2025 Annual Performance Report

Prepared For:

The City Of Stratford

Operating Authority:

OCWA

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

Reporting Period of January 1st – December 31st, 2025

Issued: March 30, 2026

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Overview

The following report was prepared by Ontario Clean Water Agency on behalf of the City of Stratford in accordance with:

- Section 20(4) (a) through (m) cited in Environmental Compliance Approval #9501-BG3JPF issued June 10th, 2020 to The Corporation of the City of Stratford.

System Process Description

The Stratford WPCP is located at 701 West Gore Street, Ontario. The plant is a conventional activated sludge plant with a rated capacity of 30,660 m^3/d and is comprised of the following components:

- Lift station
- Headworks
- Wet Weather Flow Equalization Tanks and disinfection system
- Preliminary treatment facility consisting of screens and grit removal
- Imported Waste holding tanks and four primary clarifiers
- Biological Treatment facility including supplementary treatment system
- Secondary sedimentation consisting of 3 secondary clarifiers
- Tertiary filtration system
- Ultraviolet based disinfection system
- Anaerobic digestion based sludge stabilization and storage facilities

Raw Wastewater Collection

The wastewater is directed by gravity to 11 pump stations located throughout the city. All pump stations are operated by the City of Stratford Environmental Services Department. For additional information, refer to the City of Stratford Sewage Collection System, Consolidated Linear Infrastructure Annual Performance Report.

Lift Station

The wastewater collection system carries the raw domestic wastewater throughout the city, via pumping stations, to the Water Pollution Control Plant. Sewage from the Queensland and West Gore trunk sewers enter the WPCP by gravity, while the 825mm and 1,500mm diameter inlet sewers feed to the raw sewage lift station from the Forman/O'Loane and the Erie/Brydges/Worsley trunk sewers.

The lift station is equipped with four screw pumps; three screw pumps each with a capacity of 427L/s to handle peak dry weather flows and one storm water screw pump with a capacity of 2,600L/s to handle wet weather flows. The raw sewage discharged from the lift station pumps then flows down the discharge trough by gravity to a distribution chamber.

Wet Weather Equalization Tanks

The flow diversion chamber and equalization tanks provide temporary storage for raw sewage during times when incoming sewage flow exceeds plant capacity. When incoming flow falls below plant capacity, the stored sewage may be drained to the inlet chamber for proper treatment.

During severe wet weather events, once all storage is full, excess flow is diverted to two wet weather flow equalization tanks each with a capacity of approximately 3,762m^3 and equipped with sediment flushing systems and a 300 mm diameter drain pipe connecting to the base of the raw sewage lift station.

Flow passes through a manual bar screen before entering equalization tank 1, where it receives primary treatment through sedimentation. Flow then passes over the baffles into equalization tank 2 where it is dosed with sodium hypochlorite through the use of an in-line mixer. Equalization tank 2 is equipped with baffled walls to act as a chlorine contact chamber to provide additional mixing during emergency wet weather overflow events. Prior to discharge to the Avon River, flows are dosed with sodium bisulphite and integrated with an in-line mixer to ensure sufficient de-chlorination is achieved.

Preliminary Treatment

When incoming flow is below plant capacity, raw water flows through the distribution chamber and into the screening building. The building consists of two mechanical bar screens rated at a hydraulic peak flow of 450L/s. Collected screenings are lifted into a discharge hopper and dewatered by a dewatering screw auger. The screenings and grit are removed and sent to landfill.

Following screening, the raw sewage enters the Detritor, a square tank with a rotating scraper mechanism. When in the Detritor, the grit in the raw sewage settles to the bottom of the tank, while the degritted sewage flows over the effluent weir, into the primary clarifier inlet channel. The grit is collected by the rotating scraper and deposited at the base of the grit auger located in a channel beside the Detritor. The auger mechanism pushes the grit up an incline and into a grit bin. While passing up the incline, a return pump directs sewage from the Detritor to the point where the auger emerges from the channel, causing a reverse flow. The reverse flow separates organic solids from the grit and carries them downward back to the Detritor.

Primary Treatment

Detritor effluent enters the primary influent distribution chamber. Waste activated sludge and stored sludge supernatant is added to the stream at this same location for co-thickening in the four primary clarifiers, each 24.7 m in diameter.

Under normal operating conditions two primary clarifiers provide primary treatment while the other two are used for receiving and holding imported sewage. During peak flow conditions these clarifiers can also be used as storm surge flow holding tanks.

The primary clarifiers are designed to remove settled and floating solids from the wastewater stream, utilizing sludge collector mechanisms, thereby reducing the organic load on the downstream biological Secondary Treatment process. Settled sludge collects on the bottom of the primary clarifiers and is moved to the central hoppers by a rotating scraper mechanism.

Scum and other floatables from the surface of the clarifiers are collected by the rotating surface skimmers and directed to the scum troughs. The scum troughs drain by gravity into shared scum chambers. Primary clarifiers 1 and 2 share a common combined valve and scum chamber, as do primary clarifiers 3 and 4. The collected scum can be removed from the shared scum chambers by using either of the primary sludge pumps, which discharge to the digesters.

Both the sludge and scum are pumped by two sludge pumps and macerated through in-line grinders to the primary anaerobic digester.

The primary effluent system consists of three submersible pumps located in the wet well and include related piping and accessories. The clarified effluent flows over the “V” notch weirs located around the perimeter of the primary clarifier tanks, into the clarifier effluent channel that flows by gravity into the wet well, where it is then pumped to the aeration tank inlet chamber.

Secondary Treatment

The secondary treatment system, also known as the aeration or biological part of the process, is where the organic compounds, pollutants, and nutrients that were not removed in the primary treatment occurs. Effluent from the primary clarifiers flows by gravity to the wet well, from which the primary effluent is pumped to the aeration tank inlet chamber. The return activated sludge and Ferrous Chloride is discharged to this chamber where it mixes with the primary effluent. The mixture, referred to as *mixed liquor* is evenly distributed between the four (4) aeration tanks via the aerated inlet channel.

Each tank is divided into three passes to provide a plug flow aeration pattern which provides flexibility to vary the air supply within the tanks allowing better oxygen transfer and dissolved oxygen (DO) control. It also improves sludge settleability. Aeration and mixing are provided by lattices of 944 ceramic fine pore diffuser discs per aeration cell. The air supply system consists of one duty APG Neuros 350HP Turbo Blower and two standby Hoffman 200HP centrifugal blowers that deliver compressed air to the aeration tanks and the diffuser air system.

Mixed liquor from the aeration tanks flow by gravity into the final clarifier influent distribution chamber and is distributed evenly to the three tanks. Mixed liquor enters each of the final clarifiers via a feed pipe located at the base of the clarifier. The feed pipe discharges within a circular feed well which also acts as a baffle to deflect the incoming flow downwards and reduce short-circuiting.

The clarifier mechanism in each tank is classified as a rapid sludge removal type. The settled sludge is continuously removed from the tank bottom by pipes which are supported on two rotating trusses. Mechanical rake arms on the bottom of the trusses scrape the settled sludge towards the opening in the suction pipes.

