



The Corporation of the Township of Perth East

25 Mill Street East
P.O. Box 455
Milverton, Ontario
NOK 1M0

May 3, 2024

ATTN: Aziz Ahmed, P.Eng, Director
Ministry of Environment, Conservation and Parks
135 St. Clair Avenue West, Floor 1, Toronto, Ontario
M4V 1P5

Re: ECA # 053-W601: 2023 Sewage Collection System – Performance Report

Please find enclosed the Township of Perth East's 2023 Performance Report for the Sewage Collection System. This report has been prepared in accordance with the Environmental Compliance Approval #053-W601, Schedule E Section 4.6, issued to the Township of Perth East on July 3, 2023.

This report covers the period from January 1, 2023 to December 31, 2023 and will be made available on the Township's website on or before June 1, 2024.

Any questions or concerns regarding the report can be directed to the undersigned.

Sincerely,

A handwritten signature in black ink, appearing to read "Jake Collings".

Jake Collings, P. Eng.
Township of Perth East
Manager of Public Works



The Corporation of the Township of Perth East
2023 Performance Report
Sewage Collection System



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1. INTRODUCTION (SHAKESPEARE)

1.1. System Overview

The Perth East Sewage Collection System in the town of Shakespeare consists of a series of gravity sanitary sewers and associated maintenance holes for the collection and transmission of sewage which all ultimately outlet to the Shakespeare Wastewater Treatment Plant.

Maintenance holes receive a visual inspection during flushing operations with any deficiencies noted and subsequently repaired as soon as practical. The Public Works Roads Foreperson conducts patrols bi-weekly which include visually inspection of maintenance hole lids at the road level during this time.

At the Shakespeare Wastewater Treatment Facility, the Raw Sewage Wet Well is the initial basin in which the wastewater collects prior to entering the treatment plant. As part of this ECA, this wet well will be considered although it is technically captured in the ECA associated with the Shakespeare Wastewater Treatment Facility. This wet well will be treated as a pumping station as part of the collection system as no treatment of the wastewater occurs until following pumping. Furthermore this component is absolutely critical to the overall function of the collection system.

The wet well consists of two access hatches, the inlet pipe, debris screen, two pumps (one duty and one standby), Milltronics and high level float balls. Inside the facility, there are dedicated drives for each pump, a display for the basin indicating the level of sewage and pump control. This further houses all relays and fuses supporting the proper operation of the pumps. In the office portion of the facility, a SCADA program displays the current and past operations and trends. This allows operators to monitor levels, pump run times, as well as any alarms. The Raw Sewage Wet Well is equipped with an alarm for pump failures and high level events.

Annual inspections will be required on this wet well as part of this Collection system. Operators will follow the procedures laid out in this manual, inspecting the items on the checklist and following up with any maintenance requirements identified during an inspection process.

In conjunction with the Townships maintenance program at the Milverton pumping stations, the Shakespeare wet well receives cleaning through the use of a contracted vacuum truck. This maintenance consists of scouring the chamber walls by pressure washing and vacuuming of the basin to remove all debris which could prevent the proper operation of the pumps and related components.

A standby generator at the Shakespeare Wastewater Treatment Plant is dedicated to the entire plant when necessary. It receives a detailed monthly inspection by our Facility Maintenance Coordinator who also looks after the fueling and routine maintenance as required. An annual inspection, load testing and more complex issues identified with the generator are contracted to a dedicated third party.



1.2. Reporting Details

In accordance with Schedule E, Section 4 of Environmental Compliance Approval # 053-W601 requires the Owner of the authorized sewage collection system to prepare an annual performance report, to be submitted on or before March 31st of each year. The report is to cover the period from January 1st to December 31st of the preceding calendar year.

This report is intended to satisfy the reporting requirements of the ECA as detailed in Schedule E, Section 6.

2. ANNUAL PERFORMANCE REPORT (SHAKESPEARE)

2.1. Monitoring Data and Environmental Trends

Schedule E, Section 4.6.3 of the ECA requires that, if applicable, a summary of all required monitoring data with interpretation of the data and any conclusions drawn from the data about the need for future modifications to the Authorized System or system operations. At this time, the collection system is generally operating effectively without need for immediate modification. The wet well is able to maintain flows, even during significant precipitation events. The Township is currently in the process of updating its Water/Wastewater Master Plan in 2024, during which time the Township Engineer as well as internal staff will undertake a comprehensive review of the system in order to determine if modifications are required now or in the near future.

