

Niagara Region 2025 Wastewater Annual Performance Report: Executive Summary

Purpose of the Executive Summary

Niagara Region owns and operates 11 active wastewater treatment facilities and 10 wastewater collection systems. Each wastewater treatment plant (WWTP) and collection system is required to complete a performance report annually for submission to the Ministry of the Environment, Conservation and Parks (MECP).

The purpose of this summary is to highlight the overall performance of all wastewater treatment and collections systems owned and operated by the Niagara Region. This summary includes the following information:

- Compliance performance
- Wet Weather Performance
- Summary of Spills
- Summary of Complaints
- Maintenance and Capital Upgrade Summary

A more fulsome coverage of plant performance by system is available in the system specific annual performance report.

Summary of Compliance Performance

Each wastewater system is regulated by a site-specific Environmental Compliance Approval (ECA) with defined conditions and requirements. Compliance performance for most facilities is determined by comparing monthly average final effluent quality to monthly average discharge limits outlined in the ECA. Effluent quality is determined by measuring carbonaceous biochemical oxygen demand (CBOD), total suspended solids (TSS), total phosphorus (TP), pH, E.Coli, total chlorine residual (TRC) and ammonia (NH₃) where applicable. When the monthly average of a measured parameter is greater than the ECA discharge limit, the plant is non-compliant and reported to the MECP. Samples of the influent and effluent are collected by licensed operators and sent to the Region's accredited laboratory for testing.

Table 1 below outlines wastewater system compliance performance for the reporting year 2025.

While most facilities are regularly achieving compliance, Anger Avenue WWTP, Baker Road WWTP, Niagara Falls WWTP, Port Weller WWTP, Queenston WWTP, Stevensville-Douglastown Lagoon and Welland WWTP had instances of non-compliance in 2025.

Table 1 - Summary of Plant Compliance Performance for 2025. “Yes” indicates all compliance limits were achieved for that month. Where “No” is displayed, this means one or more compliance limit was not met for that month.

System Name	January	February	March	April	May	June	July	August	September	October	November	December
Anger Avenue (Fort Erie)	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baker Road (serving Grimsby, Lincoln, West Lincoln)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Crystal Beach	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Niagara Falls	No	No	No	No	No	No	Yes	No	Yes	Yes	Yes	No
Niagara-on-the-Lake	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Port Dalhousie (serving St. Catharines and Thorold)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Port Weller (serving Niagara-on-the-Lake, St. Catharines and Thorold)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Queenston	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seaway (Port Colborne)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stevensville-Douglastown Lagoon ¹	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Welland (serving Pelham, Thorold and Welland)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

¹ While most facilities have a monthly average compliance limit, Stevensville-Douglastown has annual compliance limits for most parameters and seasonal compliance limits for ammonia. The table above indicates if a monthly average was above the ECA annual or seasonal average limit. The annual ammonia average limit for January through April and November and December as well as the annual ammonia average limit for May through October was not met.

Summary of Wet Weather Performance

All of Niagara Region's wastewater treatment and collection systems are influenced by wet weather events. The amount of wet weather entering the wastewater systems depends on a number of factors including:

- Volume, duration and intensity of precipitation events;
- Accumulation of snow/snow melt;
- The number of weather events and how close together the events occur;
- If the system was designed to collect sanitary and stormwater; and
- The age and condition of the sewers

Most of the wastewater collection systems across Niagara Region are considered separated or nominally separated and, in an ideal situation, would not be influenced by wet weather. System deficiencies such as connections of roof leader or foundation drains as well as leaky pipes, joints and maintenance holes can result in inflow and infiltration during wet weather. This increases flow to the sanitary sewer collection system. To protect downstream wastewater treatment plant processes and to prevent basement flooding, the wastewater treatment facilities and the collection systems have been designed to overflow to the environment in times of excess flow.

In 2025, a total of 67,485 million litres (ML) of wastewater received full treatment at Niagara Region wastewater treatment facilities. In the same period, a total volume of 1,370 ML of combined sewage was discharged to the environment with partial or no treatment during wet weather events. This equates to 98% of all wastewater collected receiving full treatment prior to discharge to the environment. Table 2 below summarizes overflow volumes for each wastewater system.

In 2025, Niagara Region contributed \$4.0M to support overflow reduction activities through a cost sharing program with local area municipalities. A total of 16 projects were approved for cost sharing in this reporting year. Details of activities related to the reduction of bypasses and overflows are included in each individual wastewater system performance report.

