Wastewater Collection Systems

Performance Report 2024

Contents

1.0 Introduction

Halton Region is committed to providing reliable wastewater collection and treatment for more than 656,000 residents in Burlington, Halton Hills, Milton and Oakville. The Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA) issued by the Ministry of the Environment, Conservation and Parks (MECP) governs the operation of Halton Region's wastewater (sanitary sewage) collection system. Compliance with regulatory requirements, policies and the permit conditions of the CLI ECA continues to be monitored through the supervisory controls and data acquisition (SCADA) systems, oversight by licensed operations staff, an accredited laboratory, and regular reporting mechanisms.

2.0 Collection System Overview

Halton Region's wastewater collection system (WWCS) is comprised of works for the collection and transmission of wastewater, and consists of trunk and local sewers, wastewater pumping stations, forcemains and one in-line storage tank. There are 1,978 km of sewers, which include a combination of gravity sewers (1,901.605 km), forcemains (75.859 km), inline storage (0.421 km), and siphons (0.085km). There are 83 wastewater pumping stations (see *Appendix A* for the list of the stations) and approximately 29,387 maintenance holes. The in-line storage tank is in the Burlington collection system and is comprised of a 3.0 m diameter trunk sewer that is 166 m long and has a vortex flow regulator designed for a peak flow rate of 50 L/s. Refer to *Appendix B* containing an overview map of Halton Region's wastewater collection system.

3.0 Legislated Requirements

The Ontario Water Resource Act governs wastewater collection systems and wastewater treatment plants (WWTP). The owner/operator of each wastewater collection system is required to comply with all the requirements and conditions in the Environmental Compliance Approvals. The CLI ECA for the municipal wastewater works serving Halton Region for the collection and transmission of wastewater include the works servicing the Mid-Halton WWTP, Georgetown WWTP**,** Burlington-Skyway WWTP, Oakville Southeast WWTP, Oakville Southwest WWTP and Acton WWTP. The annual performance report for the wastewater collection systems is submitted to the MECP within 90 days following the end of the period being reported upon. The performance summary is for the period from January 1, 2024, to December 31, 2024, which gives Halton Region a reporting due date of March 31st of the subsequent year.

The following table (Table 3.1) shows the sections of this report that address the specific annual reporting requirements stipulated in Halton Region's WWCS CLI ECA, No. 004-W601.

Table 3.1 – CLI ECA Specific Requirements for Annual Reporting and Corresponding Sections

WWCS Performance Report Sections	Halton Region WWCS ECA No. 004-W601 *Schedule E, Section 4.6*
4.0 Wastewater Collection System Monitoring Programs	4.6.3
5.0 Operational Challenges & Action Taken	4.6.4 & 4.6.7
6.0 Calibration, Maintenance & Repairs	4.6.5 & 4.6.6
7.0 Modification to Wastewater Collection System	4.6.8
8.0 Discharge Events	4.6.9

4.0 Wastewater Collection System Monitoring Programs

4.1 Regional Flow Monitoring Program

Halton Region has approximately 90 flow monitors deployed in strategic locations throughout the collection system, of these, 40 are located at facilities. All the flow monitors measure both depth and velocity, from which they derive the flow values, and the trends and data are available on the vendor's web site. Data from the flow monitoring program is used to calibrate the dynamic wastewater model allowing for more precise capacity and loading estimates for infrastructure improvement recommendations and strategic capital planning. Additionally, there are 35 level sensors, 3 sewer cameras and 2 H_2S sensors in operation throughout Halton's sanitary system.

A formal Flow Monitoring Program enabled Halton Region to identify key points of capacity constraints in the collection system which are the focus of current root cause analysis studies. The root cause analysis will help Halton identify appropriate mitigation measures tailored to specific areas and issues.

4.2 Real-Time Control SCADA at Pumping Stations

Supervisory Control and Data Acquisition (SCADA) allows for remote supervisory operation over key system processes. This section outlines the type and degree of monitoring at the pumping stations in the wastewater collection system in terms of flows.

Table 4.1 - Type and degree of wastewater pumping station monitoring

Monitoring Devices	Scenario
Process Equipment	Real-time control and SCADA systems in the sense that they have Programmable Logic Controller (PLC) installed at the pump station.
	Hardwired control systems, no PLCs and no connection to centralized Human Machine Interface software or a data historian. These stations do have wet well high-level alarms wired to a centralized PLC which is connected to an auto dialer which relays alarms to operations.
Flow Measurement Locations	Physical location, flow meters are installed on the discharge header(s).
	Virtual Flow Meter, no physical flow meter installed. However, they have a PLC and constant speed pumps. At these stations, the PLC is used to monitor the changing wet well level and the wet well dimensions to calculate the incoming/outgoing flow to the pump station. This is used to generate a daily total incoming flow.
	No Flow Measurement, a physical or virtual flow meter is not present.

All level measurements are in the wet wells. Most of these measurements are made using ultrasonic level transmitters. Some pumping stations that have a PLC have a pressure sensor (hydrostatic) installed that is connected to the SCADA system.

Operation staff completes SCADA checks every morning during the workweek including checking the alarms. The SCADA checks are recorded in the E-Log. The system is divided into two separate SCADA checks:

- North System (Milton, Acton, Halton Hills) is checked by the North operation staff
- South System (Burlington and Oakville) is checked by the South operation staff

Alarms for each system are generated through an auto dialer, which sends the alarm to the appropriate on call operator 24/7 (North or South)

About 93% (77 of 83) of the WWPS have SCADA data related to wet well levels; these are used to calculate the flows in and out of the station and pumping capacities.

4.3 CCTV and MH Inspection Program

Halton Region's well-established Wastewater Asset Inspection Program regularly inspects various assets (sewer pipes, laterals and maintenance hole chambers) that allow early detection of performance and condition-based issues, which then drives the necessary maintenance, remediation or replacement work in the wastewater collection system.

The inspections are completed using closed circuit television (CCTV) and zoom camera technology. When a structural issue is identified in the sewer main, lateral or maintenance hole, it is reviewed and repaired according to the level of risk and priority.

In 2024, a total of 210 km of sewer pipe, or approximately 10.6% of the collection system (gravity sewers) were inspected using CCTV. A total of 3,161, or approximately 10.75% of maintenance holes were inspected.

5.0 Operational Challenges and Action Taken

All inquiries and complaints received by Halton Region are logged, categorized and addressed accordingly. Customer service staff resolve many issues over the phone without the need for a work order, and this is usually an indication that the matter is a private issue and/or not related to the public infrastructure. A work order is generated for calls that require follow-up by Halton Region staff. Table 5.1 summarizes the follow-up required from customer calls received and subsequent Work Orders generated.

Table 5.1 - Summary of Work Orders Related to Customer Complaints/Resolutions

Category of Work Orders Issued	Number of Work Orders	Description
Private Side Sewer Lateral	303	Customer backups due to obstructions such as debris, roots, crack, grease, collapse, belly, offset etc. in private side sewer lateral.
Public Sewer Main Backup	16	Customer backups due to obstruction in sewer main.
Public Side Sewer Lateral	69	Customer backups due to obstruction such as debris, roots, crack, grease, collapse, belly, offset etc. in public side sewer lateral.
Private Odour	15	Odours caused by private side issues.
Public Odour	5	Odours caused by public side issues such as maintenance holes or sewer mains.

5.1 Wastewater Pumping Station Bypasses

Bypassing a wastewater pumping station is necessary to carry out some works at the station and/or the forcemain as the wastewater that is generated in its drainage area never stops. Bypassing the pumping station is done using bypass pumping with a capacity that can handle flows in dry and wet-weather flow conditions. In the cases of works to be done in the forcemains, bypassing the station can be achieved using pumping trucks or temporary forcemains. Temporary bypassing of a wastewater pumping station (WWPS) is permitted, and occasionally necessary to accommodate activities related to infrastructure rehabilitation or upgrades following a temporary bypass pumping guide.

During a WWPS bypass, wastewater is temporarily conveyed around the station and back into the collection system. Pumping station bypasses are operated by third party contractors who hold the required qualifications and licenses.

For 2024, there were seven (7) bypass events, as listed below

1. Paletta Gardens Wastewater Pumping Station in Burlington, Start Jan 16, 2024, to Aug 6, 2024, using bypass pumping for station upgrades.
2. Bromley Wastewater Pumping Station in Burlington, Start April 26, 2024, to Nov 8, 2024, using bypass pumping for station upgrades.

3. North Shore Wastewater Pumping Station in Burlington, Start April 6, 2024, 09:00hrs till 14:00hrs using tanker trucks to install a temporary forcemain.
4. North Shore Wastewater Pumping Station in Burlington, Start April 12, 2024, 07:00hrs till 15:14hrs using tanker trucks to reconnect the forcemain.
5. Indian Road Wastewater Pumping Station in Burlington, Start April 25, 2024, 07:00hrs till 15:00hrs using tanker trucks for the replacement piping and valves.
6. Mid-Block Wastewater Pumping Station in Milton, Start Aug 14, 2024, 08:00hrs till 17:30hrs using a temporary forcemain connection for a gate valve replacement.
7. Carrington Wastewater Pumping Station in Oakville, Start Aug 20, 2024, 08:00hrs till 16:00hrs using tanker trucks for the replacement of piping.

Overflows events from the pumping stations or from the collection system are reported directly to the MECP District Office every time an overflow event occurs. The list of overflow events can be found in Section 8 of this report.

5.2 July 2024 Flood Event

Between Wednesday, July 10 and Tuesday, July 16, 2024, Halton Region experienced five consecutive intense rainfall events in short succession that resulted in between 100 and 220 mm of total rainfall in isolated areas throughout the region. This storm event delivered approximately 25 per cent of Halton Region's average annual rainfall, with some areas receiving more than two months' worth of rain in less than one week.

As a result, many properties throughout Halton Region were impacted by overland flooding, storm sewer surcharging and wastewater system surcharging, with northwest and southeast in the City of Burlington most significantly impacted.

Public Works staff responded immediately by inspecting maintenance holes around the Region to visually confirm the extent of wastewater system surcharging and began performing in-home flooding assessments for each individual property that called in.

Over a six-week period after the first flood call came in, Halton Region received 4,400 flooding related calls of which 1,962 were reports of basement flooding due to stormwater (both overland and storm system surcharge), wastewater system surcharge and some private storm drainage flooding. Of the 1,962 properties assessed by staff, approximately 54 per cent of properties were confirmed to have experienced basement flooding related to wastewater system surcharge (sewer back-up).

As a result of the July 2024 flood event, Halton Region enacted several flood recovery supports for affected residents such as an Ex-Gratia Grant to help with the cost of cleanup, repairs and insurance deductibles, an enhanced curbside waste collection program, and an enhanced basement

flooding mitigation campaign was approved to provide residents with subsidies and access to qualified, licensed contractors, making it easier and more affordable to get necessary work completed on the private side.

The Region has initiated an in-depth wastewater system performance analysis to confirm basement flooding causes and determine what, if any, stormwater or wastewater system improvements or private side work may be required to further reduce the risk of flooding. This work requires significant data collection and analysis, as well as collaboration with the local municipalities and conservation authorities related to the stormwater system.

As Halton Region develops strategies to mitigate climate change, staff will also need to develop strategies to assist our residents and businesses to adapt to the risk of increasing wet weather impacts. Comprehensive solutions will require the participation of all stakeholders including residents, businesses and close collaboration between the Region and the Local Municipalities in the coming years to develop and implement holistic solutions to reduce the risk of adverse impacts from extreme storm events.

For reference, a copy of Staff Report PW-25-24 is included in *Appendix D*.