The hydraulic head producing the flow in the suction pipes is equal to the difference between the liquid levels in the clarifier and the sludge return box. The eight (8) suction pipes enter the sludge return box from below. A butterfly valve on each pipe is used to control the sludge flow rate into the box from each withdrawal pipe. The settled sludge from the final clarifiers is identified as return activated sludge (RAS). The RAS is either returned to the main RAS header, where it returns to the inlet chamber upstream of the aeration tanks, or it is pumped to the discharge point in the primary settling tank inlet chamber as waste activated sludge (WAS). The WAS settles within the primary clarifiers and is mixed with the primary sludge and then pumped to the primary digester. The sludge from the sludge box flows through a 450 mm diameter pipe, located inside the clarifier inlet column, to the inlet of the RAS pump located in the basement of the blower building (RAS pumping station). The clarified effluent flows over the “V” notch weirs located around the perimeter of the tank, into the clarifier effluent channel that discharges to the clarifier outlet chamber.

Filtration

Secondary clarifier effluent is lifted by the Archimedean screw pumps and flows into the filter inlet gate where it is distributed evenly between four (4) rapid filters. Each filter contains three (3) layers of media; gravel varying in size, sand and anthracite. In removing the solids, some of the residual BOD and phosphorus are also reduced. The solids accumulated in the filter are removed when the filters are backwashed and the backwash wastewater is recycled to the primary clarifier inlet channel. Many of the solids removed by filtration are removed in the second routing through the plant by physical, chemical or biological flocculation and sedimentation; as a result the finely divided solids do not accumulate in the plant.

During backwashes, there are two rotating sub-surface agitators in each filter. Each agitator arm is provided with 38 nozzles and is designed to mix the expanded media during the backwash in order to effectively scour the media and remove all accumulated solids.

The filter effluent percolates downward through the filter media where it is collected in the clear well below. The filter effluent then flows via channel to the final effluent disinfection process.

Final Effluent Disinfection

Filtered effluent flows into the UV channel where it is disinfected by ultraviolet (UV) light before being discharged to the Avon River. The UV system consists of two banks, each comprised of 10 modules with 6 lamps per rack, totaling 120 lamps within one disinfection channel. The water level in the channel is maintained by the weir located at the end of the channel.

Sludge Management System

Under normal operating conditions, the raw sludge removed from the primary treatment process is pumped to the primary digester. The primary digester has a fixed cover and can be maintained at a constant level. When operating in this configuration, sludge is pumped into the digester and excess sludge overflows into the primary tank supernatant overflow box. The lowest pipe in the overflow box connects to the transfer line that leads to the secondary digester. The second highest pipe connects to the supernatant return line to the inlet works (acts as an emergency overflow). The third pipe in the box is the feed line for the box from the primary digester. Alternatively, the transfer pumps may be used to manually pump sludge from the bottom of the primary digester into the bottom of the secondary digester.

The gas compressor located in the gas pump room continuously moves gas produced within the digesters through the draft tubes located at fixed intervals along the roof of the tank. This induces a rolling motion in the digester that provides complete mixing in the unit. Sludge is heated by pumping it through the heat exchanger and back to the primary digester.

Once sludge is transferred to the secondary digester, it settles and thickens in the tank. Methane gas that is produced within the secondary digester is stored in the gas holder cover. Methane gas is used as fuel to run the boiler system supplying heat to the heat exchanger, which in turn keeps the anaerobic digester at a constant temperature. Any methane gas that is not used will burn off into the atmosphere through the waste gas burner. Supernatant from the tank overflows in the secondary overflow box is returned to the primary clarifier influent channel by gravity. Sludge can be sampled at various levels inside the digester by opening the appropriate valves in the sampling room.

Sludge is withdrawn from the bottom of the secondary digester and transferred to the sludge storage holding tank or sludge storage lagoon. Sludge can be withdrawn from either the holding tank and/or lagoon through the sludge loading pumps. All sludge is removed and applied to agricultural land as per the NASM Guidelines.

Standby Power

The Toromont- Cat diesel generator supplies emergency power to the Stratford WPCP, thereby maintaining plant operation during power outages. The generator has been sized to provide adequate power to operate the entire plant under normal conditions.

Plant Facts:

Environmental Compliance Approval:	#9501-BG3JPF (issued June 10th, 2020)
Rated Capacity:	30,660m^3/d
Receiving Water:	Avon River

For 2025, the Stratford WPCP was operated in accordance with the provincial regulations as required in ECA# #9501-BG3JPF. The following report is presented such that it corresponds with Section 20(4) (a) through (m).

Flow Monitoring

The Stratford WPCP is rated to treat an average daily flow of 30,660 m^3. Refer to Figure 1 for a comparison of the average daily flow for the last six years against the rated capacity of the plant. The average daily flow rate in 2025 was 17,374 m^3/d, which is an 11 % decrease from the 2024 average daily flow. The WPCP was at 57 % of its rated capacity in 2025. Refer to Figure 2 for average daily flow each month and the overall annual average daily flow.