Table 2: Table summarizing wet weather overflow volumes and level of treatment by wastewater system for reporting year 2025.

Wastewater System Name	Total Volume of Plant Overflows with partial treatment (ML)	Total Volume of Plant Overflows with no treatment (ML)	Total Volume Collection System Overflows (ML)
Anger Avenue (Fort Erie)	51.711	-	-
Baker Road (serving Grimsby, Lincoln, West Lincoln)	75.883	-	82.577
Crystal Beach	-	-	-
Niagara Falls	108.362	45.797	57.524
Niagara-on-the-Lake	-	-	0.017
Port Dalhousie (serving St. Catharines and Thorold)	141.783	-	1.150
Port Weller (serving Niagara-on-the-Lake, St. Catharines and Thorold)	392.344	1.728	1.878
Queenston	-	-	-
Seaway (Port Colborne)	-	-	1.400
Stevensville-Douglastown Lagoon	-	-	-
Welland (serving Pelham, Thorold and Welland)	407.413	-	-
Total:	1,177.496	47.525	144.546

Wet weather discharges are included in each annual performance report and provide further details such as event date and sampling and analysis results.

Summary of Spills

Niagara Region strives to maintain and operate wastewater infrastructure so spills to the environment do not occur. However, circumstances arise where a spill occurs due to equipment malfunction, failure or other reasons.

Incidents of spills are reported to the MECP Spills Action Centre and Niagara Region Public Health upon discovery. Spills are investigated and written reports are submitted to the MECP and Environment and Climate Change Canada as required by legislation. All spills are communicated to Regional Council through a memo included in the Councillors weekly correspondence distribution.

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Table 3 below summarizes spills that occurred at a Niagara Region wastewater treatment facility or from a wastewater collection system. Further details regarding incidents of spill are included in each annual performance report where applicable.

Table 3: Table summarizing spills that occurred in 2025 at a Niagara Region wastewater treatment facility or from a wastewater collection system.

Wastewater System	Spill at Treatment Facility	Spill in Collection System
Anger Avenue (Fort Erie)	1	0
Baker Road (serving Grimsby, Lincoln and West Lincoln)	1	3
Crystal Beach	1	0
Niagara Falls	2	0
Niagara-on-the-Lake	0	0
Port Dalhousie (serving St. Catharines and Thorold)	0	1
Port Weller (serving Niagara-on-the-Lake, St. Catharines and Thorold)	0	0
Queenston	0	-
Seaway (Port Colborne)	1	0
Stevensville-Douglastown Lagoon	0	0
Welland (serving Pelham, Thorold and Welland)	2	0
Total:	8	4

Summary of Complaints

In 2025, a total of 78 complaints were received regarding the operation of wastewater treatment and collection systems across Niagara Region. When a complaint is received, Operations staff attend the site to verify the complaint. Corrective actions are taken as needed upon verification of any issue. Below in table 4 is a summary of the number of complaints received by wastewater system. In 2025, a significant increase in complaints was experienced at Port Weller WWTP. This was caused by operational issues experienced with aging mechanical aerators on site.

Table 4: Summary of complaints received in 2025 by wastewater system.

Wastewater System	Treatment Facility Complaint	Collection System Complaint
Anger Avenue (Fort Erie)	0	1
Baker Road (serving Grimsby, Lincoln and West Lincoln)	6	9
Crystal Beach	1	1
Niagara Falls	4	4
Niagara-on-the-Lake (NOTL)	0	0
Port Dalhousie (serving St. Catharines and Thorold)	5	6
Port Weller (serving Niagara-on-the-Lake, St. Catharines and Thorold)	35	3
Queenston	0	0
Seaway (Port Colborne)	0	1
Stevensville-Douglastown Lagoon	0	0
Welland (serving Pelham, Thorold and Welland)	0	2
Total:	51	27

Major Maintenance and Capital Upgrades

Niagara Region works to keep wastewater infrastructure in a state of good repair. Maintenance activities completed include regular preventative maintenance (PM) activities and normal and emergency equipment repair or replacement. Where a substantial amount of upgrade is required, this work is carried out under the capital works program.

Below in table 5 is a summary of normal and emergency maintenance activities carried out on major equipment and capital upgrades for all Niagara Region wastewater systems.