5.3 Inflow/Infiltration

Inflow/Infiltration (I&I) is the primary cause of sewer surcharging within the wastewater collection system during severe storm events. Sewer surcharging is caused when sewer capacity limits are exceeded by I&I and depending on the extent of sewer surcharging, wastewater can back up into sewer laterals causing basement flooding. Pumping station and wastewater treatment plant capacity can also be exceeded during severe storms, resulting in overflows of untreated or partially treated wastewater into the environment.

Halton Region's wastewater collection system is designed to accommodate peak inflow and infiltration (I&I) rate; however, it is not designed to handle excessive I&I from private and public sources which can significantly increase sewer flows during severe rain events.

I&I from aging public infrastructure such as sewers and manholes are being addressed through Halton Region's Sewer Optimization and Comprehensive Asset Management Programs. The Sewer Optimization Program utilizes the asset inspections (sewer mains, sewer laterals) to identify opportunities to optimize (replace, line or spot repair) the existing wastewater collection system to reduce extraneous flows throughout Halton Region. The Sewer Optimization Program augments the existing State of Good Repair (SOGR) Asset Management Program that replaces pipes at end of their lifecycle that are in poor structural condition. In some cases, sections of pipe identified for replacement under the Sewer Optimization Program are removed and included in the SOGR Program as a separate capital project to allow for coordination with the replacement of other capital work in the same area.

The Voluntary Basement Flooding Prevention Subsidy Program provides financial incentives to residents to undertake work on private property to remove sources of excessive I&I through the disconnection of roof downspouts and weeping tiles or the repair of defective private sewer laterals.

Any reduction in I&I is a reduction in the amount of excess wastewater that must be conveyed and treated which saves both energy and chemicals needed in the wastewater treatment process. This aligns with Halton Region's Climate Action Plan goals.

Halton Region's wastewater collection system continues to function well during normal dry weather conditions and typical rain events.

In 2024, the Region of Halton retained GEI Consultants Canada Limited (GEI) to assess wet weather flows compared to dry weather flows for the Region's wastewater collection system, Wastewater Pump Stations (WWPS) and associated Wastewater Treatment Plants (WWTP) in response to compliance requirements for the Region's Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) 004-W601 (Schedule E s.8.1.1).

The final assessment report was submitted to MECP November 22, 2024.

Regional staff continues to identify opportunities and areas of improvement including a review of regional wastewater system service levels to identify projects for inclusion in the integrated Master Plan, identification of sources of inflow and infiltration from new home construction and the established asset management program which ensures that the wastewater collection system is maintained in a state-of-good repair.

Halton Region's progressive program to subsidize the disconnection of private side sources of excessive I&I in concert with the annual capital rehabilitation, repair and replacement program will also continue to lead to improvements in system resiliency through removal of excessive I&I at the source.

In addition, Halton Region will continue to collaborate with the Local Municipalities and Conservation Authorities to share information, identify opportunities and coordinate flooding reduction initiatives.

6.0 Calibrations, Maintenance & Repairs

6.1 Calibrations

As per Halton Region's Preventative Maintenance (PM) Plan, all monitoring equipment is regularly tested (signals are verified). Operations staff test the high-level float/Milltronics high level floats, and check Milltronics (ultrasonic level transmitter) parameters (zero and span) at the wastewater pumping stations once per year and these are confirmed through SCADA. The electronic signals in the station flowmeters are checked annually.

The flow monitors utilized in the Regional Flow Monitoring Program are rented and installed by sub-contractor in the collection system and are calibrated on a regular basis.

6.2 Maintenance and Repairs of Linear Infrastructure

The Sewer Assessment and Cleaning Program includes the scheduled two or four-year program for local wastewater sewers based on the material and diameter of the sewer pipe. Trouble sections are cleaned on a regular basis upwards of several times per month. A 'problem section' sewer cleaning program was established in 2020 to monitor and optimize sewer cleaning less frequently than bi-monthly on an as-needed basis. In addition, the Asset Management Program includes regular monitoring and maintenance work. Table 6.1 provides a summary of maintenance and repair activities performed last year.

Table 6.1 – Maintenance/Repair Activities for 2024

Description	Metric
Length of Sewer Flushed	185.9km
Length of Sewer Scanned/Assessed	1086.5km (ACOUSTIC 876.5km) + (CCTV 210km)
Length of Sewer Trouble/Problem Sections Cleaned	58.9km
Length of Sewer Lined /Replaced /Spot Repaired	8.6km
Number of Maintenance Holes Rehabilitated	39 (8 Rebuild + 31 Repair)

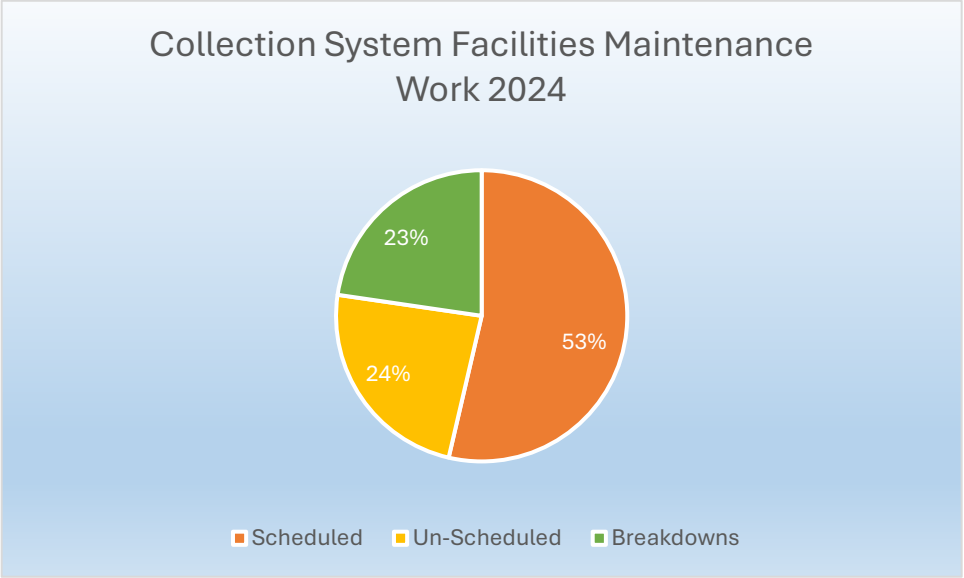
6.3 Maintenance and Repairs of the Collection System Facilities

Halton Region maintains and operates 83 WWPSs. In 2024, approximately 56% of the maintenance work was completed internally and 44% was completed by a third-party contractor. Facilities maintenance work is comprised of three components:

- Scheduled: Work undertaken regularly to maintain the equipment in good working order.
- Un-scheduled: Not a breakdown but if not corrected in 24/48 hours or within the current week could result in a breakdown - urgent and will interrupt current week schedule.
- Breakdowns: Work that's required to restore an asset to physical operation after an unplanned stop – urgent and immediate support required – will interrupt maintenance schedule.

Figure 1 presents the breakdown of the maintenance work completed in 2024.

Figure 1: Collection System Facilities Maintenance Work 2024



7.0 Modifications to Wastewater Collection Systems

Halton Region submitted the following modifications in Table 7.1 to the MECP under the Transfer of Review (TOR) Program. The TOR Program became obsolete upon the issuance of the new Halton Region WWCS CLI ECA on September 27, 2022. There were no direct ECA submissions submitted during the reporting period.

Table 7.1 – TOR Modifications to Works

Modification Type	Project Number	Project Description	Status
TOR	PR-3010	Sanitary sewer replacement on Churchill Ave, Oakville	Completed
TOR	DH-1029	Sanitary sewer extension on James St, Halton Hills	Under Construction
TOR	PR-3126	Drumquin Wastewater Pumping Station, Milton	Completed
TOR	PR-3156	Pumping Station Upgrade, Bridgeview WWPS, Burlington	Completed

In Tables 7.2 and 7.3, there are three types of modifications to Wastewater Works:

- Notice of Modification (NOM) under the former Mid-Halton WWCS ECA
- Form SS1 - Record of Future Alteration Authorized for Separate Sewers/Nominally Separate Sewers/Forcemains (new WWCS CLI ECA)
- Form SS2 - Record of Future Alteration Authorized for Components of the Municipal Sewage Collection System (new WWCS CLI ECA).

Prior to the issuance of the new Halton Region WWCS CLI ECA, NOMs were submitted to the MECP's Water Supervisor.
Subsequent to issuance of the Halton Region WWCS CLI ECA, NOMs were replaced with Form SS1s and Form SS2s which are now kept on file, as a result of pre-authorized modification provisions in the ECA for the Wastewater Works. The status report on the implementation of the modifications to Wastewater Works and a hyperlink to a copy of each modification is provided in the table below.

Table 7.2 - Status Report for Alterations to the Halton Region WWCS Authorized in 2024

Project Number	Form	Project Description	Date Signed	Status	Link to Form
DO-1112	Form SS1	Joshua's Creek Phase 3A, Oakville	03-Jan-2024	Under Construction	ECA-SS1-DO1112-Joshua's Creek Phase 3A-Oakville-2024
DO-1113	Form SS1	Joshua's Creek Phase 3B, Oakville	05-Jan-2024	Tender/Design	ECA-SS1-DO1113-Joshua's Creek Phase 3B-Oakville-2024
DO-1110	Form SS1	Vogue Wycliffe 3171 LRW Subdivision	01-Feb-2024	Tender/Design	ECA-SS1-DO1110-Vogue Wycliffe 3171 LRW Subdivision-Oakville-2024
DO-1090	Form SS1	Redoak/Capoak Phase 2	29-Feb-2024	Under Construction	ECA-SS1-DO1090–Redoak Capoak Phase 2 Subdivision-Oakville-2024
PR2671A & PR2671B	Form SS1	600/300/375mm WWM on Dundas St	8-Aug-2024	Under Construction	ECA-SS1-PR2671A & PR2671B-600/300/375mm WWM on Dundas St-Oakville/Burlington-2024
PR-3429A	Form SS1	WWM on McCraney Street and Various Side Streets (SOGR project), Oakville	18-Mar-2024	Under Construction	ECA-SS1-PR3429-WWM on McCraney Street and Various Side Streets-Oakville-2024
DO-1102	Form SS1	Crosstrails TWKD Developments, Oakville	19-Mar-2024	Under Construction	ECA-SS1-DO1102-Crosstrails TWKD Developments-Oakville-2024
DO-1120	Form SS1	Menkes Lakeshore Woods Subdivision, in Oakville	25-Mar-2024	Under Construction	ECA-SS1-DO1120-Menkes Lakeshore Woods Subdivision-Oakville-2024
PR-3146A	Form SS1	WWM on Bromley and various streets (SOGR project), Burlington	13-Apr-2024	Under Construction	ECA-SS1-PR3146A-WWM on Bromley and Side Streets (SOGR project)-Burlington-2024