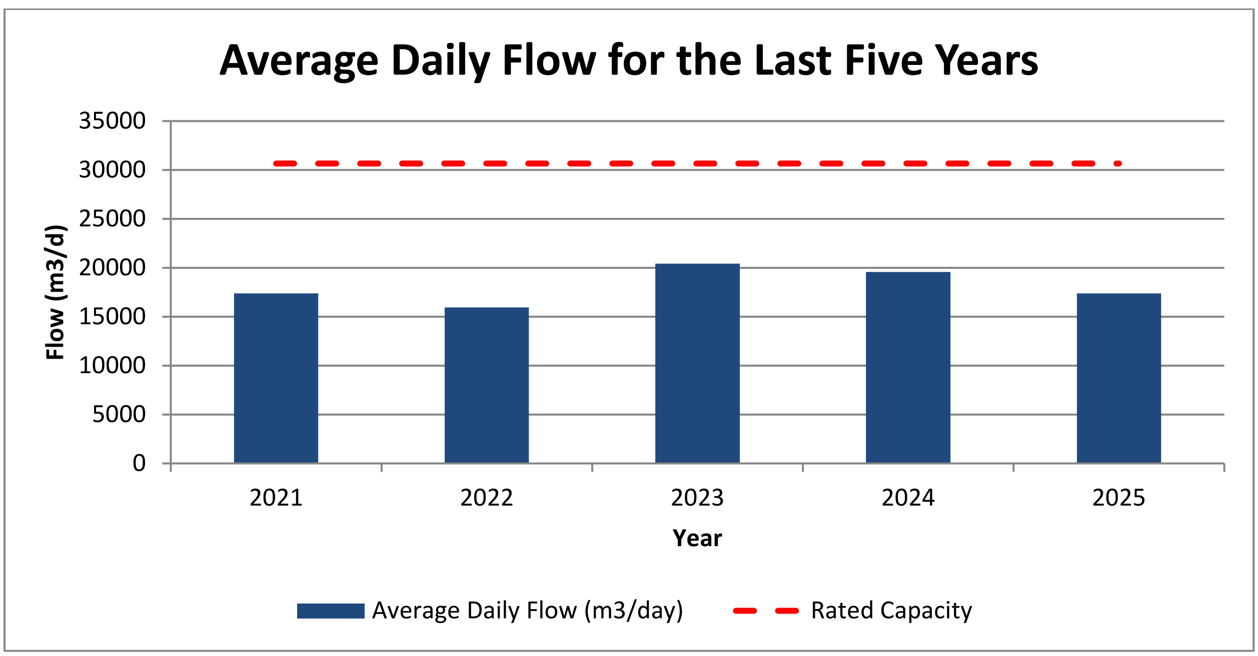

Figure 1. Average Daily Flow for the Last five Years

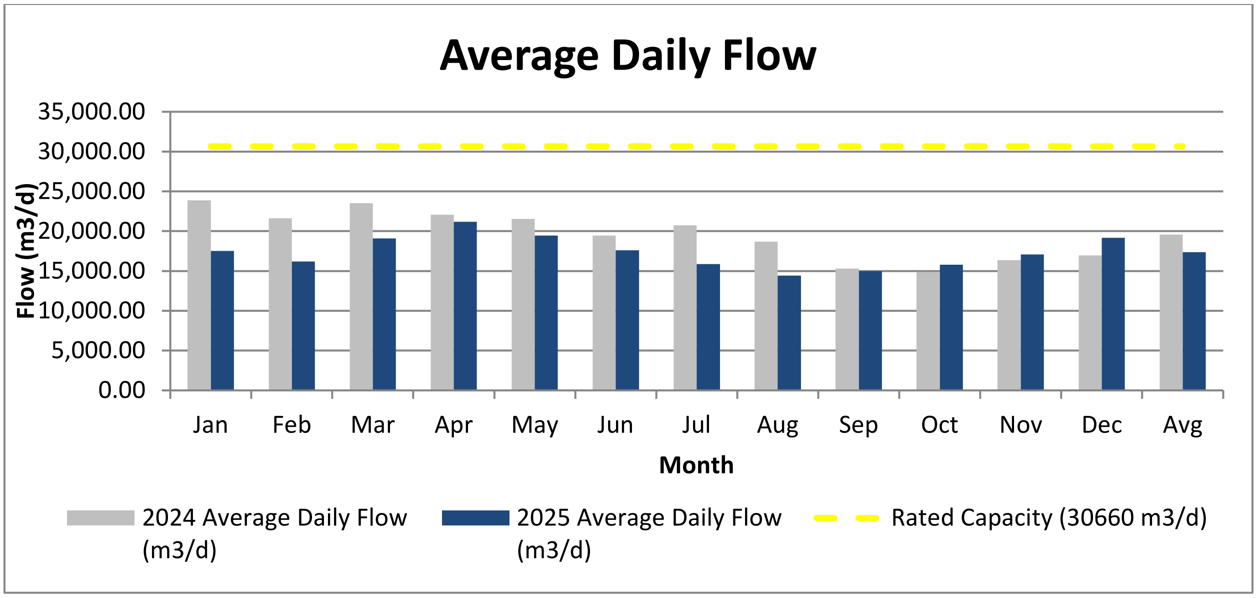

Figure 2. Average Daily Flow each Month

Influent Data

The influent is monitored for BOD_5, total suspended solids (TSS), total phosphorous (TP), and total Kjeldahl nitrogen (TKN) on a weekly basis by means of composite sample. Refer to ***Appendix A Influent and Effluent Data*** for more detail on monthly results.

In 2025, the average raw Biochemical Oxygen Demand (BOD_5) concentration was 231 mg/L, which is a 46 % increase from the average concentration in 2024. Refer to Figure 3 for a comparison of 2025 monthly raw BOD_5 concentrations to 2024 concentrations.

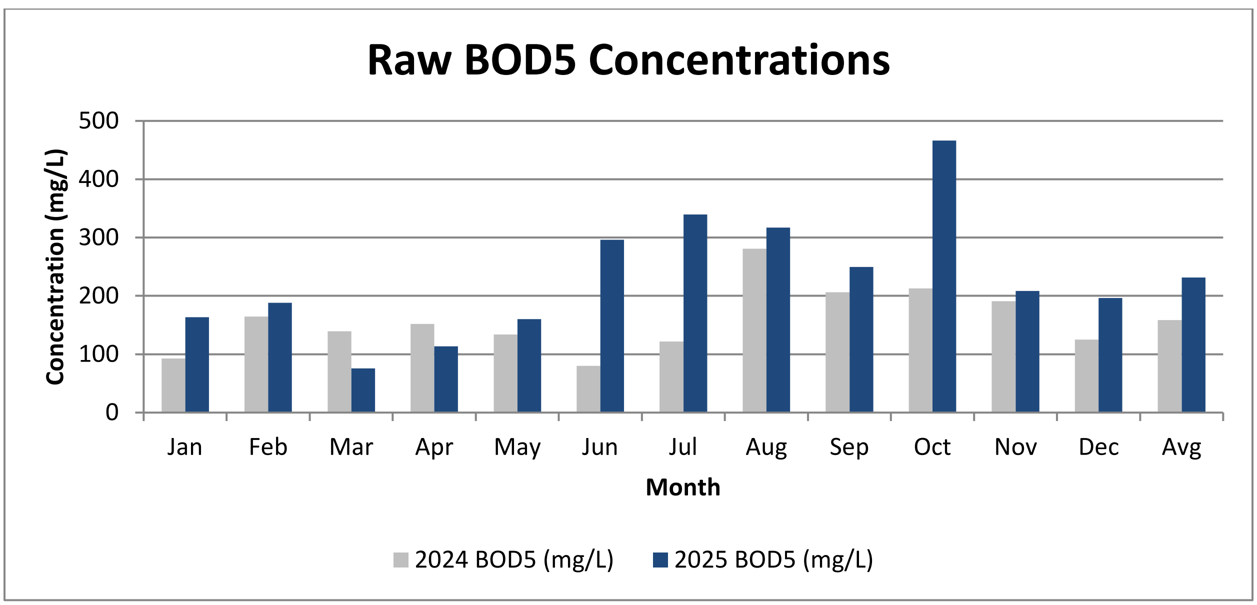

Figure 3. Raw BOD Concentrations

In 2025 the average raw Total Suspended Solids (TSS) concentration was 259 mg/L, which is an 83 % increase from the average concentration in 2024. Refer to Figure 4 for a comparison of 2025 monthly raw TSS concentrations to 2024 concentrations.