The below table outlines the inflows associated with the aforementioned Raw Sewage Wet Well:

Shakespeare Flow Data (m ³)			
Month	Average Daily Flow	Total Monthly Flow	Maximum Daily Flow
January	236.17	7321.29	651.57
February	230.19	6445.21	633.19
March	262.72	8144.30	682.22
April	255.66	7669.72	886.01
May	232.65	7212.00	358.12
June	224.89	6746.76	319.59
July	247.14	7661.41	562.66
August	205.87	6381.96	261.08
September	199.01	6157.55	267.24
October	204.28	6225.39	277.65
November	211.76	6352.77	324.38
December	267.70	8298.79	618.79



2.2. Operating Problems and Corrective Actions

2.2.1. Pump Stations Operating Problems

The Township of Perth East operating staff has made every effort to ensure that the Raw Sewage Wet Well operates effectively. Regular visual inspection and the maintenance of the wet well has continued to prevent debris from building up to a point where problems arise with pumps and float bulbs. There were no problems with this wet well for the operating year of 2023.

2.2.2. Collection System Operating Problems

Township staff have made every effort to ensure the proper function of the wastewater collection system in Shakespeare. We had one issue that involved a blockage at the backwater valve for a property on Miller Avenue. The operators cleared the blockage and returned the service back in to normal operation.

2.3. Calibration, Maintenance and Repairs

2.3.1. Pump Station Calibrations, Maintenance and Repairs

The following is a list of maintenance, calibrations and repairs carried out during this reporting period on any structures, equipment, apparatus' or related mechanisms which form the integral components necessary for the safe transmission of sewage within the Shakespeare Wastewater Collection System. It's important to know that influent flow meters receive annual calibrations under the Shakespeare Wastewater Control Plant through a licenced third party contractor and are noted in the associated annual report.

- Monthly inspection carried out on backup generator; weekly checks.
- Generators inspected and load tested as required by licenced third party contractor.
- Raw sewage wet well cleaned by vacuum truck/ pressure washer.
- Raw sewage pumps pulled and inspected.

2.3.2. Collection System Calibration, Maintenance and Repairs

Noted below is any and all maintenance, calibrations and repairs carried out during this reporting period on any structures, equipment, apparatus' or related mechanisms which form the integral components necessary for the safe transmission of sewage throughout the Shakespeare Wastewater Collection System. Flushing is completed once every 5 years on a rotation with five delineated collection areas within the Perth East wastewater collection system.



Flushing occurs for four consecutive years on the Milverton collection system before flushing activities occur in Shakespeare for one year. Flushing activities took place in Shakespeare for the 2023 operating year completing the entire system at once, which is the anticipated approach until such a time that the system becomes too large. At that time, the division of the town into two smaller sections will be contemplated.

2.4. Complaints

There were no complaints received regarding the Shakespeare Sewage Collection System throughout the reporting period.

2.5. Alterations to the Authorized System

There were no alterations to the Shakespeare Sewage Collection System during the reporting period.

2.6. Collection System Overflows and Spills

No by-passes, spills, or abnormal discharge events occurred in the Shakespeare Sewage Collection System during the reporting period.

2.7. Sanitary Sewage Collection System Improvement

2.7.1. Asset Management Plan and Wastewater Master Plan

The Township of Perth East Sewage Collection System is included in the Asset Management Plan. These plans provide guidance on the short and long term infrastructure improvements to address asset condition and potential future capacity constraints. As previously mentioned, the Township is updating the Water/Wastewater Master Plan in 2024.

2.7.2. Inflow and Infiltration Studies

Through the process of updating the Water/Wastewater Master Plan taking place in 2024, the Township Engineer and internal staff will examine the urgency around conducting an inflow & infiltration (I & I) study and the potential impacts of such.

2.7.3. Sewer Reconstruction

There were no reconstruction events that took place in the reporting period.

2.8. Summary

The Shakespeare Sewage Collection System and Raw Sewage Wet Well operated and maintained by the Township of Perth East are functioning well at this time and receive any necessary repairs as soon as reasonably practical. Any complaints received will be documented and subsequently followed up with in order to investigate the cause of the complaint and ultimately resolve the issue.



3. INTRODUCTION (MILVERTON)

3.1. System Overview

The Perth East Sewage Collection System in the town of Milverton consists of a series of gravity sanitary sewers and maintenance holes for the collection and transmission of sewage with the use of pumping stations and forcemains which all ultimately discharge to the Milverton Water Pollution Control Plan (WPCP).