Project Number	Form	Project Description	Date Signed	Status	Link to Form
DM-1086	Form SS1	Bayview Lexis Ph3, Milton	3-May-2024	Under Construction	ECA-SS1-DM1086-Bayview Lexis Phase 3-Milton-2024
DM-1090	Form SS1	Orlando North Porta, Milton	8-May-2024	Under Construction	ECA-SS1-DM-1090-Orlando North Porta-Milton-2024
DM-1085	Form SS1	Garito Barbuto ToR Phase 2, Milton	11-Jun-2024	Under Construction	ECA-SS1-DM-1085-Garito Barbuto ToR Phase 2-Milton-2024
DM-1031	Form SS1	Milton Meadows Subdivision, Milton	10-Jul-2024	Under Construction	ECA-SS1-DM1031-Milton Meadows Subdivision-Milton-2024
DM-1072	Form SS1	Milton III 75 Land Limited Subdivision, in Milton	17-Jul-2024	Under Construction	ECA-SS1-DM1072-Milton III 75 Land Limited Subdivision-Milton-2024
DM-1093	Form SS1	Schlegel LTC, Milton	26-Jul-2024	Under Construction	ECA-SS1-DM1093-Schlegel LTC-Milton-2024
DO-1098	Form SS1	Preserve North Phase 4 Subdivision, Oakville	14-Aug-2024	Tender/Design	ECA-SS1-DO1098-Preserve North Phase 4 Subdivision-Oakville-2024
DO-1114	Form SS1	Sixth Oak North Subdivision, Oakville	30-Aug-2024	Under Construction	ECA-SS1-DO1114-Sixth Oak North Subdivision WWCS-Oakville-2024
PR-3250L	Form SS2	Mid-Block WWPS Backup Pump Control System Upgrades, Milton	3-Sep-2024	Under Construction	ECA-SS2-PR3250K-MidBlock WWPS Backup Pump Control System Upgrades-Milton-2024
PR-3250K	Form SS2	Tremaine Rd WWPS Backup Pump Control System Upgrades, Milton	4-Sep-2024	Under Construction	ECA-SS2-PR3250K-Tremaine Rd WWPS Backup Pump Control System Upgrades-Milton-2024

Project Number	Form	Project Description	Date Signed	Status	Link to Form
DO-1094	Form SS1	Fernbrook Homes (OTMH) Subdivision, Oakville	10-Sep-2024	Under Construction	ECA-SS1-DO1094-Fernbrook Homes (OTMH) Subdivision-Oakville-2024
DO-1111	Form SS1	Star Oak South Subdivision, Oakville	8-Nov-2024	Under Construction	ECA-SS1-DO1111-Star Oak South Subdivision-Oakville-2024
DO-1117	Form SS1	DOCASA Subdivision, Oakville	15-Nov-2024	Under Construction	ECA-SS1-DO1117-DOCASA Subdivision-Oakville-2024
PR-3219A & PR-3219B	Form SS1	Prospect St and various Side Streets, Burlington	15-Nov-2024	Under Construction	ECA-SS1-PR3219A & PR3219B-Prospect St and Various Side Streets-Burlington-2024
PR-2987C	Form SS1	John St WWPS, Georgetown (Phase 1)	9-Dec-2024	Tender/Design	ECA-SS1-PR2987-John Street Pumping Station-Georgetown-2024
DO-1073	Form SS1	Dundas St New Trunk Sanitary, Oakville	11-Dec-2024	Tender/Design	ECA-SS1-DO1073-Dundas St New Trunk Sanitary-Oakville-2024
DM-1100	Form SS1	Milton Meadows External Works, Milton	12-Dec-2024	Tender/Design	ECA-SS1-DM1100-Milton Meadows-Milton-2024
PR-2987C	Form SS2	John St WWPS, Georgetown (Phase 1)	16-Dec-2024	Tender/Design	ECA-SS2-PR2987C-John Street WWPS (Phase 1)-Georgetown-2024

It was noted that no projects were determined to pose a significant threat to sources of drinking water in 2024.

Table 7.3 – Status Report for Alterations to the Halton Region WWCS Authorized prior to 2024

Name of System	Project Number	Form	Project Description	Date Signed	Status
Halton Region WWCS	PR-3119B	Form SS1	1500mm Trunk Sewer on Britannia Road, Milton	20-Dec-2023	Under Construction
Halton Region WWCS	DM-1076	Form SS1	New Sanitary Sewers servicing Mount Pleasant Way Extension (Escarpment Business Community West Phase III), Milton	13-Dec-2023	Under Construction
Halton Region WWCS	DM-1068	Form SS1	New Sanitary Sewers servicing Fieldgate West Subdivision, Milton	30-Nov-2023	Under Construction
Halton Region WWCS	DM-1075	Form SS1	New sanitary sewers in Mattamy Garito Barbuto, Milton	10-Oct-2023	Under Construction
Halton Region WWCS	DO-1116	Form SS1	Abandonment of sewer and service connection to North Park Development/Town of Oakville Recreation Centre Project, Oakville	29-Sep-2023	Under Construction
Halton Region WWCS	PR-2668A	Form SS1	Installation of 450mm Sanitary Sewer in 1200mm tunnel on Britannia Road from Trafalgar Road to 580+/- east of Trafalgar Road, M	29-Sep-2023	Completed
Halton Region WWCS	DB-1022	Form SS1	Plains Road E., Wastewater main extension, (National Homes),Burlington	11-Sep-2023	Tender/Design
Halton Region WWCS	DM-1083	Form SS1	New sanitary trunk sewer on Savoline Blvd to service Fieldgate West Limited Subd, Milton	5-Sep-2023	Tender/Design
Halton Region WWCS	DO-1071	Form SS1	Sanitary Sewers in Oakville Green Development - Phase 1, Oakville	24-Aug-2023	Tender/Design
Halton Region WWCS	DO-1099	Form SS1	Sanitary Sewer Extension on Glenashton Dr, Oakville	23-Aug-2023	Under Construction
Halton Region WWCS	DM-1052	Form SS1	Sanitary Sewers in Pony Pines Phase 4, Milton	21-Jul-2023	Tender/Design
Halton Region WWCS	DM-1084	Form SS1	Sanitary Trunk Sewer on Savoline Blvd/LSL Ave Intersection (Ex. SMH 22A to SMH 63A), Milton	26-Jun-2023	Under Construction

Name of System	Project Number	Form	Project Description	Date Signed	Status
Halton Region WWCS	DM-1080	Form SS1	Sanitary Trunk Sewer on Savoline Blvd/Fiddlehead Ln., Milton	19-Jun-2023	Completed
Halton Region WWCS	PR-3152	Form SS1	Sanitary Sewers on Ontario St S and Woodward Ave WM projects, Milton	15-Jun-2023	Completed
Halton Region WWCS	PR-3348	Form SS1	Sanitary Trunk Sewer on Eighth Ln, 10 SR & Mountainview, Halton Hills (Georgetown)	15-Jun-2023	Completed
Halton Region WWCS	DM-1051	Form SS1	Sanitary Sewers in Pony Pines Ph3, Milton - split into Ph 3A (DM-1051) and 3B (DM-1088)	6-Jun-2023	Under Construction
Halton Region WWCS	PR-3346	Form SS1	Sanitary Sewers Replacement, Reid Crt, Gower Crt, McIntyre Cres,Todd Rd, Temple Rd-Georgetown	23-May-2023	Under Construction
Halton Region WWCS	DM-1058	Form SS1	Sanitary Sewers in Varga Phase 2, Milton	24-Mar-2023	Under Construction
Halton Region WWCS	DO-1058	Form SS1	Sanitary Sewers in Bronte Green Subdiv, Oakville (near Regional Hq)	22-Feb-2023	Under Construction
Halton Region WWCS	PR-2700C	Form SS2	SCADA Implementation for Gollop Cres WWPS	28-Nov-2022	Completed
Halton Region WWCS	PR-2700C	Form SS2	SCADA Implementation for Lynden Circle WWPS	28-Nov-2022	Completed
Halton Region WWCS	PR-2700C	Form SS2	SCADA Implementation for Moore Park WWPS	28-Nov-2022	Completed
Halton Region WWCS	PR-2907	Form SS1	Sanitary sewers on McGeachie Dr, Milton	24-Oct-2022	Completed
Mid-Halton WWCS	DM-1074	NOM	Sanitary Sewers in Bayview Lexis Ph2, Milton	27-Sep-2022	Under Construction
Mid-Halton WWCS	DM-1056	NOM	Sanitary Sewers in Fieldgate Mil Con Three, Milton	4-Jul-2022	Completed

Name of System	Project Number	Form	Project Description	Date Signed	Status
Mid-Halton WWCS	DM-1064	NOM	Sanitary sewers on Kennedy Circle (East) Ext, Milton	18-Mar-2022	Completed
Mid-Halton WWCS	DO-1073	NOM	Sanitary sewer extension of Arbor Memorial, Oakville	28-Oct-2021	Tender/Design
Mid-Halton WWCS	PR-3126	NOM	Sanitary trunk main on Eighth Ln, Halton Hills & Milton	21-May-2021	Under Construction
Burlington Skyway WWCS	PR-3244	Form 1	Pumping station upgrade, Paletta Gardens WWPS, Burlington	21-Dec-2020	Under Construction
Burlington Skyway WWCS	PR-3245	Form 1	Pumping station upgrade, Bromley Park WWPS, Burlington	21-Dec-2020	Under Construction
Mid-Halton WWCS	DH-1028	NOM	Sanitary sewer connect to Steeles from NADC, Halton Hills	16-Jul-2020	Under Construction
Burlington Skyway WWCS	DB-1011	Form 2	Sanitary sewer extending from Bird Boulevard, Burlington	27-Aug-2019	Cancelled

8.0 Discharge Events

Some of the wastewater pumping stations 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.

Wastewater collection system related events are reported to the MECP in accordance with ECA requirements, such as observed overflows, spills, customer complaints resulting from odour or noise, or any equipment taken out of service. The On-Call Public Health Inspector is notified if an overflow occurs at one of the pumping stations listed in the Wastewater Stations Event Reporting Health Risk Escalation Table (Q-LI-3297). Halton Region has documented work instructions, titled Wastewater Stations Event Reporting (Q-WI-3311) and Wastewater Linear Spills Event Reporting (Q-WI-4601), that cover the regulatory requirements and best practices for reporting events. Table 8.1 provides the summary of all available overflows, spills or abnormal discharge events in the reporting year.

Table 8.1 – Summary of 2024 Overflow, Spill or Abnormal Discharge Events

Halton Region WWCS Subsystem Name	Date	SAC Incident #	Type	Location of Event	Receiver Name	Start Time	Duration	Volume (ML)	Volume Determination	Cause Code	Samples Taken
Burlington Skyway WWCS	February 15, 2024	1-4ODJ84	Spill	5025 Mainway, Burlington	Appleby creek	17:05	1.5 hrs	Unknown	Estimated	5	No
Burlington Skyway WWCS	March 27, 2024	1-59T7BC	Spill	1299 Brant St. Burlington	Nearby Storm Catch Basin	16:14	N/A	N/A	N/A	5	No
Oakville SW WWCS	June 18, 2024	1-7R30QM	Overflow	Riverside Wastewater Pump Station W14	16 Mile Creek	9:00	90 mins	23.2	Estimated	6	Yes
Oakville SE WWCS	June 20, 2024	1-7XDBAA	Spill	Navy Street Wastewater Pumping Station E1	Lake Ontario	18:30	110 mins	35.64	Estimated	3	Yes
Burlington Skyway WWCS	July 12, 2024	1-8WSFF3	Overflow	Pinedale Wastewater Pumping Station B21	Appleby Creek	19:58hrs	267 mins	480.6m3	Estimated	1	Yes

Halton Region WWCS Subsystem Name	Date	SAC Incident #	Type	Location of Event	Receiver Name	Start Time	Duration	Volume (ML)	Volume Determination	Cause Code	Samples Taken
Burlington Skyway WWCS	July 15, 2024	1-8YR7P0	Overflow	Fisher Elephant Trunk Overflow	Rambo Creek catchment area	N/A	11 hrs	600	Estimated	1	No
Burlington Skyway WWCS	July 15, 2024	1-8YLSVL	Spill	Paletta Gardens WWPS	Flooded overflow, unknown if spill occurred	13:05	N/A	N/A	N/A	1	No
Burlington Skyway WWCS	July 15, 2024	1-8YF3II	Overflow	Roseland Wastewater pump station B9	Roseland Creek	12:50hrs	97 mins	1273 m3	Measured	1	Yes
Burlington Skyway WWCS	July 15, 2024	1-8YASI2	Overflow	Junction Wastewater Pump Station B1	Rambo Creek	12:46hrs	16 mins	16.4 m3	Measured	1	No
Burlington Skyway WWCS	July 15, 2024	1-8YCUGW	Overflow	Elizabeth Gardens Wastewater Pump Station B8	Lake Ontario	12:53hrs	392 mins	5852.0 m3	Measured	1	Yes
Oakville SW WWCS	July 15, 2024	1-8YEAAN	Overflow	West River W1	Lake Ontario	14:20hrs	250 mins	247.5 m3	Estimated	1	Yes
Burlington Skyway WWCS	July 15, 2024	1-8Y5OWJ	Overflow	Pinedale Wastewater Pump Station	Appleby Creek	12:40hrs	296 mins	433.6m3	Estimated	1	Yes