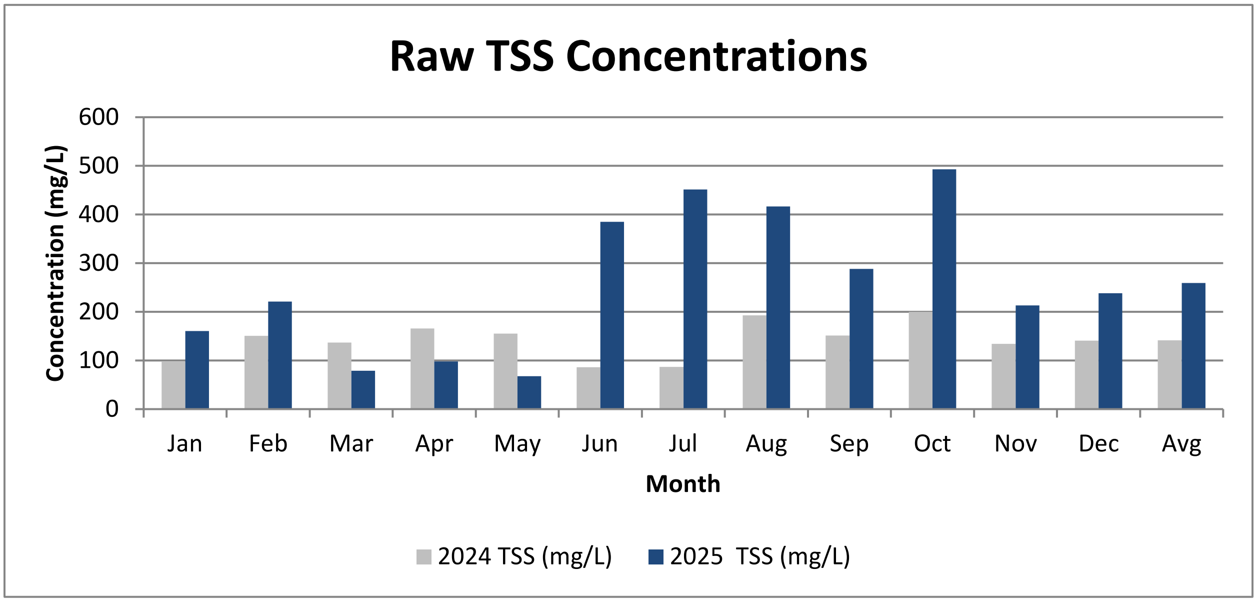

Figure 4. Raw TSS Concentrations

In 2025, the average raw Total Phosphorus (TP) concentration was 4.5 mg/L, which is a 59 % increase from the average concentration in 2024. Refer to Figure 5 for a comparison of 2025 monthly raw TP concentrations to 2024 concentrations.

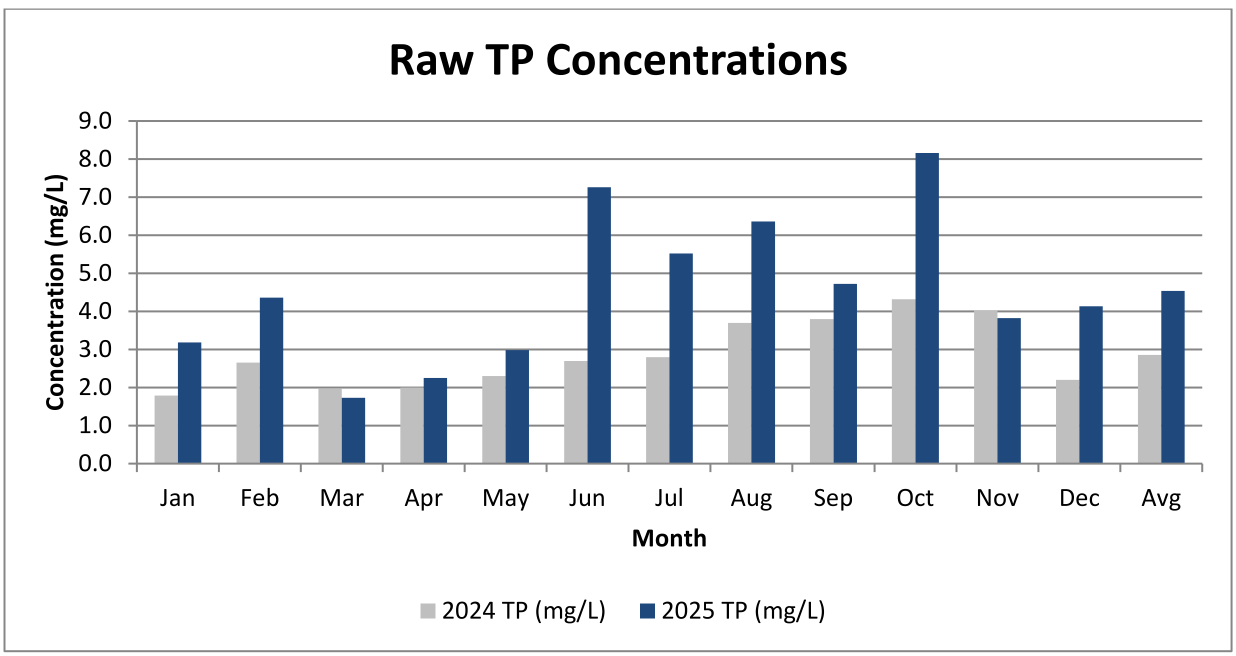

Figure 5. Raw TP Concentrations

In 2025 the average raw Total Kjeldahl Nitrogen (TKN) concentration was 35.0 mg/L, which is a 41 % increase from the average concentration in 2024. Refer to Figure 6 for a comparison of 2025 monthly raw TKN concentrations to 2024 concentrations.

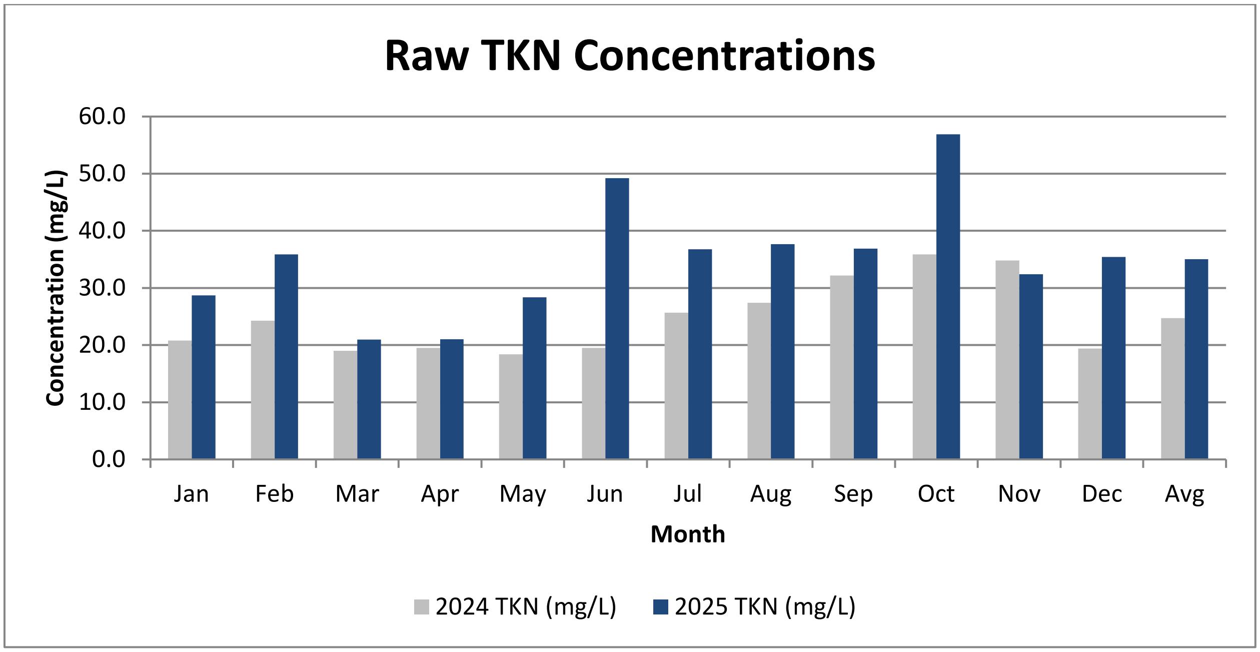

Figure 6. Raw TKN Concentrations

The significant increase in raw water monitoring parameters is attributed to a change to the sample collection method that was implemented during the 2025 reporting period. The new methods provide more agitation to samples prior to collection and have resulted in higher average raw water contaminant loading, and raw samples that are more representative of the typical inflow to the WPCP.