The Township of Perth East operates two (2) pumping stations in the town of Milverton, one of which is located at 95 Mill Street East and is known as the Mill Street East Pumping Station. The other pumping station is located at 41 Mill Street West and is known as the Mill Street West Pumping Station. The entire collection system in Milverton ultimately outlets to the Mill Street West Pumping Station where it receives the addition of aluminum sulfate prior to conveyance through a 200mm forcemain to the lagoon system.

The Mill Street East pumping station features a wet well design consisting of two submersible pumps connecting to one 150mm forcemain discharging to sanitary maintenance hole 16A located at the intersection of Mill Street and St Mary's Street. The peak capacity of this pumping station is 14.5 Liters per second with both duty and standby pumps in operation. In extreme circumstances, overflow waters are discharged from the wet well to the Gingerich Drain via the Gingerich Drain Storm Water Management Pond with ultimate discharge to the Grand River. This facility also has a standby generator in place for emergency scenarios.

The Mill Street West or Main pumping station also features a wet well design consisting of two submersible pumps with a peak capacity of 34 Liters per second one of which is the duty pump and the other a standby. The 8.5m³ wet well has a 450mm diameter overflow to the Boyle Drain for extreme flows with ultimate discharge to the Maitland River. A 75kw standby generator on site provides back-up power during any loss of service. Alum is stored on site in a 32m³ tank inside a spill containment area which also houses the two chemical dosing pumps (one duty and one spare) which have a capacity of 10 Liters per hour. A 200mm magnetic flowmeter is housed in a chamber downstream of the pumps to capture all flow rates in the 200mm forcemain. Inside the building there are starters for each pump, milltronics for level monitoring and an alarm dialer to make operators aware of any faults in the system.

Standby generators at both pumping stations receive a detailed inspection by our Facilities Maintenance Coordinator whom also looks after the fueling and routine maintenance as required. An annual inspection, load testing and more complex issues identified with the generator are contracted to a dedicated third party.



3.2. Reporting Details

CLI-ECA Schedule E, Section 4 requires the Owner of the authorized sewage collection system to prepare an annual performance report, to be submitted on or before March 31st of each year. The report is to cover the period from January 1st to December 31st of the preceding calendar year.

This report is intended to satisfy the reporting requirements of the ECA as detailed in Schedule E, Section 6.

4. ANNUAL PERFORMANCE REPORT (MILVERTON)

4.1. Monitoring Data and Environmental Trends

CLI-ECA Schedule E Section 4.6.3 calls for, if applicable, a summary of all required monitoring data with interpretation of the data and any conclusions drawn from the data about the need for future modifications to the Authorized System or system operations. With increased growth in the town of Milverton, increased demands of the Mill St West pumping station continue to grow. The twinning of the foremain discharging to the WPCP is a vital step toward handling the increasing flows especially during heavy precipitation events.

Mill St West Pumping Station Flow Data (m ³)			
Month	Average Daily Flow	Total Monthly Flow	Maximum Daily Flow
January	706.13	21890	1270
February	786.79	22030	1210
March	948.71	29410	1680
April	884.67	26540	1690
May	592.26	18360	950
June	491.67	14750	600
July	673.55	20880	1060
August	538.39	16690	580
September	544.33	16330	670
October	560.32	17370	710
November	587.67	17630	690
December	835.16	25890	1460

4.2. Operating Problems and Corrective Actions

4.2.1. Pump Stations Operating Problems

The Township of Perth East operating staff has made every effort to ensure that the two pumping stations operate in accordance with all applicable laws, certificates and regulations. The largest operating issue in the Milverton pumping stations is that of high flow events as a result of precipitation and/or melt events.



As a result of these events, the Mill St West pumping station is subject to peak influent flows in excess of the rated flow capacity of the pumps which can lead to by-pass/ overflow events. As part of the 2024 Capital Budget, the Township of Perth East Council has approved the twinning of the primary forcemain for wastewater conveyance to the lagoon system in addition to upgrading the existing wet well piping to increase the peak flow capacity. This is set to occur in 2024 pending appropriate approvals from the MECP. The following operational problems occurred over the reporting period relating specifically to the pumping stations:

Pumping Station	Operating Problem	Corrective Action
Mill Street West	Pump #2 Failure	Pulled pump, installed spare. Returned to service.
Mill Street West	Pump #1 Failure	Operated in reverse to clear debris, returned to service.
Mill Street East	Pump #2 Failure	Pulled pump, removed debris, returned to service.