This list does not include normal minor maintenance or preventative maintenance activities.

Table 5: Summary of major maintenance and capital upgrade by wastewater system. This does not include minor maintenance or regular preventative maintenance activities.

Wastewater System	Major Maintenance Completed	Capital Upgrades Complete or Ongoing
Anger Avenue (Fort Erie)	<ul style="list-style-type: none"> • Rebuild and install of secondary clarifier #2 gearbox completed • Secondary clarifier weir repairs • Rebuild of scum arm on secondary clarifier #1 • Repairs to storm tanks • Rebuild raw sewage pump #1 • Repairs to discharge raw sewage pump discharge piping • Rebuild of waste sewage pump #1 • Repairs to digester gas flare stack • Dominion Road SPS – rebuild pump #2 • Lakeshore Road SPS – rebuild of pump #2, spare pump rebuild, new discharge piping, check valves, isolation valves, installation of temporary station bypass equipment • Rose Avenue SPS – rebuild of pump #3, repair of variable frequency drive (VFD) 	<ul style="list-style-type: none"> • Cleanout of biosolids storage tank and valve replacement • Lakeshore Road SPS sustainability and capacity upgrade (2027) • Catherine Street SPS sustainability and capacity upgrade (on hold)

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Wastewater System	Major Maintenance Completed	Capital Upgrades Complete or Ongoing
Baker Road (serving Grimsby, Lincoln and West Lincoln)	<ul style="list-style-type: none"> • Repair of digester gas booster • Repair of aeration blower #3 • Repair of secondary clarifier #2 distribution gate • Replacement of raw sewage pump #5 • Jordan Valley SPS – rebuild of pump #2 • Victoria SPS – repair of forcemain • Ontario Street SPS – repair of forcemain, rebuild of pump #1 and #2 • Woodsvie SPS – replacement of pump #3 	<ul style="list-style-type: none"> • Plant capacity upgrade – environmental assessment and pre-design • Imported sewage receiving station improvements –design • Jordan Valley SPS station and forcemain upgrade - design • Bal Harbour SPS station upgrades - construction • Lake Street SPS station upgrades - design • Lakewood Gardens SPS station upgrade - design • Victoria Avenue SPS forcemain upgrade - design • Biggar Lagoon SPS station upgrades- design • Streamside SPS station upgrades – design • Smithville servicing study • Woodsvie SPS station upgrades – design
Crystal Beach	<ul style="list-style-type: none"> • Replacement of four sewage lift pumps • Digester recirculation pump replacement • Replacement of secondary clarifier gear drive 	<ul style="list-style-type: none"> • Shirley Road SPS station upgrades

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Niagara Falls	<ul style="list-style-type: none"> • Ongoing maintenance/repairs to Rotating Biological Contactors • Rebuild of raw sewage pump #2 and #3 • Rebuild of grit tank chemical mixer #2 • Polymer containment cleanout • Rebuild of digester gas compressor • Replacement of grit system valves • Ongoing maintenance or primary clarifiers including rebuild of chain and flights and replacement of chain pins/retainers • Rebuild of secondary sludge pump #1 • Chlorine contact tank cleaning • Bender Hill SPS <ul style="list-style-type: none"> ○ Rebuild of pump #1 • South Side Low Lift SPS – purchasing of new pumps, rebuild of pump #1, siphon chamber cleaning • Central SPS <ul style="list-style-type: none"> ○ Replacement of pump impellers on pumps #1, #2, #3, #4 and #5 ○ Electrical repairs ○ Rebuild of pump #5 • Muddy Run SPS <ul style="list-style-type: none"> ○ Rebuild of pump #2 ○ Installation of new style of sewage pump 	<ul style="list-style-type: none"> • Plant phase one secondary treatment upgrades - construction • Plant phase two primary treatment upgrades - design • Bender Hill SPS station upgrade – construction anticipated for 2026 • Mewburn SPS station upgrade – construction anticipated for 2026 • Rolling Acres SPS – design • Thundering water trunk sewer rehabilitation – construction anticipated for 2026

