral back-up	Sewage back-ups due to obstructions in sewer laterals	78	1	Operator was sent out to confirm and locate the appropriate service point in the home. Sewer trucks were used for mechanical rodding to release the backup.
Sanitary odour	Sewage-like odours associated with the wastewater collection system	6	0	Operators were dispatched to check the locations. Assets associated with the collection system were checked and work was done to resolve the odour, if any.
Maintenance hole issues	Maintenance hole issues such as dislodged or broken covers	765	0	Operators were dispatched to assess the damage. Depending on the requirements, the repairs were performed, ranging from fixing a lid to an extensive repair with a multi-person crew.

4.4 Summary of sewage pumping station overflows, spills or abnormal discharge events

Occasional weather events such as heavy rainfall and spring snow melt can result in flow rates that burden the collection system and may be higher than those for which the plant was designed. These challenges, as well as the need for planned maintenance and construction activities, may result in a planned or unplanned discharge to the environment.

An overflow is a controlled discharge of wastewater to the environment from a designed location within the collection system. An overflow occurs when rainwater, groundwater intrusion and/or emergency situations result in additional flows entering sanitary sewers that overwhelm the system. Overflows from the sewage pumping stations, while not desirable, are sometimes necessary to help prevent basement and surface flooding and to protect the downstream treatment plants. **In 2023, there were no overflows.**

When possible, samples must be collected at the beginning and end of an overflow event and tested to characterize wastewater discharge. Parameters tested for overflow events include BOD₅, TSS, TP, TAN, pH, and *E. coli* (between April 1 and October 31).

A spill is an unplanned discharge of wastewater to the environment from any location that is not specifically designed for this purpose. There were **four spills in 2023** from the collection system to the environment, as summarized in [Table 9](#).

Table 9. Summary of spills from the collection system in 2023

Date of Event	Location	Description	Estimated volume and durations	Corrective actions taken	Spills Action Centre reference number
Feb 9	East side of Eglinton Avenue West, Mississauga	Infiltration from rain caused maintenance hole to overflow	Estimated time less than 12 hours. Volume unknown	Spill Responder returned to site the next day. Reported spills have stopped and there was no sign of sanitary waste around the area.	1-2HSNKO
Apr 18	Hurontario Street, Mississauga	Mainline sanitary sewer backup caused sewage spill from the maintenance hole lid	Estimated time less than 4 hours. Volume unknown	Blockage from the mainline sewer was removed	1-3EYAIN
Sept 17	2285 The Collegeway, Mississauga	Sanitary sewer backup caused sewage spill into Sawmill Creek	Estimated time 5 hours. Estimated volume 0.6 cubic metres	Blockage from the mainline sewer was removed	1-3EUWMH
Nov 10	11613 Bramalea Rd., Brampton	Sanitary sewage blockage caused spill to storm sewer	Estimated time more than 4 hours. Volume unknown	Affected maintenance hole and storm sewer catch basin was pumped down. Forcemain inside the maintenance hole was repaired to prevent the re-occurrence of blockage	1-4EUJAS

All overflow and spill events are reported to the Ministry's Spills Action Centre (SAC). Additionally, any SPS overflows are summarized on a quarterly basis and submitted to the Ministry. These quarterly reports include event details including estimates of duration and overflow volume.

4.5 Notice of modifications

Under the Approval, minor modifications are pre-authorized and need only be recorded on the appropriate form and retained. There are several forms that are used, as described in [Table 10](#).

Table 10. Preauthorized modifications forms

Form type	Description	Completed in 2023
SS1	Form SS1 documents preauthorized alterations to sanitary sewer mains and forcemains, i.e., addition, modification, replacement, or extension to system's pipes	9
SS2	Form SS2 documents preauthorized alterations to the components of the collection system, i.e., addition, modification, or replacement of components of the system or sewage pumping stations;	1
A1	Form A1 documents preauthorized alterations to equipment with emissions to air, e.g., addition, modification, or replacement of venting for odour control or emergency generators	0

Repair and maintenance activities are exempt from the documentation requirements and may be performed as needed to maintain the collection system in good working order.

Peel Region undertakes construction projects to upgrade or enhance the collection system to meet demands related to industrial and commercial growth in Peel that may alter incoming wastewater volume or loading (strength), and to integrate new technologies. Under the Approval, minor modifications and system extension are preauthorized provided they meet the conditions specified. Major modifications that are not preauthorized require an amendment to the Approval and are listed in the Approval as Additional Approved Works.