4.2.2. Collection System Operating Problems

There were no operating problems within the collection system for the reporting period.

4.3. Calibration, Maintenance and Repairs

4.3.1. Pump Station Calibrations, Maintenance and Repairs

The following is a list of maintenance, calibrations and repairs carried out during this reporting period on any structures, equipment, apparatus' or related mechanisms which form the integral components necessary for the safe transmission of sewage within the Milverton Wastewater Collection System.

- Monthly inspection carried out on backup generator; weekly checks.
- Generators inspected and load tested as required by licenced third party contractor.
- Raw sewage flow meter annual calibration completed at Mill Street West Pumping Station by third party.
- Raw sewage wet wells at both pump stations cleaned by vacuum truck.
- Raw sewage pumps pulled and inspected. Repaired as required.
- Main disconnect switch at Mill St East pump station was damaged. Electrician replaced with new switch

4.3.2. Collection System Calibration, Maintenance and Repairs

The following is a list of the maintenance, calibrations and repairs carried out during this reporting period on any structures, equipment, apparatus', or mechanisms which form the integral parts of the safe transmission of sewage throughout the Milverton Wastewater Collection System Flushing is separated into four sections with one section completed each year. This occurs for four



consecutive years in Milverton before flushing activities occur in Shakespeare for one year. Flushing activities took place in Shakespeare for the 2023 operating year and are scheduled to take place in one of the four quadrants of Milverton in 2024. There are two locations in Milverton that require periodic cleaning due to low flow. Operators prefer doing this annually to prevent any complaints or unexpected service disruptions.

- Manhole in front of 15 Sippel Street cleaned out by vacuum truck and service lateral flushed to property line.
- Manhole @ MacBeth and William Streets (123A) cleaned out by vacuum truck.

4.4. Complaints

There were no complaints received regarding the Milverton Sewage Collection System through the reporting period.

4.5. Alterations to the Authorized System

Over the reporting period, the following alterations were completed within the collection system:

- Replacement of all Town infrastructure on Pacific Avenue, Davis Street and a segment of CPR Drive. This includes approximately 296.2 meters of 200mm diameter sanitary sewer on Pacific Avenue and 254.6 meters of 375mm diameter sanitary sewer on segments of Pacific Avenue, CPR Drive and Davis Street. None of the work completed posed a significant drinking water threat (SDWT).

4.6. Collection System Overflows and Spills

Over the reporting period, there was one overflow by-pass event which occurred on July 13, 2023. This event was a result of a significant precipitation event. The overflow took place for approximately 6.5 hours with an estimated 100m³ being discharged to the Boyle Drain. The event was reported to the appropriate authorities and sampled accordingly.

No other by-passes, spills, or abnormal discharge events occurred during the reporting period.

4.7. Sanitary Sewage Collection System Improvement

4.7.1. Asset Management Plan and Wastewater Master Plan

The Township of Perth East Sewage Collection System is included in the Asset Management Plan. These plans provide guidance on the short and long term infrastructure improvements to address asset condition and potential future capacity constraints. The Township is updating the Water/Wastewater Master Plan in 2024.



4.7.2. Inflow and Infiltration Studies

Through the update of the Water/Wastewater Master Plan occurring in 2024, the consultant and staff will examine the urgency around conducting an inflow & infiltration (I & I) study and the potential impacts of such.

4.7.3. Sewer Reconstruction

During the 2023 reporting period, the Township of Perth East acquired the services of a contractor to reconstruct various streets in Milverton. The reconstruction of these streets included the replacement of sanitary sewer mains, related structures as well as service laterals to the property line. Already, Township staff have realized a reduction in apparent I&I as a result. The table below lists the reconstructed sections:

Location	Segment	Sanitary Diameter
Pacific Avenue	Mill Street East – Davis Street	200mm
Pacific Avenue	Davis Street – CPR Drive	375mm
Davis Street	Pacific Avenue – Whaley Avenue	375mm
CPR Drive	Pacific Avenue – 98m west	375mm

4.8. Summary

The sanitary sewer collection system and pumping stations operated and maintained by the Township of Perth East are functioning well at this time and receive any necessary repairs as soon as reasonably practical. Any complaints received will be followed up with promptly to be investigated and resolved. The Township is looking forward to the anticipated approval from the MECP for twinning of Millerton’s primary forcemain to minimize/eliminate overflow events now and into the future.