Imported Sewage

The Stratford WPCP is approved to accept imported sewage by licensed waste management system operators as identified within Regulation 347, General Waste Management, for co-treatment in the sewage treatment plant. In 2025, the WPCP has accepted 390 m^3 of imported sewage, as shown in Table 1. This is a 92 % decrease when compared to 2024.

Table 1. Total Imported Sewage

Month	2024	2025
January	669.4	23.08
February	947.7	14.37
March	1061.4	27.63
April	1218.8	46.19
May	754.0	45.81
June	22.0	39.66
July	63.8	43.28
August	43.5	21.95
September	41.6	33.31
October	49.4	22.36
November	36.3	60.20
December	23.5	12.12
Total (m^3)	**4,931.5**	**390.0**

Effluent Monitoring Data

Composite effluent samples are collected from the Stratford WPCP over a twenty-four hour period on a weekly basis and analyzed for: $CBOD_5$, total suspended solids, total phosphorous and Unionized Ammonia. Effluent grab samples are collected on a weekly basis and tested for *E. coli*, pH and dissolved oxygen. Detailed results are found in ***Appendix A Influent and Effluent Data***. Table 2 shows the monthly average effluent loading results.

Table 2. Effluent Loading Results

Month	$CBOD_5$ (kg/d)	TSS (kg/d)	TP (kg/d)	Unionized Ammonia (kg/d)
January	31.1	31.1	1.6	0.02
February	36.7	46.1	1.8	0.01
March	47.1	52.0	1.6	0.02
April	149.1	195.4	3.4	0.02
May	87.3	153.9	2.8	0.02
June	39.9	64.5	1.1	0.02
July	34.0	42.5	1.4	0.03
August	25.1	37.6	0.9	0.01
September	25.5	44.7	0.7	0.01
October	29.6	37.7	1.5	0.02
November	29.9	37.4	1.6	0.01
December	34.2	47.8	1.1	0.02
Average	**47.4**	**65.9**	**1.6**	**0.02**
Limit	**306**	**306**	**6.1**	**3.06**

Comparison to Compliance Limits and Objectives

The Stratford WPCP average monthly effluent Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) concentration in 2025 was 2.5 mg/L, which is a 14 % increase from the annual average in 2024. There were no objective or limit exceedances in 2025. Refer to Figure 7 for a comparison of 2025 monthly effluent CBOD5 concentrations to 2024 concentrations.

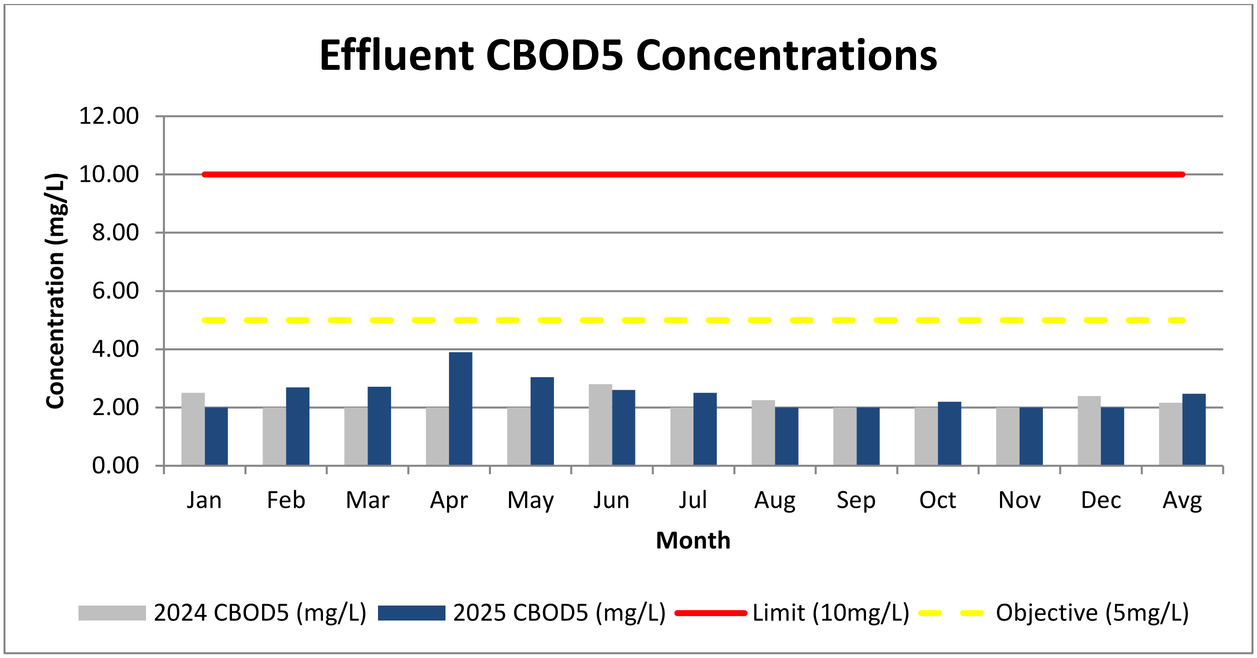

Figure 7. Effluent CBOD Concentrations

The average monthly effluent Total Suspended Solids (TSS) concentration in 2025 was 4.1 mg/L, which is 39 % increase from the annual average in 2024.

There was one (1) objective and one (1) limit exceedance that occurred in April and May, respectively, due to samples collected during tertiary bypass events in these months. Refer to ***Summary of Efforts Made to Achieve Design Objectives*** for more information on the monthly TSS objective and limit exceedances. Refer to Figure 8 for a comparison of 2025 monthly effluent TSS concentrations to 2024 concentrations.