Halton Region WWCS Subsystem Name	Date	SAC Incident #	Type	Location of Event	Receiver Name	Start Time	Duration	Volume (ML)	Volume Determination	Cause Code	Samples Taken
				B21							
Oakville SW WWCS	July 15, 2024	1-8YNRTM	Overflow	Sheldon Creek Wastewater Pump Station W4	Lake Ontario	12:42hrs	132 mins	15.8m3	Estimated	1	Yes
Burlington Skyway WWCS	July 16, 2024	1-903Q8A	Overflow	Ennisclare Wastewater Pump Station E8	Lake Ontario	11:00hrs	435 mins	99.2 m3	Estimated	1	Yes
Mid-Halton WWCS	July 16, 2024	1-8ZPYZK	Overflow	Fulton Street Wastewater Pumping Station M13	16 Mile Creek	10:41 Hrs.	245 mins	3524.7 m3	Measured	1	Yes
Oakville SE WWCS	July 18, 2024	1-93OUV3	Spill	First St. Wastewater Pumping Station W2	Lake Ontario	15:00	27 mins	1.45 m3	Estimated	6	Yes
Oakville SE WWCS	July 22, 2024	1-96JC8J	Spill	Carrington Wastewater Pump Station E11	Lake Ontario	13:15hrs	45 mins	14.8m3	Estimated	3	Yes
Georgetown WWCS	July 29, 2024	1-9EX7WC	Spill	Main St. WWPS-G9	Credit River	12:33	60 mins	80	Estimated	3	Yes
Oakville SE WWCS	September 25, 2024	1-BCEHOC	Spill	2623 Wynten Way (Oakville)	Manhole	22:30 hrs	N/A	N/A	N/A	N/A	No

Halton Region WWCS Subsystem Name	Date	SAC Incident #	Type	Location of Event	Receiver Name	Start Time	Duration	Volume (ML)	Volume Determination	Cause Code	Samples Taken
Acton WWCS	December 10, 2024	1-EIJK1D	Spill	Agnes Wastewater Pumping Station (A1)	Black Creek	9:18	38 mins	51.1	Estimated	8	Yes
Georgetown WWCS	December 20, 2024	1-F45MTT	Spill	140 Arborglen Dr. (Georgetown)	Main St WWPS (building interlock brick and asphalt parking lot)	11:45	30 mins	0.1	Estimated	N/A	No
Burlington Skyway WWCS	December 30, 2024	1-FDKQXA	Spill	2355 Cavendish Dr. (Burlington)	MH12654	12:30	N/A	N/A	N/A	N/A	No

Halton Region uses best efforts to collect a representative sample consisting of one grab sample from the wastewater pumping station to have analyzed by an accredited laboratory. *Appendix C* provides all lab sample results.

Appendix A – List of Wastewater Pumping Stations

Name	Town or City	Drainage Area
10 Sideroad PS	Georgetown (Halton Hills)	Georgetown
Agnes Street PS	Acton (Halton Hills)	Acton
Appleby Place PS	Burlington	Burlington Skyway
Argyle Drive PS	Oakville	Oakville Southeast
Armstrong Avenue PS	Georgetown (Halton Hills)	Georgetown
Bayshore Boulevard PS	Burlington	Burlington Skyway
Bel Air Estates PS	Oakville	Oakville Southeast
Belhaven PS	Burlington	Burlington Skyway
Bellview Street PS	Burlington	Burlington Skyway
Belvedere Drive PS	Oakville	Oakville Southwest
Birch Hill Lane PS	Oakville	Oakville Southwest
Bridgeview PS	Burlington	Burlington Skyway
Britannia Rd PS	Milton	Mid-Halton
Bromley Park PS	Burlington	Burlington Skyway
Bronte Yacht Club PS	Oakville	Oakville Southwest
Cardinal Avenue PS	Burlington	Burlington Skyway
Carrington Place PS	Oakville	Oakville Southeast
Cedarberry Court PS	Oakville	Oakville Southeast
Chancery Lane PS	Oakville	Oakville Southeast
Chartwell Road PS	Oakville	Oakville Southeast
Cindebarke Terrace PS	Georgetown (Halton Hills)	Georgetown
Coronation Park PS	Oakville	Oakville Southwest
Cumnock Crescent PS	Oakville	Oakville Southeast
Danforth Place PS	Burlington	Burlington Skyway
Double Ten PS	Georgetown (Halton Hills)	Georgetown
Dundas East PS	Oakville	Mid-Halton
Dundas PS	Oakville	Mid-Halton
Edgewater Crescent PS	Burlington	Burlington Skyway
Elizabeth Gardens PS	Burlington	Burlington Skyway
Ennisclare Drive PS	Oakville	Oakville Southeast

Name	Town or City	Drainage Area
First Street PS	Oakville	Oakville Southeast
Fulton St PS	Milton	Mid-Halton
Gairloch Gardens PS	Oakville	Oakville Southeast
Garden Trails PS	Burlington	Burlington Skyway
Gardiner Drive PS	Georgetown (Halton Hills)	Georgetown
Glen Williams PS	Georgetown (Halton Hills)	Georgetown
Gollop Crescent PS	Georgetown (Halton Hills)	Georgetown
Grandview Avenue PS	Burlington	Burlington Skyway
Halton Hills #1 PS	Milton	Mid-Halton
Halton Hills #2 PS	Milton	Mid-Halton
Halton Hills #3 PS	Milton	Mid-Halton
Hixon Street PS	Oakville	Oakville Southwest
Indian Road PS	Burlington	Burlington Skyway
John Street PS	Georgetown (Halton Hills)	Georgetown
Joshua Creek PS	Oakville	Oakville Southeast
Junction St PS	Burlington	Burlington Skyway
Kingham PS	Acton (Halton Hills)	Acton
La Salle Park PS	Burlington	Burlington Skyway
Lakeview PS	Acton (Halton Hills)	Acton
Lakewood Drive PS	Oakville	Oakville Southwest
Laurier Avenue PS	Milton	Mid-Halton
Lynden Circle PS	Georgetown (Halton Hills)	Georgetown
Main Street PS	Georgetown (Halton Hills)	Georgetown
Marine Drive PS	Oakville	Oakville Southwest
Mid-Block PS	Milton	Mid-Halton
Moore Park PS	Georgetown (Halton Hills)	Georgetown
Morrison Heights PS	Oakville	Oakville Southeast
Navy Street PS	Oakville	Oakville Southeast
Northshore Boulevard PS	Oakville	Burlington Skyway
Norval PS	Georgetown (Halton Hills)	Georgetown

Name	Town or City	Drainage Area
Oaklands Park PS	Burlington	Burlington Skyway
Overton Place PS	Oakville	Oakville Southwest
Paletta Gardens PS	Burlington	Burlington Skyway
Pinedale PS	Burlington	Burlington Skyway
Providence Road PS	Oakville	Mid-Halton
Raymar Place PS	Oakville	Oakville Southeast
Riverbank Way PS	Oakville	Mid-Halton
Riverside Drive PS	Oakville	Oakville Southwest
Roseland Creek PS	Burlington	Burlington Skyway
Sheldon Creek PS	Oakville	Oakville Southwest
Shepherd Road PS	Oakville	Oakville Southwest
Shorewood Place PS	Oakville	Oakville Southwest
Sixteen Mile Creek PS	Oakville	Mid-Halton
Spring Garden Road PS	Burlington	Burlington Skyway
Stillwater Crescent PS	Burlington	Burlington Skyway
Stirling Drive PS	Oakville	Oakville Southwest
Tremaine Road PS	Milton	Mid-Halton
Unsworth Avenue PS	Burlington	Burlington Skyway
Walker Street PS	Oakville	Oakville Southwest
Water Street PS	Oakville	Oakville Southwest
Weaver Avenue PS	Oakville	Oakville Southeast
West River PS	Oakville	Oakville Southwest
Westdale Road PS	Oakville	Oakville Southwest