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Niagara-on-the-Lake (NOTL)	<ul style="list-style-type: none"> • Rebuild of hauled sewage pump • Rebuild of effluent pump #2 • Rebuild of sludge mixing pump • Rebuild of return activated sludge pump • Replacement of four clarifier gearboxes and motors • Purchase of new digester recirculation pump • Purchase of new digester mixing pump • Ricardo Street SPS – rebuild of pumps #1 and #2 • Stone Road SPS – rebuild of pumps #1 and #2 • Front Street SPS – rebuild of pump #2 – spare installed in its place 	<ul style="list-style-type: none"> • Decommissioning of the Niagara-on-the-Lake Lagoon – ongoing • William Street SPS – generator replacement
Port Dalhousie (serving St. Catharines and Thorold)	<ul style="list-style-type: none"> • Replacement of primary sludge pump • Replacement of west grit screw and wear bar • Transferred sludge and cleared plugged piping in sludge loading tank • Purchased three-way valve for digester • Replacement of sprockets and main drive chain on east primary clarifier • Replacement of #2 check valve, piping and hardware • Renown SPS – forcemain repair 	<ul style="list-style-type: none"> • Digester cleanout/instrumentation upgrade • Waste gas burner replacement – construction continues in 2026 • Beaverdams SPS station and forcemain upgrades – construction to continue to 2026 • Confederation Heights SPS – generator replacement

Wastewater System	Major Maintenance Completed	Capital Upgrades Complete or Ongoing
Port Weller (serving St. Catharines, Thorold and NOTL)	<ul style="list-style-type: none"> • Repair of two digester gas boosters • Repair of pipe hangers in primary clarifier gallery • Rebuild of raw sludge pump #2 • Purchase of new waste activated sludge pump • Rebuild of raw sewage pump #1 • Installation of jet mixers in aeration as temporary air supply solution • Rebuild of two aeration gearboxes • Purchase of four new aeration gearboxes • • Lombardy Avenue SPS <ul style="list-style-type: none"> ○ Rebuild of pump • Peel Street SPS <ul style="list-style-type: none"> ○ Replacement of pump impellor and liner for pump #3 ○ Rebuild of pump • Black Horse SPS <ul style="list-style-type: none"> ○ Rebuild pump #2, install spare pump in its place 	<ul style="list-style-type: none"> • Chlorine/dechlorination system upgrades – phase two 2026 • Digester instrumentation upgrade – construction anticipated for 2026 • Port Weller Optimization Study • Port Weller primary clarifier upgrades • Spring Gardens SPS station sustainability upgrades – construction anticipated for 2026
Queenston	<ul style="list-style-type: none"> • Main gate replacement • Return activated sludge pump #1 rebuild • Rebuild of raw sewage pump #2 • Purchase of spare raw sewage pump 	<ul style="list-style-type: none"> • Plant sustainability upgrades

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Seaway (serving Port Colborne)	<ul style="list-style-type: none"> • Replacement of storm chlorination system • Replacement of effluent water pumps and pressure relief valve • Replacement of imported sewage receiving tank pump • Repair to primary clarifier #2 head shaft mechanism • Oxford SPS – pump replacement and electrical upgrades • East Side SPS – installed two new pumps 	<ul style="list-style-type: none"> • Standby generator upgrade - construction • Ferric system upgrades (tank and piping replacement) - construction • Influent channel repairs - construction • City Hall SPS and forcemain upgrades - • East Side SPS and forcemain upgrades – forcemain in construction
Stevensville-Douglastown Lagoon	<ul style="list-style-type: none"> • No major maintenance required in 2025 	<ul style="list-style-type: none"> • No capital projects are planned for this system in the near future
Welland (serving Welland, Pelham and Thorold)	<ul style="list-style-type: none"> • Secondary clarifier #5 <ul style="list-style-type: none"> ○ Corner sweep and scum collection system rebuild ○ Gear box replacement • Primary clarifier #4 rebuild • Secondary clarifier #4 and #5 <ul style="list-style-type: none"> ○ Scum pump and dewatering pump replacement ○ Concrete stabilization work completed ○ Crack repairs • Return activated sludge pump #5, #6, and #7 replacement/re-piping completed • Aeration blower #3 rebuild • Kelly Street SPS – pump replacement • Seaway Heights SPS – Header piping and valves replacement 	<ul style="list-style-type: none"> • Primary digester #1 cleanout and instrumentation upgrade – to be completed in 2026 • Ridge Road Siphon Sustainability Upgrades • Quaker Road new trunk sewer installation – construction • Dain City SPS station upgrades – construction anticipated for 2026 • Broadway trunk sewer replacement (in partnership with City of Welland)