4.6 Efforts to achieve conformance with Ministry's treatment and collection system requirements (Procedure F-5-1)

As Peel's population continues to grow, volumes of wastewater are expected to continue to increase. In addition, flows rise during wet weather and snow melt events due to infiltration of water into the collection system. Climate change causes an increase in the frequency and severity of these wet weather events. Increased flows influence treatment effectiveness. Another influence is industrial discharges into the collection system. Peel's Water and Wastewater 10-Year Plan includes ongoing capital improvements to the treatment plants and collection system to improve flow management to protect neighbourhoods from flooding, maintain treatment capacity, and meet all regulatory limits for treated effluent. Peel has several avenues by which it

is working to address these challenges to the wastewater system, including sewer conditions assessment and rehabilitation as described in section [4.3.5](#).

G.E. Booth WWTP

Peel recognizes that the plant capacity is approaching 90% of design, which increases the possibility of bypass occurrences and potential impacts to effluent quality during high flows. To address high flows to G.E. Booth WWTP, there is a project underway to divert flows from east to west (away from G.E. Booth WWTP and towards Clarkson WWTP). The project is expected to be completed and flow diversion operational in 2027. The preliminary flow diversion strategy under this project is to re-direct approximately 70 MLD. More information on this project is available on [Peel's construction website](#). Information specific to environmental assessments being performed by Peel are available on the [Environmental Assessment website](#).

Peel continues working to reduce inflow and infiltration in the collection system that contributes to peak flows during high flow events (see section [4.2.2](#) for more information).

Industrial Wastes

Peel Region's [Wastewater Bylaw \(53-2010\)](#) sets concentration limits for discharges to the sanitary sewer, which subsequently protects the WWTPs from industry impacts, and provides information on agreements and spills to the environment. The bylaw applies to the industrial, commercial, and institutional (ICI) sectors as well as residences and establishes penalties for offences of up to \$100,000 for businesses.

All ICI facilities are inspected by Peel Region staff at a minimum once every 2 years, resulting in thousands of inspections being completed annually. The inspections are used to assess the discharges from the facility and its compliance with the bylaw as well as the effect on the wastewater collection and treatment systems. Upon discovery of a spill into the sanitary sewer, or notification from an industry of a release, WWTPs are notified so staff can implement protective actions.

4.7 Other information required by the Ministry Water Supervisor

There was no other information requested by the Ministry Water Supervisor in 2023.

5. Performance management programs

5.1 Ministry inspections

Wastewater system inspections are performed periodically by the Ministry to ensure systems are operating as required and complying with the terms and conditions of their Approvals. Performance data is reviewed against the compliance objectives and limits. The inspections also verify that Peel meets sampling, testing and treatment standards and staff competency requirements. Additional inspections can be triggered through a variety of factors such as frequency of events or inconsistent system performance (e.g. increased number of spills or reportable incidents), in response to a complaint or concern, or as part of a follow-up from prior non-compliances.

There was no Ministry inspection of the Peel's wastewater collection system in 2023.

5.2 Wastewater integrated management system

Peel Region has developed and implemented the Wastewater Integrated Management System (WWIMS) to systematically assess pollution prevention, embrace quality work, and improve overall performance to meet compliance obligations. It also provides an effective framework for operational excellence, guidance to building and managing policies, procedures, and process, and fostering a culture of continual improvement within the wastewater division.

The WWIMS draws on the principles of ISO 9001 (Quality Management Systems) and ISO 14001 (Environmental Management Systems) and strives to implement optimal management practices for the Peel-operated wastewater collection and treatment systems. The scope of the WWIMS includes the Wastewater Collection System, and the Inglewood Wastewater Treatment Plant.

In the fall of 2023, Peel completed a full internal audit of its management systems, with focus on the WWIMS. It was determined that conformance to both ISO 9001 and ISO 14001 requirements had been met. With ongoing changes in Peel's water and wastewater programs, alignment with the new operational framework of the wastewater collection and treatment systems continued to be maintained. A review of normal and abnormal operations for Peel's wastewater systems and the natural environment was carried out. Through the assessment of 144 risks and their potential impact, 15 activities were deemed to be significant, and objectives and targets were then discussed and established to ensure effective controls are in place to eliminate or reduce the risk.