Appendix B – Overview Map of Halton Region's Wastewater Collection Systems

Halton Region Wastewater Collection and Facilities

Pumping Station

RMOHID, PS NAME, ADDRESS	RMOHID, PS NAME, ADDRESS
1,ARMSTRONG AVENUE PS,303A ARMSTRONG AV	56,STIRLING DRIVE PS,1207 STIRLING DR
2,GOLLOP CRESCENT PS,14 GOLLOP CRES	57,NORTHSHORE BV PS,374 NORTHSHORE BV
3,LYNDEN CIRCLE PS,40 LYNDEN CL	60,LEACHATE STATION 1,65 ARMSTRONG AV
4,MOORE PARK PS,39 MOORE PARK CR	62,GARDINER DRIVE PS,21 GARDINER DR
5,AGNES STREET PS,11 AGNES ST	63,CINDEBARKE TERR PS,10 CINDEBARKE TERR
6,KINGHAM PS,242 KINGHAM RD	64,MARINE DRIVE PS,2285 MARINE DR
7,WATER STREET PS,130 WATER ST	65,CORONATION PARK PS,1420 LAKESHORE RD WEST
8,CEDARBERRY COURT PS,2262 CEDARBERRY CT	66,BELVEDERE DRIVE PS,60 BELVEDERE DR
9,CARRINGTON PLACE PS,2352 CARRINGTON PL	67,APPLEBY PLACE PS,105 APPLEBY PL
10,CHANCERY LANE PS,2288 CHANCERY LN	68,INDIAN ROAD PS,447 INDIAN RD
11,ENNISCLARE DRIVE PS,8 ENNISCLARE DR	69,BELLVIEW STREET PS,1189 BELLVIEW ST
12,NINTH LINE PS,1541 LAKESHORE RD EAST	70,STILLWATER CRES PS,535 STILLWATER CR
13,BEL AIR ESTATES PS,54 BEL AIR DR	71,UNSWORTH AVENUE PS,1094 UNSWORTH AV
14,ARGYLE DRIVE PS,1034 ARGYLE DR	72,BELHAVEN PS,131 NORTHSHORE BV EAST
15,RAYMAR PLACE PS,59 RAYMAR PL	73,BAYSHORE BLVD PS,614 BAYSHORE BV
16,FIRST STREET PS,20 FIRST ST	74,GRANDVIEW AVENUE PS,761 GRANDVIEW AV
17,GAIRLOCH GARDENS PS,1302 LAKESHORE RD WEST	75,OVERTON PLACE PS,250 OVERTON PL
18,NAVY STREET PS,2 NAVY ST	76,JOHN STREET PS,68 JOHN ST
20,LAKEWOOD DRIVE PS,231 LAKEWOOD DR	77,BRIDGEVIEW PS,1261 SPRING GARDENS RD
21,WALKER STREET PS,10 WALKER ST	78,PROVIDENCE ROAD PS,2175 PROVIDENCE RD
23,BIRCHHILL LANE PS,39 BIRCHHILL LN	79,RIVERBANK WAY PS,1164 RIVERBANK WY
24,WESTDALE ROAD PS,135 WESTDALE RD	80,NORVAL PS,464 GUELPH ST
27,HIXON STREET PS,1334 HIXON ST	83,MAIN STREET PS,140 ARBORGLEN DR
28,BRONTE YACHT CLUB PS,2514 LAKESHORE RD WEST	86,MID BLOCK PS,8255 LOUIS ST LAURENT AVE
29,WEST RIVER STREET PS,51 WEST RIVER ST	87,16 MILE CREEK PS,280 OLD UPPER MIDDLE RD
30,PINEDALE PS,5151 NEW ST	88,LAURIER AVENUE PS,509 COMMERCIAL ST
31,ELIZABETH GARDENS PS,5390 LAKESHORE RD	92,GARDEN TRAILS PS,547 GENISTA DR
32,BROMLEY PARK PS,5061 LAKESHORE RD	97,HALTON HILLS #1 PS,11429 STEELES AV
33,JUNCTION PS,2137 LAKESHORE RD	99,JOSHUA CREEK PS,2313 ROCK POINT DRIVE
34,ROSELAND CREEK PS,3241 LAKESHORE RD	100,10 SIDEROAD PS,14515 10 SIDE ROAD
35,PALETTA GARDENS PS,4281 LAKESHORE RD	103,TREMAINE ROAD PS,6300 LOUIS ST LAURENT AVE
36,BAYVIEW LANDFILL 2,1540 KING RD	104,HALTON HILLS #2 PS,12420 STEELES AV
37,EDGEWATER CR PS,604 EDGEWATER CR	912,DUNDAS STATION PS,345 DUNDAS ST W
38,SPRING GARDEN RD PS,834 SPRING GARDENS RD	914,GLEN WILLIAMS PS,509A MAIN ST
40,OAKLANDS PARK PS,89 OAKLANDS PARK CT	1315,HALTON HILLS #3 PS,14234 STEELES AV
41,DANFORTH PLACE PS,836 DANFORTH PL	2916,AVONDALE PS,123 AVONDALE CT
42,CHARTWELL ROAD PS,16 CHARTWELL RD	3316,WOODINGTON PS,1099 WOODINGTON LN
43,MORRISON HEIGHTS PS,1152 MORRISON HEIGHTS DR	3716,DOUBLE TEN PS,10010 TENTH LINE
44,CUMNOCK CRESCENT PS,1271 CUMNOCK CR	4117,BRITANNIA PS,8875 BRITANNIA RD W
45,WEAVER AVENUE PS,1380 WEAVER AV	5316,LEACHATE STATION 2,65 ARMSTRONG AV
46,RIVERSIDE DRIVE PS,265 RIVERSIDE DR	5317,LAKESHORE RD W WWPS,1385 LAKESHORE RD W
47,SHEPHERD ROAD PS,10 SHEPHERD RD	5716,FULTON PS,161 FULTON ST
48,CARDINAL AVENUE PS,305 CARDINAL AV	6917,4TH LN LANDFILL ,3330 NEYAGAWA BLVD
49,BAYVIEW LANDFILL 3,1540 KING RD	7318,HALTON BMC PUMP STAT,4449 REGIONAL ROAD 25
50,SHELDON CREEK PS,3251 LAKESHORE RD WEST	8518,BAYVIEW LANDFILL 2,1540 KING RD
52,SHOREWOOD PLACE PS,62 SHOREWOOD PL	
53,LAKEVIEW PS,104 ELIZABETH DR	
54,LA SALLE PARK PS,59 OAKLAND PARK CT	
55,THIRD LINE PS,2069 NORTH SERVICE RD WEST	

Facilities

Wastewater Treatment Plant

NAME, ADDRESS

ACTON WASTEWATER TREATMENT PLANT, 202 CHURCHILL RD. S.

BURLINGTON SKYWAY WASTEWATER TREATMENT PLANT, 1125 LAKESHORE RD.

GEORGETOWN WASTEWATER TREATMENT PLANT, 275 MOUNTAINVIEW RD. S.

MID-HALTON WASTEWATER TREATMENT PLANT, 2195 NORTH SERVICE RD. W.

OAKVILLE SOUTHEAST WASTEWATER TREATMENT PLANT, 2477 LAKESHORE RD. E.

OAKVILLE SOUTHWEST WASTEWATER TREATMENT PLANT, 1385 LAKESHORE RD. W.

Storage Tank

NAME, ADDRESS

REBECCA STREET STORAGE TANK, 171 REBECCA STREET

Other

NAME, ADDRESS

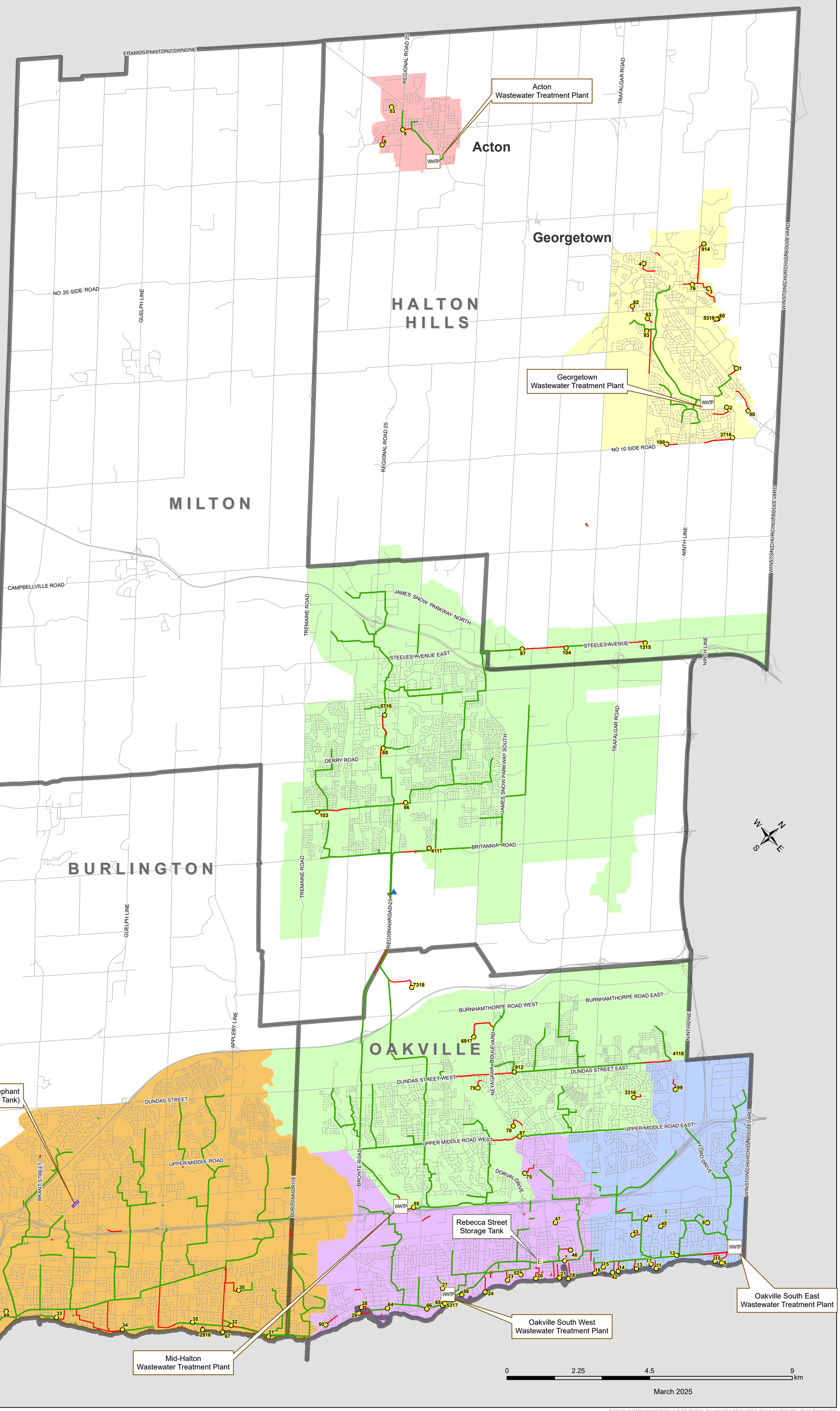
SEPTAGE RECEIVING FACILITY, 5449 HIGHWAY 25

Wastewater Main

- FORCE MAIN
- GRAVITY SEWERS 450mm AND LARGER
- INLINE STORAGE

Wastewater Treatment Plant Boundaries

- ACTON WWTP
- GEORGETOWN WWTP
- MID HALTON WWTP
- OAKVILLE SOUTH EAST WWTP
- OAKVILLE SOUTH WEST WWTP
- BURLINGTON SKYWAY WWTP



March 2025

Appendix C – Overflow Lab Result

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01122070224160419

Client: Wastewater Collection **Submission #** 24S-01122

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X					**Sample ID**	24S-01122-01
Sample Point	X	**Sampled By**	Jones J.						Regulatory
Sample Date	June 18, 2024	**Sample Time**	09:10	**Sample Period (Hrs)**				**SACI #**	1-7R30QM
Sample Description	Riverside Overflow								
PS-4	BOD	Total BOD	77	mg/L	1.0				
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	45.4	mg/L	0.10				
PS-12	TP	Total Phosphorus	6.17	mg/L	0.02				
PS-13	TSS	Suspended Solids	110	mg/L	2.0				

Analysis Notes:

Sample Condition: Improper Storage Of Sample Prior To Submission To Laboratory - Low Volume
Senior Lab Analyst Approval: ASB

Results apply to the sample as received.
Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Jordan Maltby

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01152070224160419

Client: Wastewater Collection **Submission #** 24S-01152

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X				**Sample ID**	24S-01152-01	
Sample Point	X	**Sampled By**	Balice A.					Regulatory	
Sample Date	June 20, 2024	**Sample Time**	20:15	**Sample Period (Hrs)**			**SACI #**	1-7XDBAA	
Sample Description	Navy St. P.S. Overflow								
PS-4	BOD	Total BOD	190	mg/L	1.0				
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	4.21	mg/L	0.10				
PS-12	TP	Total Phosphorus	1.77	mg/L	0.02				
PS-13	TSS	Suspended Solids	150	mg/L	2.0				

Analysis Notes:

Sample Condition: Low Volume

Senior Lab Analyst Approval: ASB

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Jordan Maltby

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01298072424112756

Client: Wastewater Collection **Submission #** 24S-01298

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X				**Sample ID**	24S-01298-01	
Sample Point	X	**Sampled By**	Brazel D.					Regulatory	
Sample Date	July 12, 2024	**Sample Time**	21:00	**Sample Period (Hrs)**			**SACI #**	1-8WSFF3	
Sample Description	B21 Pindale WWC Sample Station								
PS-4	BOD	Total BOD	14	mg/L	1.0				
		Analysis Start Time	2024/07/15 14:31						
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	0.62	mg/L	0.10				
		Analysis Start Time	2024/07/16 13:08						
PS-12	TP	Total Phosphorus	0.44	mg/L	0.02				
		Analysis Start Time	2024/07/15 14:30						
PS-13	TSS	Suspended Solids	20	mg/L	2.0				
		Analysis Start Time	2024/07/16 10:00						

Analysis Notes: **Sample Condition:** Ok

Senior Lab Analyst Approval: ASB

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Monica Klawunn

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01311072424112815

Client: Wastewater Collection **Submission #** 24S-01311

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X				**Sample ID**	24S-01311-01	
Sample Point	X	**Sampled By**	Kosterewa M.					Regulatory	
Sample Date	July 15, 2024	**Sample Time**	14:05	**Sample Period (Hrs)**			**SACI #**	1-8YF3II	
Sample Description	B9 Roseland								
PS-4	BOD	Total BOD	30	mg/L	1.0				
		Analysis Start Time	2024/07/16 14:36						
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	0.88	mg/L	0.10				
		Analysis Start Time	2024/07/16 13:08						
PS-12	TP	Total Phosphorus	0.64	mg/L	0.02				
		Analysis Start Time	2024/07/16 15:30						
PS-13	TSS	Suspended Solids	72	mg/L	2.0				
		Analysis Start Time	2024/07/16 10:00						