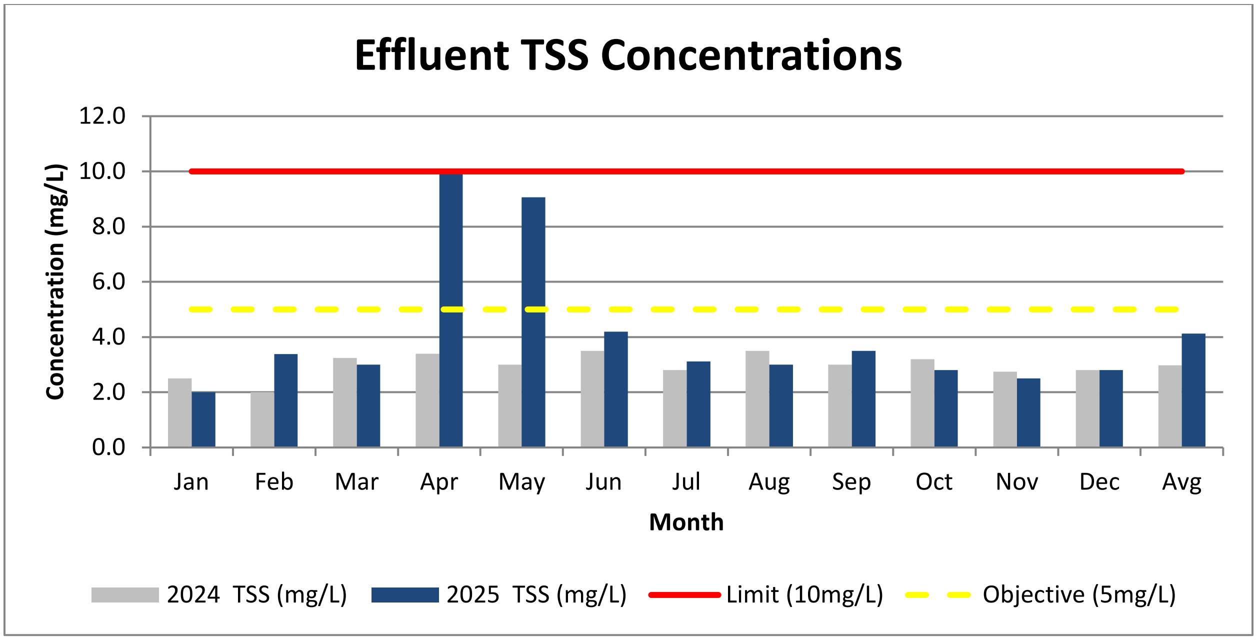

Figure 8. Effluent TSS Concentrations

The average monthly effluent Total Phosphorus (TP) concentration in 2025 was 0.10 mg/L, which is a 23 % increase from the annual average in 2024.

There were four objective exceedances that did not result in a limit exceedance which occurred in February, April, May and October 2025***.*** Refer to ***Summary of Efforts Made to Achieve Design Objectives*** for more information on the monthly TP objective exceedances. Refer to Figure 9 for a comparison of 2025 monthly effluent TP concentrations to 2024 concentrations.

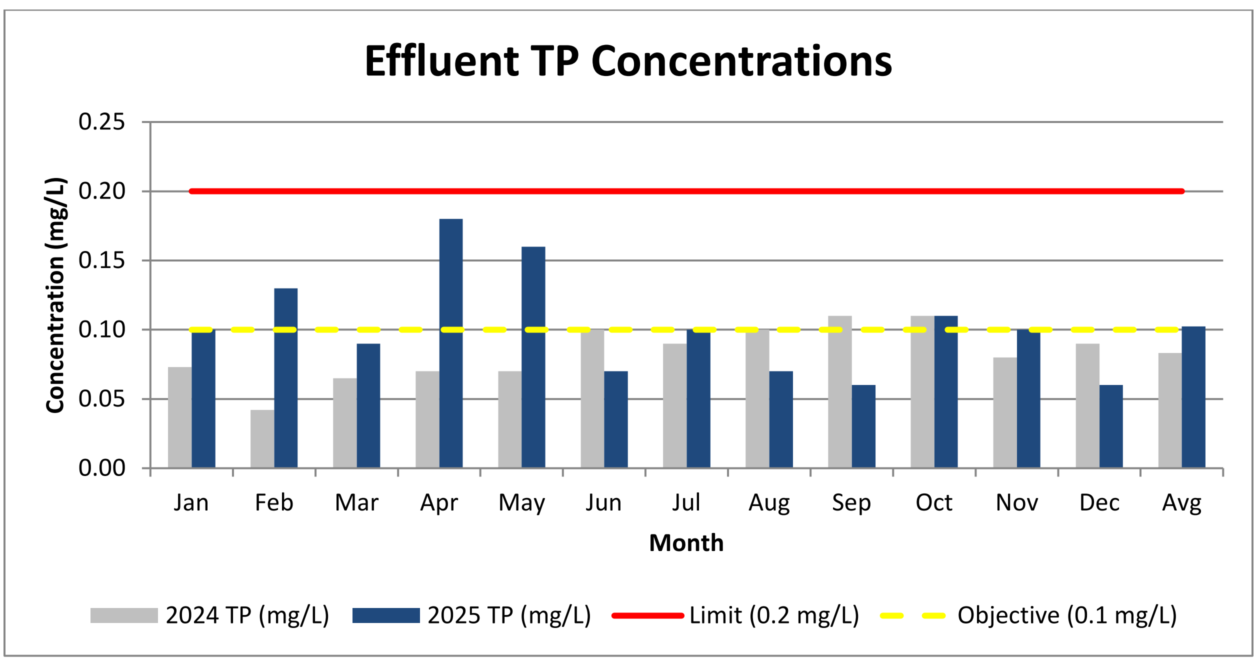

Figure 9. Effluent TP Concentrations

The average monthly effluent Unionized Ammonia concentration in 2025 was 0.001 mg/L, which is a 93 % decrease from the annual average in 2024. This decrease is attributed to unionized ammonia concentrations consistently remaining at or near the laboratory's minimum detectable limit in 2025, resulting in a narrower range of sample results than in 2024. Unionized Ammonia Single Sample results ranged from 0.001-0.127 mg/L in 2024, while sample results in 2025 ranged between 0.001-0.006 mg/L. There were no objective or limit exceedances in 2025. Refer to Figure 10 for a comparison of 2025 monthly effluent Unionized Ammonia concentrations to 2024 concentrations. Refer to Figure 11 for the single sample concentrations compared to the exceedance limit.