Appendix A

Table 11. List of pumping stations and facilities in South Peel wastewater collection system

Serial number	Sewage pumping station (SPS)	Location
1	Beach Street SPS	City of Mississauga
2	Beechwood SPS	City of Mississauga
3	Ben Machree SPS	City of Mississauga
4	Bolton North Hill SPS	Town of Caledon
5	Bolton SPS	Town of Caledon
6	Caledon East SPS	Town of Caledon
7	Castlemore SPS	City of Brampton
8	Clarkson SPS	City of Mississauga
9	Dougall SPS	Town of Caledon
10	Elmwood SPS	City of Mississauga
11	Fifeshire SPS	City of Mississauga
12	Front Street SPS	City of Mississauga
13	Gore Road SPS	City of Brampton
14	Harvestview SPS	Town of Caledon
15	Hiawatha SPS	City of Mississauga
16	Indian Road SPS	City of Mississauga
17	Intermodal SPS	City of Brampton
18	Jack Darling Memorial Park 1 SPS	City of Mississauga
19	Jack Darling Memorial Park 2 SPS	City of Mississauga
20	Lakelands SPS	City of Brampton
21	Mayfield SPS	City of Brampton
22	McVean SPS	City of Brampton
23	Meadowvale SPS	City of Mississauga
24	Mullet Creek SPS	City of Brampton
25	O'Neil SPS	City of Mississauga
26	Pinetree SPS	City of Mississauga
27	Richards Memorial SPS	City of Mississauga
28	Rosemere SPS	City of Mississauga
29	Shardawn Mews SPS	City of Mississauga
30	Silver Birch Trail SPS	City of Mississauga
31	Stonehaven SPS	City of Mississauga
32	Watersedge SPS	City of Mississauga

Table 12. List of pumping stations and facilities in Inglewood wastewater collection system

Serial number	Sewage pumping station (SPS)	Location
1	Inglewood SPS	Town of Caledon

Table 13. List of odour control and septage facilities

Serial number	Sewage pumping station (SPS)	Location
1	Torbram Septage Receiving Station	City of Brampton
2	Mullet Creek Septage Receiving Station	City of Brampton
3	York-Peel Odour Control Facility	City of Brampton

Appendix B - Frequently asked questions

Where does water go after it is used?

After you use water to wash dishes and clothes, brush your teeth, shower or flush the toilet, the used water (wastewater) that goes down your drains flows through a series of underground sewer pipes to the wastewater treatment plants.

The wastewater is treated to remove contaminants and kill disease-causing microorganisms before being discharged into the environment. Peel operates three wastewater treatment plants (WWTP): G.E. Booth WWTP and Clarkson WWTP, both discharging into Lake Ontario, and the Inglewood WWTP, discharging into the Credit River. These three plants serve the cities of Mississauga and Brampton and the Town of Caledon.

View [Peel Region's wastewater video](#) for more information on how wastewater is treated.

Why am I experiencing a sewage odour outside my house?

The sewage odor outside your house could be from a variety of sources. It could be that the sewer is backed up close to your property. If your property is located close to a lake, algal blooms also cause odours. Other sources of odour might include: scheduled treatment plant maintenance coupled with prevailing winds, nearby farming activities, or odours from waste management facilities or industries.

If you are noticing odours near your property, please call Peel Region at 905-791-7800.

Why am I experiencing a sewage odour inside my house?

If you notice an odour of sewage coming from a drain in your house, it is recommended to pour a cupful of bleach into the drain, let it sit for 10-15 minutes and then rinse it down with plenty of water. If this does not resolve the odour problem, please call Peel Region at 905-791-7800 for further investigation.

What is the difference between a storm sewer and sanitary sewer?

Wastewater that goes down drains inside homes and buildings enters the sanitary sewer system, which sends it to a wastewater treatment facility for treatment before it is released to the environment. Sanitary sewer systems in Mississauga, Brampton and Caledon are maintained by Peel Region.

Rainwater and melting snow are called storm water. Stormwater enters storm grates on the road and enters the storm sewer pipes that run beneath the roadways. These pipes discharge the storm water to local waterways, like streams, creeks, and lakes. The majority of storm sewer is maintained by the local municipality: the cities of Brampton and Mississauga and the Town of Caledon. Peel maintains storm sewers on Regional roads.