Analysis Notes:

Sample Condition: Ok

Senior Lab Analyst Approval: ASB

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Monica Klawunn

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01309072424112811

Client: Wastewater Collection **Submission #** 24S-01309

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X					**Sample ID**	24S-01309-01
Sample Point	X	**Sampled By**	Kelso R.						Regulatory
Sample Date	July 15, 2024	**Sample Time**	13:50	**Sample Period (Hrs)**				**SACI #**	1-8YCUGW
Sample Description	WW Pump Station Overflow								
PS-4	BOD	Total BOD	26	mg/L	1.0				
		Analysis Start Time	2024/07/16 14:36						
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	0.73	mg/L	0.10				
		Analysis Start Time	2024/07/16 13:08						
PS-12	TP	Total Phosphorus	0.79	mg/L	0.02				
		Analysis Start Time	2024/07/16 15:30						
PS-13	TSS	Suspended Solids	97	mg/L	2.0				
		Analysis Start Time	2024/07/16 10:00						

Analysis Notes:

Sample Condition: Ok

Senior Lab Analyst Approval: ASB

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Monica Klawunn

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01310072424112813

Client: Wastewater Collection **Submission #** 24S-01310

Method	Test Description		Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X					**Sample ID**	24S-01310-01
Sample Point	X	**Sampled By**	Jones J.						Regulatory
Sample Date	July 15, 2024	**Sample Time**	14:30	**Sample Period (Hrs)**				**SACI #**	1-8YEAAN
Sample Description	West River P.S. Overflow								
PS-4	BOD	Total BOD	20	mg/L	1.0				
		Analysis Start Time	2024/07/16 14:36						
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	0.58	mg/L	0.10				
		Analysis Start Time	2024/07/16 13:08						
PS-12	TP	Total Phosphorus	0.57	mg/L	0.02				
		Analysis Start Time	2024/07/16 15:30						
PS-13	TSS	Suspended Solids	88	mg/L	2.0				
		Analysis Start Time	2024/07/16 10:00						

Analysis Notes:

Sample Condition: Ok

Senior Lab Analyst Approval: ASB

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Monica Klawunn

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01306072424112806

Client: Wastewater Collection **Submission #** 24S-01306

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X					**Sample ID**	24S-01306-01
Sample Point	X	**Sampled By**	Balice A.						Regulatory
Sample Date	July 15, 2024	**Sample Time**	13:28	**Sample Period (Hrs)**				**SACI #**	1-8Y5OWJ
Sample Description	Pinedale P.S. Overflow								
PS-4	BOD	Total BOD	21	mg/L	1.0				
		Analysis Start Time	2024/07/15 14:31						
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	0.32	mg/L	0.10				
		Analysis Start Time	2024/07/16 13:08						
PS-12	TP	Total Phosphorus	0.82	mg/L	0.02				
		Analysis Start Time	2024/07/16 15:30						
PS-13	TSS	Suspended Solids	120	mg/L	2.0				
		Analysis Start Time	2024/07/16 10:00						

Analysis Notes:

Sample Condition: Ok

Senior Lab Analyst Approval: ASB

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Monica Klawunn

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01329072424112832

Client: Wastewater Collection **Submission #** 24S-01329

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X					**Sample ID**	24S-01329-01
Sample Point	X	**Sampled By**	Balice A.						Regulatory
Sample Date	July 16, 2024	**Sample Time**	13:50	**Sample Period (Hrs)**				**SACI #**	1-903Q8A
Sample Description	Ennisclare P.S Overflow								
PS-4	BOD	Total BOD	39	mg/L	1.0				
		Analysis Start Time	2024/07/17 13:25						
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	1.93	mg/L	0.10				
		Analysis Start Time	2024/07/17 15:51						
PS-12	TP	Total Phosphorus	0.89	mg/L	0.02				
		Analysis Start Time	2024/07/17 14:30						
PS-13	TSS	Suspended Solids	63	mg/L	2.0				
		Analysis Start Time	2024/07/16 10:00						

Analysis Notes:

Sample Condition: Ok

Senior Lab Analyst Approval: ASB

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Monica Klawunn

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01328072424112829

Client: Wastewater Collection **Submission #** 24S-01328

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X				**Sample ID**		24S-01328-01
Sample Point	X	**Sampled By**	Isabelle T.						Regulatory
Sample Date	July 16, 2024	**Sample Time**	11:20	**Sample Period (Hrs)**			**SACI #**		1-8ZPYZK
Sample Description	Fulton P.S. Overflow								
PS-4	BOD	Total BOD	64	mg/L	1.0				
		Analysis Start Time	2024/07/17 13:25						
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	1.94	mg/L	0.10				
		Analysis Start Time	2024/07/17 15:51						
PS-12	TP	Total Phosphorus	1.92	mg/L	0.02				
		Analysis Start Time	2024/07/17 14:30						
PS-13	TSS	Suspended Solids	160	mg/L	2.0				
		Analysis Start Time	2024/07/16 10:00						

Analysis Notes:

Sample Condition: Ok

Senior Lab Analyst Approval: ASB

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Monica Klawunn

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01375073124140144

Client: Wastewater Collection **Submission #** 24S-01375

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X					**Sample ID**	24S-01375-01
Sample Point	X	**Sampled By**	Balice A.						Regulatory
Sample Date	July 18, 2024	**Sample Time**	15:15	**Sample Period (Hrs)**				**SACI #**	1-93OUV3
Sample Description	First St P.S. Overflow								
PS-4	BOD	Total BOD	27	mg/L	1.0				
		Analysis Start Time	2024/07/19 12:07						
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	5.61	mg/L	0.10				
		Analysis Start Time	2024/07/22 15:02						
PS-12	TP	Total Phosphorus	0.69	mg/L	0.02				
		Analysis Start Time	2024/07/22 15:00						
PS-13	TSS	Suspended Solids	21	mg/L	2.0				
		Analysis Start Time	2024/07/22 15:13						

Analysis Notes:

Sample Condition: Ok

Senior Lab Analyst Approval: NLL

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Jordan Maltby

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01388080924145840

Client: Wastewater Collection **Submission #** 24S-01388

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X					**Sample ID**	24S-01388-01
Sample Point	X	**Sampled By**	Kelso R.						Regulatory
Sample Date	July 22, 2024	**Sample Time**	13:25	**Sample Period (Hrs)**				**SACI #**	1-96JC8J
Sample Description	Carrington Pump Station Overflow								
PS-4	BOD	Total BOD	110	mg/L	1.0				
		Analysis Start Time	2024/07/25 11:41						
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	19.8	mg/L	0.10				
		Analysis Start Time	2024/07/23 15:05						
PS-12	TP	Total Phosphorus	4.05	mg/L	0.02				
		Analysis Start Time	2024/07/23 15:45						
PS-13	TSS	Suspended Solids	180	mg/L	2.0				
		Analysis Start Time	2024/07/22 15:13						

Analysis Notes:

Sample Condition: Ok

Senior Lab Analyst Approval: NLL

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Alison Barnes

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-01447081624 82859

Client: Wastewater Collection **Submission #** 24S-01447

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X					**Sample ID**	24S-01447-01
Sample Point	X	**Sampled By**	Playfoot B.						Regulatory
Sample Date	July 29, 2024	**Sample Time**	14:48	**Sample Period (Hrs)**				**SACI #**	1-9EX7WC
Sample Description	Main St. Overflow								
PS-4	BOD	Total BOD	65	mg/L	1.0				
		Analysis Start Time	2024/08/01 11:40						
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	31.9	mg/L	0.10				
		Analysis Start Time	2024/07/30 14:21						
PS-12	TP	Total Phosphorus	4.00	mg/L	0.02				
		Analysis Start Time	2024/07/30 15:00						
PS-13	TSS	Suspended Solids	75	mg/L	2.0				
		Analysis Start Time	2024/08/01 12:15						

Analysis Notes: **Sample Condition:** Ok

Senior Lab Analyst Approval: NLL

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Alison Barnes

Certificate of Analysis

Regional Municipality of Halton
1135 Lakeshore Rd
Burlington, ON L7S 1A8
Phone: 905-825-6000 x 3030
Halton Regional Laboratory

Report ID: 24S-02150121924114234

Client: Wastewater Collection **Submission #** 24S-02150

Method		Test Description	Result Value	Units	Detection Limit	Low Obj.	High Obj.	Low Limit	High Limit
Sample Type	Sewer Overflow	**Location**	X					**Sample ID**	24S-02150-01
Sample Point	X	**Sampled By**	Playfoot B.						Regulatory
Sample Date	December 10, 2024	**Sample Time**	09:23	**Sample Period (Hrs)**				**SACI #**	1-EIJK1D
Sample Description	Agnes - SSO								
PS-4	BOD	Total BOD	63	mg/L	1.0				
		Analysis Start Time	2024/12/12 11:40						
PS-27	NH3-N (AQ400)	Total Ammonia Nitrogen	18.9	mg/L	0.10				
		Analysis Start Time	2024/12/13 10:55						
PS-12	TP	Total Phosphorus	2.70	mg/L	0.02				
		Analysis Start Time	2024/12/11 15:00						
PS-13	TSS	Suspended Solids	77	mg/L	2.0				
		Analysis Start Time	2024/12/12 14:23						

Analysis Notes:

Sample Condition: Ok

Senior Lab Analyst Approval: ASB

Results apply to the sample as received.

Analysis statistics such as uncertainty, significant figures and methods are available on request.

Supervisor Approval: Jordan Maltby

Appendix D – July 15 and 16, 2024 Flood Response Update (PW-25-24)

Report To:	Regional Chair and Members of Regional Council Andrew
From: Date:	Farr, Commissioner, Public Works September 18, 2024
Report No.:	PW-25-24
Re:	July 15 and 16, 2024 Flood Response Update

Recommendation

1. THAT Report No. PW-25-24, re "July 15 and 16, 2024 Flood Response Update", be received for information.

2. THAT the Regional Clerk forward a copy of Report No. PW-25-24 to the City of Burlington, the Town of Halton Hills, the Town of Milton and the Town of Oakville for their information.

Report

Executive Summary

- Between July 10, and July 16, 2024, Halton Region experienced five consecutive intense rainfall events, in short succession, resulting in 100 to 220 mm of total rainfall in isolated areas throughout the region.

- As a result, Halton Region received 4,400 flood-related calls over six weeks following the July 15 and 16, 2024, storm events. During the first two days, approximately 700 flood-related calls were received, in addition to the average of 1,800 calls received daily.

- A total of 1,897 basement flooding incidents were reported, including 1,620 in the City of Burlington, 124 in the Town of Halton Hills (Georgetown), 49 in the Town of Milton and 104 in the Town of Oakville.

- Of the basements that reported flooding, roughly 54 per cent were related to some sort of stormwater-induced wastewater system surcharging, with the remainder being directly flooded by stormwater. Some areas of Halton were inundated by floodwaters and flooding likely occurred from a combination of storm sewer/wastewater system surcharging and overland flow.

- For basements flooded with some sort of wastewater system surcharging, the homeowner and/or tenant were provided a $1,000 Ex-Gratia grant from Halton Region to help with the cost of flood-related clean-up, repairs or insurance deductible. As of August 29, 2024, a total of 929 Halton Region Ex-Gratia grant applications were processed by the Region.

- On July 19, 2024, the City of Burlington's Council approved a $1,000 Flood Relief grant, for homeowners and/or tenants who were ineligible for Halton Region's Ex- Gratia grant and whose basement was flooded with stormwater. Flood assessment data for 712 properties were sent to the City of Burlington to help process Flood Relief grants.