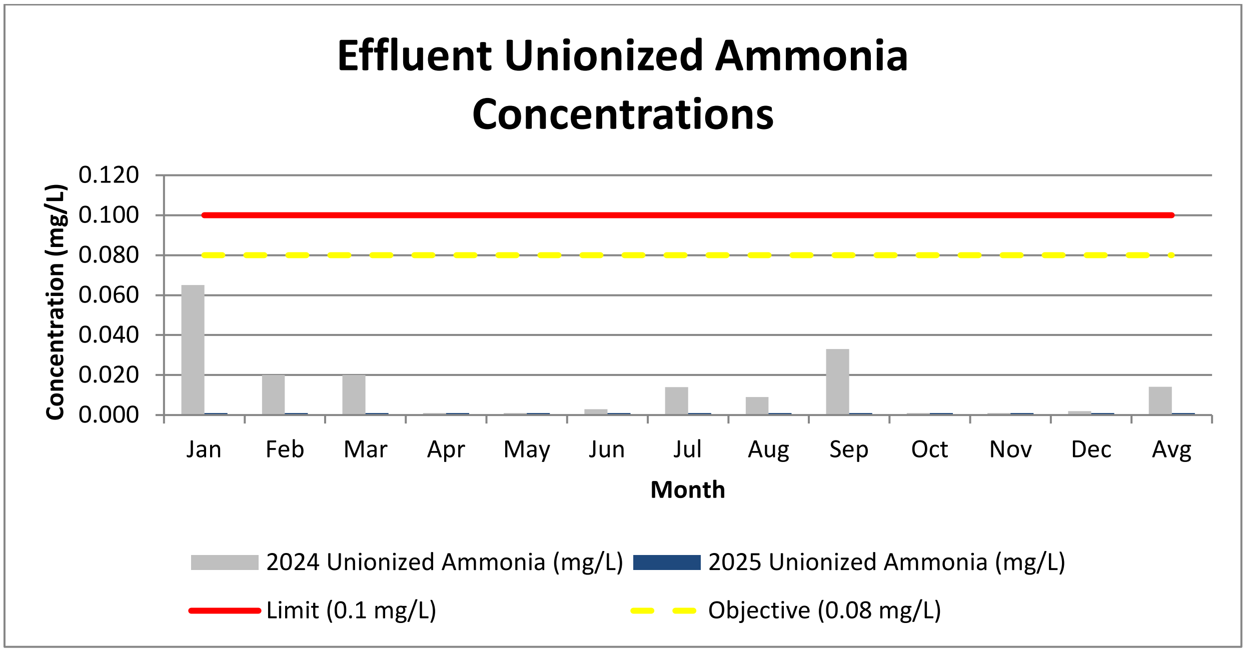

Figure 10. Effluent Unionized Ammonia Concentrations

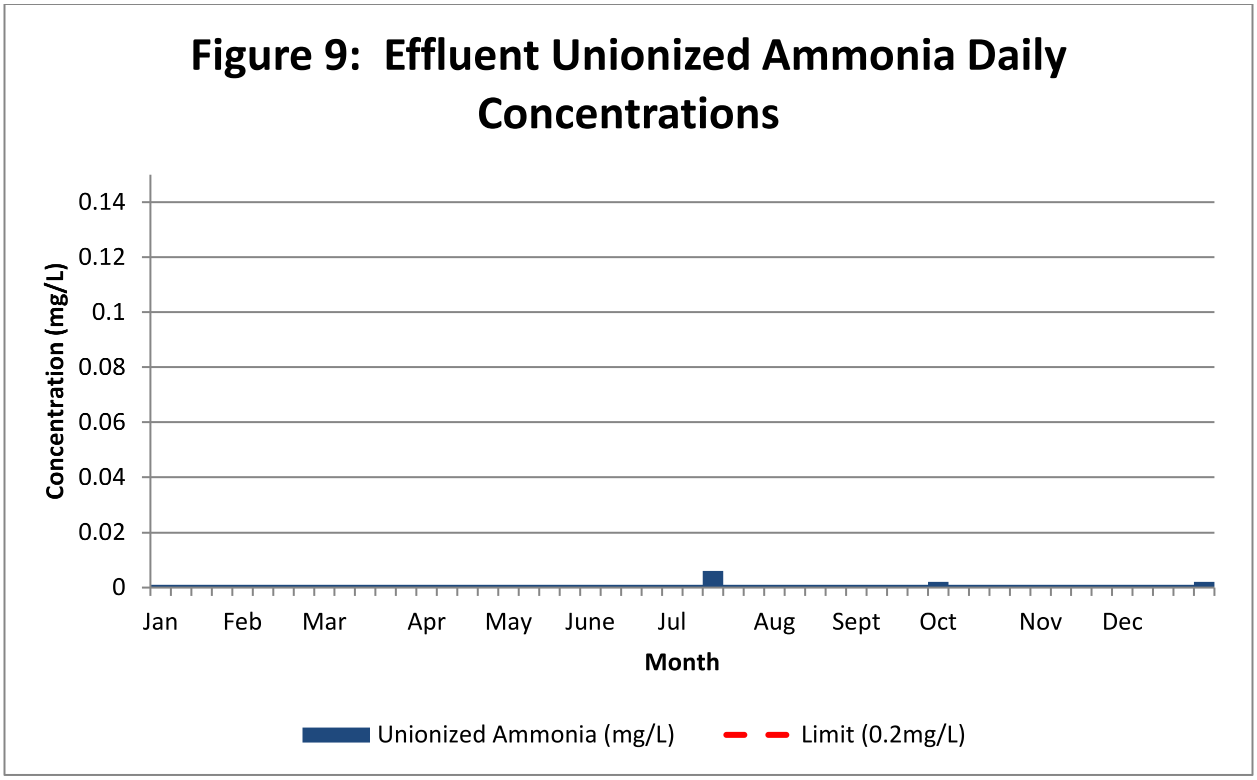

Figure 11. Daily Effluent Unionized Ammonia Concentrations

The monthly geometric mean effluent *E. coli* concentration in 2025 was 3.1 MPN/100mL, which is a 13 % decrease from the annual average in 2024. There were no objective or limit exceedances in 2025. Refer to Figure 12 for a comparison of 2025 monthly effluent E. coli concentrations to 2024 concentrations.

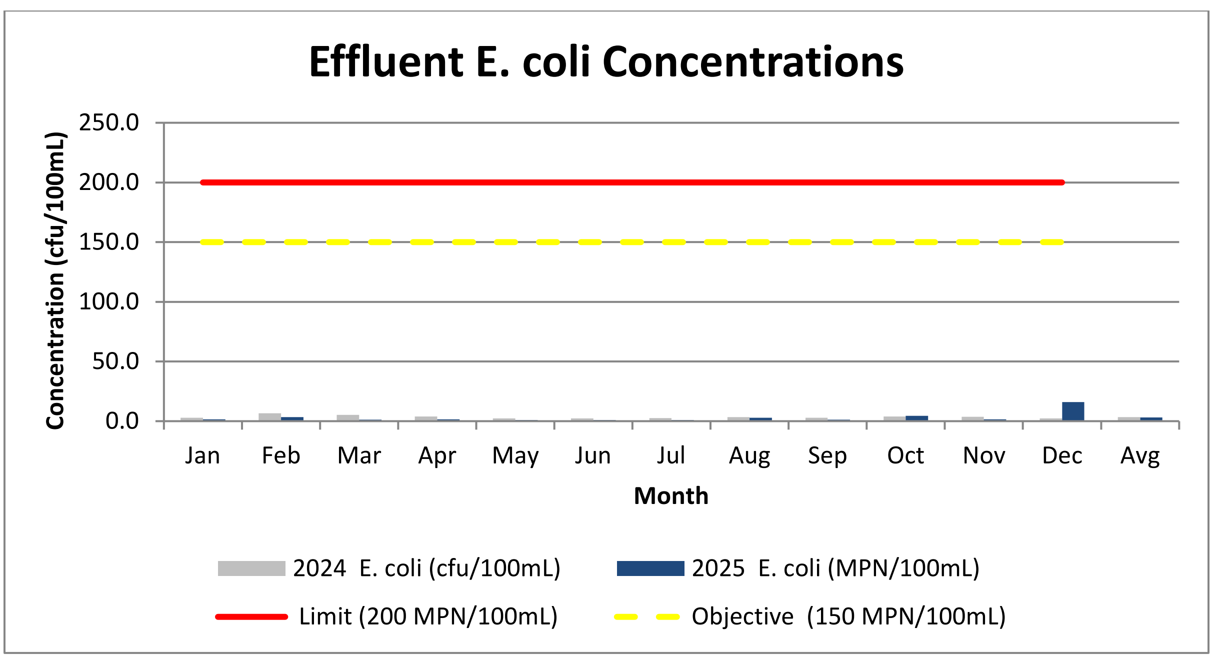

Figure 12. Effluent E. coli Concentrations

The annual monthly average effluent pH value in 2025 was 7.3. There was one (1) effluent pH objective exceedance in March that did not result in a limit exceedance. The exceedance is attributed to the February digester spill event, which resulted in considerable volumes of spilled sludge and decanted water from the digester and lagoon being returned to the WPCP headworks. Refer to ***Summary of Efforts Made to Achieve Design Objectives*** for more information on the single sample pH objective exceedances.