Refer to the [Peel Region website](#) for more information about wastewater and storm water.

What happens to industrial wastewater?

Some companies treat their own wastewater and release it directly into the environment or into Peel Region's sanitary sewer (wastewater collection system). Wastewater released into the sanitary sewer joins all other wastewater collected (from households and building drains) and flows to one of the wastewater treatment plants. Industrial wastewater can be hazardous or contain substances that may damage sewer infrastructure or upset the treatment process. Therefore, all wastewater released and all businesses that release it into Peel sewers must comply with Peel's [Sewer Use Bylaw](#) (Wastewater Bylaw). To ensure compliance, industrial facilities are examined by inspectors from Peel's Environmental Control department. Thousands of inspections are completed each year.

What must not be disposed down the toilet or poured down the drain?

It is important to understand that what goes down the drain or the toilet may have negative impacts on the wastewater system and the environment. Fats, oils, and grease should never be poured down the drain because these materials are known to cling to pipe walls. Over time, their accumulation can build up to such high levels that the sewer can become blocked. Another reason to avoid disposing fats, oils, and grease into drains or toilets is that it is not effectively broken down during the wastewater treatment process. Instead, Peel recommends that edible household fats, oils and

grease (FOG) should be collected and properly disposed as [per the FOG disposal at home instructions](#). To learn more about Peel's [community recycling centres' web page](#).

It is also important not to dispose items down the toilet that could get stuck in or damage the sewer systems. Sticks, rags, paper towels, personal hygiene products, diapers, disposable wipes, household hazardous waste and pharmaceuticals should not be disposed by simply flushing down the toilet. Any unused or expired pharmaceuticals can be returned to your local pharmacy. For more information on how to properly dispose of items that damage the wastewater refer to [idontflush.ca](#).

What causes a sanitary sewer backup?

Most sewer backups occur when sewer pipes get blocked. Sewer pipes can become clogged with excess fats, oils, greases, food wastes, coffee grounds, hair, toilet paper, soap residue, or inappropriate materials being flushed down the toilet or drain. Even sanitary wipes that are labelled “flushable” will in fact clog pipes, sewers, and screens at the treatment plants. To help reduce sanitary sewer blockages and prevent backups, it is recommended to properly dispose of these items and other materials that can harden or settle within the sewer pipes.

Sanitary sewer backups can also occur when tree roots grow into or through sewer lines. These roots may be from trees that are outside your property boundaries. The only solution to this problem is to cut away the roots and then replace the pipeline.

If you notice a sewer backup in your home, call Peel Region at 905-791-7800 extension 4409, or 1-888-919-7800 for residents in Caledon. If the problem area is determined to be on private property, there is a flat fee for the service call.

More information about wastewater and storm water is available on the Peel Region [webpage](#).

How safe is the treated wastewater that is released into Lake Ontario?

To meet environmental compliance criteria in Ontario, all wastewater must be treated before being returned to the environment. Peel operates and maintains three wastewater treatment facilities, G.E. Booth, Clarkson, and Inglewood, and the effluent discharged into the environment must meet location-specific, provincial, and federal standards.

Which pipes are mine and which are Peel Region's responsibility?

See the information at [homeowner and regional responsibilities of wastewater infrastructure](#).

What is optional water and sewer line insurance program?

The pipes on the private side of the property line belong to the property owner. Sometimes these pipes may get damaged or blocked, which can result in costly plumbing bills. Peel endorses a voluntary pipe insurance program. For more information can be found on the [pipe protection plan webpage](#).

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.

Other sources for more information about wastewater and related issues



Peel Region

10 Peel Centre Dr., Brampton ON L6T 4B9

Wastewater-related questions:

Phone: 905-791-7800 extension 4685

Website: peelregion.ca/wastewater

E-mail: Publicworkscustserv@peelregion.ca

Water and Sanitary Sewer and Septic Protection Plans:

[Peel Wastewater Bylaw](#) or [Service line warranties](#)



Ministry of the Environment, Conservation and Parks

Public Information Centre

Phone: 416-325-4000

Toll-Free: 1-800-565-4923

Website: ontario.ca/environment



Environment and Climate Change Canada

Inquiry Centre

Phone: 819-997-2800

Toll-Free: 1-800-668-6767

Website: ec.gc.ca