- Over the coming months staff will analyze a significant amount of wastewater system performance data and rainfall information collected since 2015 and during the July 2024 storm events. This analysis will inform future initiatives to further reduce the risk of basement flooding wastewater system surcharging throughout Halton.

Background

Between July 10 and July 14, 2024, Halton Region experienced five rainfall events in quick succession, impacting different isolated areas of the region.

On July 15 and 16, 2024, properties throughout Halton were impacted by stormwater flooding, and wastewater system surcharging, with the northwest and southeast areasin the City of Burlington most significantly impacted.

Halton Region has not experienced flooding of this extent since August 4, 2014. The 2014 rainfall event was considered a 1-in-200-year storm and resulted in over 6,000 flood- related calls of which 3,500 calls were reports of basement flooding.

Following the August 2014 storm event, Halton Region conducted a comprehensive review of the wastewater system. That review concluded the wastewater system wasin good condition and operated well during dry weather and typical rain events. It also concluded that the basement flooding was a result of excessive amounts of stormwater entering the wastewater system, also called rain derived inflow and infiltration(I/I). That excessive I/I overloaded the wastewater system, causing diluted wastewater to backup into basements.

To reduce the risk of basement flooding due to stormwater-induced wastewater system surcharge, the Region-Wide Basement Flooding Mitigation

Program (the Program) was established in 2015 through Report No. PW-22-15. The Program focused on reducing public and private sources of excessive inflow and infiltration (I/I) from entering the Region's wastewater collection system and to build resiliency in the wastewater collection system to more frequent and intense storms.

Halton Region has made significant investments in the wastewater system over the past decade to reduce the amount of stormwater that enters the wastewater system. Although system analysis is still underway, these investments have reduced the extent, severity and duration of flooding that occurred during the July storms.

Discussion

July 2024 Storm Characterization and Impact

Between July 10, and July 16, 2024, Halton Region experienced five consecutive intense rainfall events in short succession, that resulted in between 100 and 220 mm of total rainfall in isolated areas throughout the region.

The first three rainfall events on July 10, July 12, and July 14 produced more than 100 mm total rainfall in some areas. As a result, soils were completely saturated and stormwater systems were flowing near or at capacity. Halton Region did not receive any reports of basement flooding during these events.

Based on preliminary analysis from Halton Region's flow monitoring network, in areas most impacted by these three storm events, the wastewater system flows were approximately two to five times higher than normal from all the stormwater inflow and infiltration that entered the system.

On July 15, the City of Burlington received up to 74 mm of rain, and the Town of Oakville received up to 60 mm. Then on July 16, the Town of Halton Hills received up to 79 mm of rain, the Town of Milton up to 70 mm and the Town of Oakville up to 52 mm of rain. See Attachments #1 and #2 (Maps) that illustrate the total volume of rainfall in a given area in relation to the July 15 and 16 storms.

Rainfall peak intensity for the July 15 storm (measured in mm per hour) at several rain gauge locations in the northwest area of the City of Burlington, was equal to or exceeded a 1-in-100-year storm event (over a 1-hour duration). The July 16 storm was equal to or exceeded 1-in-50-year storm (over a 1-hour duration) and was centered over a rural area of the Town of Halton Hills just west of Georgetown and north of the Town of Milton.

These two intense storms resulted in flash flooding in areas most impacted by rainfall, with stormwater systems, creeks, roads, ditches and swales overflowing.

In certain areas, the wastewater system already flowing high from previous storms, was overwhelmed with the additional I/I from the intense rainfall

resulting in system surcharging, which caused wastewater to back up into basements.

As of August 29, 2024, Access Halton received over 4,400 flood-related inquiries. During the first two days, approximately 700 flood-related calls were received, in addition to the 1,800 calls received on an average day.

Flood related calls were categorized as follows: general flooding reports, including basement flooding reports (3,128); enhanced waste collection (363); grant eligibility and applications (327); and flood mitigation and subsidy (268).

A breakdown of the number of homes that reported basement flooding by municipality and ward is below.

	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	**Total**
Burlington	144	212	641	374	220	29		1,620
Halton Hills		5	38	81				124
Milton	33	8	1	7				49
Oakville	33	22	11	6	10	17	5	104

See Attachments #3, #4 and #5 (Maps) that illustrate the density of reported basement flooding related to the July 15 and 16 storm events.

Of the basements that reported flooding, roughly 54 per cent involved some degree of stormwater-induced wastewater system surcharging. The rest flooded with stormwater from public and private sources.

Comparison to 2014 Storm

Compared to the August 2014 storm event, the peak intensity of the July 15 and 16 storm events were just as intense in a one-hour window but did not last as long. The July 2024 storms only lasted one hour as opposed to three hours in 2014.
In 2014, up to 200 mm total rain fell within eight hours in the City of Burlington, which was over twice as much rain over a longer duration when compared to the July 15 and 16, 2024 events.

On July 15, up to 74 mm of rain fell over five hours over the City of Burlington and the Town of Oakville, while on July 16 up to 79 mm was recorded in six hours in the Townof Milton, the Town of Halton Hills. Please refer to the table below for a major storm event comparison.

Extreme Rainfall Event	Max. One Hour Peak Intensity (mm/hr)	One Hour Peak Intensity Duration (hrs)	Total Rainfall (mm)	Total Rainfall Duration (hrs)
Aug 2014 'Burlington'	56	3	200	8
July 15, 2024 'Burlington'	55	1	74	5
July 16, 2024 'rural Milton and Halton Hills'	52	1	79	6

One significant factor that differentiated the 2014 from the 2024 storm related flooding is that in 2024 there were several intense rainfall events in short succession (July 10, 12 and 14, 2024) that preceded the larger events on July 15 and 16, 2024. This created ideal conditions for flash flooding and contributed to the extent of basement flooding in 2024.

Flood Response

This section outlines the Region's response during and after the July 15 and 16, 2024 storm events.

Access Halton/311 Call Response

On July 15, 2024, shortly after the heavy rain began, Access Halton/311 began receiving reports of overland and basement flooding from residents within the City of Burlington and the Town of Oakville. Then on July 16, 2024, after the second round of rainfall began, Access Halton/311 started receiving reports of basement flooding from residents in the Town of Milton and the Town of Halton Hills.

Access Halton staff, followed already established scripts and gathered key information from each caller to determine how to properly transfer calls as follows:

- Reports of overland flooding (e.g., roads, overflowing creeks) were transferred to the appropriate local municipality.
- Reports of basement flooding (e.g., water and/or sewage entering the home through the basement drain) were connected to Halton Region's Public Works staff for follow up.

As more information was available and as the flood event continued, Access Halton/311 scripts were adjusted to improve communication to the resident and between the Region and the Local Municipalities.

Field Response

In response to high flow notifications from wastewater pumping stations, operations crews were dispatched to ensure that each station was operating properly, flows were being managed, and that all regulatory sampling and reporting procedures were being followed.

Additional operations staff were called in as flows as the number of pump stations most impacted by storms increased. Up to 14 wastewater pumping stations were being closely monitored during and after the storm events. The Ministry of Environment, Conservation and Parks was kept informed as system flows increased and localized overflows were occurring at seven pumping stations.

Halton Region's pumping stations are designed to overflow when the station capacity is exceeded to protect properties from flooding. Treatment plant influent flows were also being carefully monitored. Staff monitored the regional road network to address any localized flooding or road damage due to the storm.

Public Works field staff responded immediately to basement flooding calls and continued to respond for more than six weeks after the July 15 and 16 storm events as follows:

- Staff completed a flood assessment for each individual property.
- As call volumes increased, a mixed approach of scheduled and unscheduled visits was used. Staff were assigned to highly impacted areas, to go door-to-door to complete flood assessments, rather than to schedule appointments.
    - Printed information on how to schedule an appointment was left at the home, if residents were unavailable.
- All non-essential work was suspended to focus on in-home flooding assessments.
- As the flood calls continued to come in, working hours were adjusted to include evenings and weekend to accommodate residents.

Flood Communications

The following outlines communications, during and after the flood, to help residents know what to do and who to call if they flooded.

- Information on the steps a resident should take when experiencing a basement flood was communicated on the Region's website, halton.ca/flood, all social media channels, and to Regional Council.
- Public Health staff provided accurate information on what to do after the flood (including clean-up) and how to mitigate potential health impacts related to mould, indoor air quality, and food safety to residents.
- The 311 temporary queue message was updated directing callers to Halton Region's website and to provide assurance of a call back.

- Access Halton leveraged the third-party answering service (AnswerPlus) to support overflow calls and after-hours intake.
- Access Halton call scripts were also updated with additional questions to gather more information from residents to better triage reports.
- Nine flood response updates were provided via email to Regional Council.
- Communications were geographically targeted (via Google and social media advertising) to the areas most impacted in the region.

Flood Recovery Supports

In addition to the direct in-the-field response described above, Halton Region provided the following flood recovery supports to Halton residents:

Halton Region's Ex-Gratia Grant

Halton Region's existing Ex-Gratia Grant Program provides $1,000 to property owners or tenants, who experienced a basement flood due to wastewater surcharging. The grant is intended to help property owners/tenants offset the cost of an insurance deductible or to help with flooding-related cleanup or repair costs. To be eligible for the grant, homeowners/tenants needed to call Access Halton/311 to report flooding and have an in- home flooding assessment completed to determine the source of flood.

As of August 29, 2024, Halton Region processed 929 Ex-Gratia grant applications for property owners and/or tenants.

Burlington Flood Relief Grant

On July 19, 2024, the City of Burlington approved a Flood Relief grant of $1,000 to help homeowners and tenants, who were ineligible for the Region's Ex-Gratia grant as they experienced stormwater-related basement flooding.

To help streamline the application process and expedite residents receiving the grant funds, the Region carried out the initial in-home flood assessment and provided the applicable Halton or City of Burlington grant application, along with instructions on how to fill out and submit each type of application.

Halton also communicated with those homeowners who were originally told they were ineligible for Halton Region's Ex-Gratia grant, to let them know they may now be eligible for a City of Burlington Flood Relief grant.

The City of Burlington Flood Relief grant applications were distributed to property owners and/or tenants at 716 properties throughout Burlington that were flooded with stormwater.

Enhanced Curbside Waste Collection

To help residents manage any waste generated from flood clean up, Halton Region provided enhanced waste collection services between July 22 and August 2 for property owners who reported flooding to Access Halton. Limits on garbage and bulk items were temporarily waived.

Additional collection crews were dispatched to the most impacted areas, and regular curbside collection service was maintained for those not impacted by flooding. Approximately 1,300 residences received this service, and crews safely collected over 180 tonnes of material.

Residents were able to drop off household hazardous waste and building and demolition debris during regular hours at the Halton Waste Management Site. Metal and appliance/white goods collection was arranged by appointment.

Canadian Red Cross Supports

Halton Region identified several Burlington neighbourhoods that were significantly impacted by basement flooding that may also have required additional financial support or may not have been connected to Halton Region's regular communications channels where information is typically accessed.

In partnership with Halton Region and the City of Burlington, between July 19 and August 11, Canadian Red Cross volunteers from across the Greater Toronto Area went door-to- door in these neighborhoods visiting 1,686 homes. Volunteers were able to complete wellness checks and provide information about flood recovery support and flood prevention materials (translated into Halton Region's top five spoken languages) to 1,367 households. The 81 per cent response rate for completing these wellness checks was unprecedented.

Regional staff also referred thirteen households that needed hotel accommodations (up to 72 hours) and/or financial assistance for food, laundry, and personal items to the Canadian Red Cross Enhanced Personal Disaster Assistance Program. Six households were then also referred to Halton's Housing Services for longer term housing supports.

Wellness checks conducted by the Canadian Red Cross did not lead to any additional referrals for 72-hour supports, as most impacted households sought information about available grant programs and support cleaning up from flood related damage.

Basement Flooding Mitigation Communications

As flood-related calls began to steadily decrease and recovery supports were in place, staff began an educational marketing campaign focused on flood mitigation.

Halton Region promoted its Enhanced Basement Flooding Prevention Subsidy Program which provides financial incentives to property owners who make home improvements to reduce the risk of flooding from sewer backup.

Other key flood prevention measures advertised include relatively easy and inexpensive fixes to reduce the risk of stormwater-related flooding, such as ensuring downspouts, eavestroughs (gutters), window wells and floor drains are clear of debris, ensuring yards slope away from the house, and installing weather protective sealant around basement windows and ground-level doors.

A combination of digital and community-based advertising methods was used, including advertising through The Weather Network, Village Media, Meta and Google. Information was also distributed through our Local Municipal partners and promoted through targeted road-side signs. In addition, seven educational videos were created and promoted featuring Halton Region staff with expertise in flood prevention. The campaign has resulted in over 1.8M impressions and the educational videos have a combined 86K views across all channels to date.

Region-Wide Basement Flooding Mitigation Program

In 2015, in response to the August 2014 storm event, Regional Council approved the implementation of the Region-Wide Basement Flooding Mitigation Program, through Report PW-22-15. This program was established to:

- Reduce public and private sources of inflow and infiltration (I/I) from entering Halton Region's wastewater collection system; and,
- Build resiliency in the wastewater collection system to reduce the risk of future basement flooding.

As noted in Report PW-08-22, which provided an update on the on-going Region-wide Basement Flooding Mitigation Program" Halton Region has invested over $78 million to date in the following areas:

<u>System Performance Monitoring Program</u>

Since 2015, Halton Region has invested $7.1 million in system performance monitoring to better assess system performance and detect areas of inflow and infiltration. A permanent wastewater flow monitoring system was implemented with over 140 flow and depth sensors strategically placed throughout the wastewater system.

Halton Region has also partnered with Conservation Halton to gain access to 30 additional rain gauges managed by the Local Municipalities and other partners.

This data is used to inform the hydraulic model that analyzes system performance to support operational decision-making and the identification of

infrastructure improvements.

Sewer System Optimization Program

Since 2015, Halton Region has invested over $60.5 million in targeted spot repair, pipelining and replacements to specifically reduce I/I. In total 424 spot repairs, 328 pipe lining, and 27 open cut repairs have been completed across the region.

In addition, over the past ten years, through the State-of-Good-Repair Capital Replacement Program, Halton Region has invested approximately $63.7 million for sanitary sewers replacement across the region. These Capital projects were prioritized based on risk, criticality, coordination with local municipalities, age, and condition of the asset according to Halton's Asset Management Program. These activities ensure the Region's wastewater system continues to meet service levels and performs properly.

Private Side Inflow and Infiltration Reduction

A total of $10.4 million has been provided to residents through several programs to assist homeowners with disconnecting private sources of stormwater from the wastewater system, as well as protect their home through the installation of backwater valves. The table below provides a summary of the work completed under the various private side programs since 2015.

	Downspout Disconnect	Weeping Tile Disconnect	Lateral Repair	Backwater Valve	Total by Program	Total Investment
Full Coverage Program	14	123		115	252	$ 1.1 M
Targeted Downspout Disconnection Program	3,385				3,385	$ 5.4 M
Enhanced Subsidy Program	137	365	847	646	1,995	$ 3.9 M
Totals	**3,536**	**488**	**847**	**761**	**5,632**	**$ 10.4 M**

Wastewater System Response to July 2024 Storms

The July 15 and 16, 2024, intense storms resulted in 1,897 reports of flooded homes, throughout the region. Approximately 54 per cent (1,015) of those were due to stormwater-induced wastewater system surcharge and the remainder were flooded directly with stormwater from public and private sources.

Halton Region employs a network of pumping stations to convey wastewater to the Region's wastewater treatment plants. To protect up stream properties from flooding, stations are designed to overflow when flows have greatly exceeded the peak capacity of each station's pumping capacity so that excess flows are removed from the system by gravity without reliance on pumping.

Treatment plants are also designed to overflow to protect upstream areas and the treatment process during extremely high flow events. During the storm July 15th and 16th storms seven of the Region's wastewater pumping stations in areas most impacted by the storms were overflowing as designed with all incidents reported the Ministry of Environment, Conservation and Parks as required. Due to high influent flows, overflows were recorded at the Oakville Southeast and Georgetown Wastewater Treatment Plants as well as the Fourth Line overflow location by the Oakville Southwest Wastewater Treatment Plant.

As outlined in several reports to Regional Council since the August 2014 storm, Halton Region continues to invest in the Region-wide Basement Flooding Mitigation Program to reduce the amount of stormwater that enters the wastewater system from both public and private sources. Although the wastewater system is designed to accommodate a nominal amount of stormwater and groundwater I/I, it is unable to accommodate excessive I/I amounts that can lead to system surcharges and basement flooding like those experienced during the August 2014 and July 2024 storms.

Although detailed analysis is still ongoing, excessive stormwater I/I entering wastewater systems is the suspected cause of localized system surcharging of wastewater backups into basements from the July storm events.

During extreme storms, such as those in August 2014 and July 2024, properties and basements can flood with stormwater due to the overflow of creeks, roads, ditches, and swales, as well as the surcharging of storm sewers.
One example that highlights how the stormwater system directly impacts thewastewater systems was seen in the Cavendish Drive area in the City of Burlington. This area was inundated by floodwaters, which filled basements with stormwater. The wastewater system was quickly overwhelmed in the area. The stormwater in these homes drained into the wastewater system and impacted downstream areas. Detailed analysis of this area is still ongoing to better understand system impacts. Other areas in the Region were similarly impacted by surface flooding.

Because of the direct relationship between stormwater flooding and wastewater system surcharging, any improvement to the public or private stormwater systems that reduces the risk of overland flooding, will also reduce the risk of wastewater system surcharges.

In the coming months, staff will perform more in-depth analysis to better understand how Halton Region's wastewater system responded to the July 2024 storm events in each affected area. This information, along with the findings collected from in-home inspections and any household drainage surveys completed, will provide valuable insight into the cause of wastewater system surcharge and will be crucial to determining the next steps to further mitigate the risk of basement flooding.

Close collaboration with the Local Municipalities and residents will be key to identifying and coordinating any stormwater system improvements to help reduce the risk of basement flooding and make the stormwater and wastewater systems more resilient to the effects of climate change.

Future Opportunities and Improvements

The following sections outline opportunities and improvements that will be explored to improve the Region's flood response or enhance the Region-Wide Basement Flooding Mitigation Program. This summary of initiatives is not an exhaustive list, as further opportunities may be identified as the Region continues analyze system performance in relation to the July 2024 storm events. Staff will also network with other municipalities and utilities to share best practices in flood response and mitigation.

Household Drainage Surveys

Household drainage surveys provide important information to Halton Region and the Local Municipalities about their systems. They are conducted on-site and review the home's connections to the wastewater and stormwater systems. Site drainage around the home is also inspected. The assessment is provided to homeowners to help them understand how to better mitigate flooding in their home and outlines next steps they can take.

Currently Halton conducts household drainage surveys in targeted areas that have experienced basement flooding during rain events, at no cost to the homeowner. In the future, Halton Region will consider expanding this service to the broader public in collaboration with the Local Municipalities.

Private Side Disconnection Program

Some areas in the Region, specifically those built before 1978, continue to experience excessive storm-related infiltration and inflow. Although these areas have been targeted by Halton Region with increased communication to encourage participation in the voluntary disconnection programs, participation has been limited.

A significant increase in participation would be required to achieve a notable decreased risk in surcharging due to excessive I/I in these older areas and increase the resiliency of the system to future extreme storm events.

Staff will review the existing subsidy programs to explore opportunities to increase participation in older areas and in areas known to have high inflow and infiltration. The implications, costs and implementation considerations will need to be identified and carefully reviewed. Staff anticipate that studies will be initiated over the next year.

Future Growth and Infill

Halton Region identifies and plans for required expansions and upgrades to the wastewater system through its Water and Wastewater Master Planning process. Currently, a Master Plan is being developed to service growth in Halton Region to 2051 and an essential first step is identifying the level of service that new infrastructure will be designed to and the criteria that will be used to determine whether intensification in existing communities can be accommodated without negatively impacting the existing wastewater system.
When reviewing development applications related to intensification, staff use the Region's hydraulic model and flow monitoring data to determine if existing wastewater infrastructure can accommodate increased flows from development.

New developments are constructed with up-to-date standards that prohibit any direct stormwater or groundwater connections to the wastewater system.

Inter-Agency Collaboration

In recognition of the direct relationship between stormwater from public and private sources and basement flooding related to wastewater system surcharges, Halton Region will continue to participate in the inter-jurisdictional working group (established in 2015) to discuss and develop collaborative strategies with the Local Municipalities and Conservation Authorities to strengthen inter-agency cooperation and reduce future flooding risks.

Areas to be discussed will continue to include the sharing of data and information, coordination of any infrastructure improvements to the Local Municipalities' stormwater system or the Region's wastewater system, alignment of mutually supportive policies and programs as well as enhanced flooding communications to the public to also.

Call Data and Council Notifications

Access Halton's data can help identify significant community events early, emphasizing the need for timely customer call data collection and collaboration with Emergency Management, Local Municipalities, and program areas for timely emergency responses.

Report No. ST-07-21 re: "Digital Strategy and Audit and Accountability Fund Update" recommended upgrading Halton Region's Customer Relationship Management system from Siebel to Salesforce. This recommendation forms part of the broader Customer Relationship Management System modernization review, which is currently underway and will enhance data collection, reporting, and alerting capabilities of Access Halton.
Reviving Access Halton's participation in the 311-community working group with the Local Municipalities provides an opportunity to renew and enhance important partnerships with the local municipalities, Emergency Management and the specific program areas within the Region to set up clear processes for identifying and flagging emerging issues through Standard Operating Procedures.

It will be key to improve and streamline the collection of home flood assessment data and improve reporting capabilities to share this information quickly between the Region and Local Municipalities.

Additionally, as Halton Region continues with its digital strategy, more services will become available, making it easier for customers to access information online and manage a surge in volumes, especially during emergencies.

Next Steps

Extreme storm events have been occurring with increasing frequency in communities across Ontario, Canada and worldwide.

Municipalities are struggling with the reality that it is not always feasible to design, construct and retrofit wastewater and stormwater systems to accommodate extreme storm events. This is especially true for existing systems that have been in place for decades. Although the risk of flooding cannot be eliminated, we can however reduce the risk of flooding through continued best practices in stormwater management and reducing sources of stormwater from entering the wastewater system.

In the coming months, Halton Region will continue to perform more in-depth analysis with information collected during the July 2024 storms to better understand how Halton Region's wastewater system responds to wet weather in each affected area.

In addition, as outlined in this report, Halton Region will continue to build on the work initiated after the August 2014 storm events to further enhance the Region-wide Basement Flooding Mitigation Program.
This work will require the participation of all stakeholders including residents, businesses, and close collaboration between the Region and Local Municipalities and Conservation Authorities.

Staff will provide Regional Council with updates as work progresses.

Financial/Program Implications

Claims from both homeowners and insurance companies have been received and are being addressed by Legal Services. Details can be found in Confidential Attachment #6.

The projected cost of the ex-gratia grants, basement flooding prevention subsidies, and other costs related the flooding in July 2024 will be reported to Council through the Operating Variance report in October 2024. The final overall financial impact of the flood will be reviewed as part the year-end analysis, and if required, a transfer from the Rate Stabilization reserve will be made to offset any overall unfavourable variance.