A suspected dye discharge event that entered the WPCP and persisted within the treatment processes for approximately 5 days is considered to be a secondary contributing factor to the exceedance. See the ***Operating Problems & Corrective Actions*** and ***Bypass, Overflows or Abnormal Discharge Events*** sections for more details on these events. Refer to Figure 13 for a comparison of 2025 daily effluent pH values to the objectives and limits.

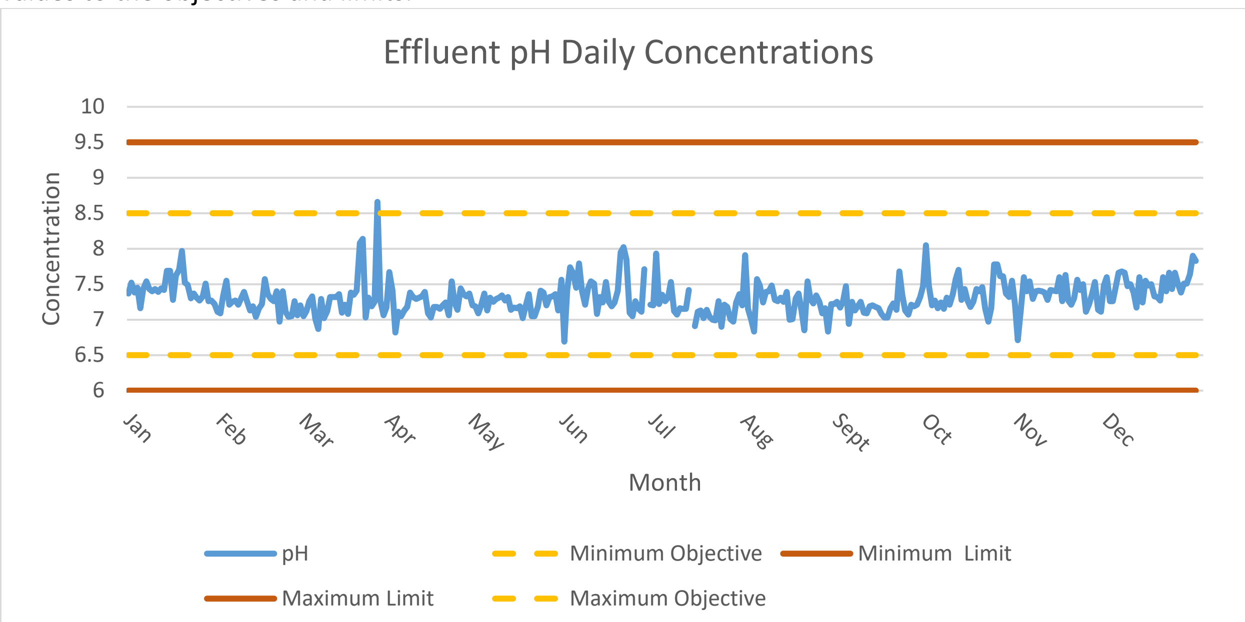

Figure 13. Effluent pH Concentrations

The monthly average Dissolved Oxygen (DO) concentration in 2025 was 9.0 mg/L. There was one (1) D.O. objective exceedance that did not result in a limit exceedance in 2025. Refer to ***Summary of Efforts Made to Achieve Design Objectives*** for more information on the single sample DO objective exceedances. Refer to Figure 14 for a comparison of 2025 daily effluent DO concentrations to the objective and limit.

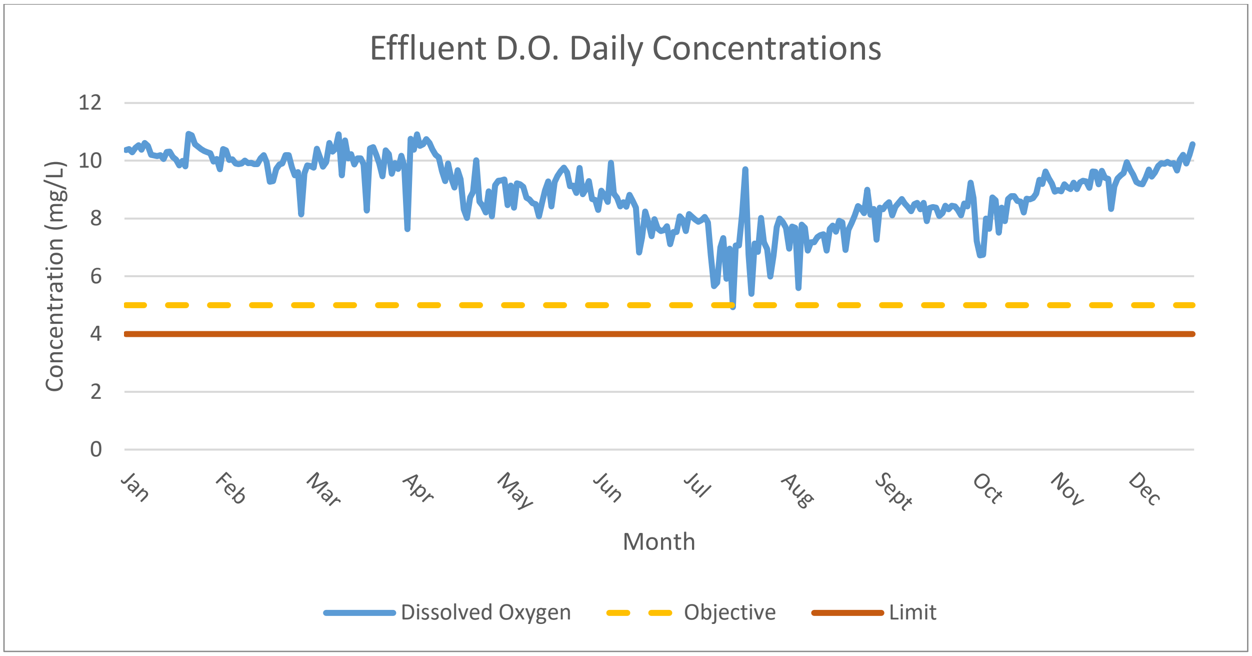

Figure 14. Effluent DO Concentrations

Deviations from Monitoring Schedule

Deviations from the 2025 sample calendar are outlined in Table 3. Refer to ***Appendix B Monitoring Schedule*** for the 2026 sampling schedule.

Table 3. Summary of Deviations from Monitoring Schedule

Scheduled Date	Collected Date	Reason for Deviation
May 20, 2025	May 19, 2025	Moved weekly raw & effluent samples to meet sample holding time requirements due to stat holiday.
June 30, 2025	July 1, 2025	Moved weekly raw & effluent samples to meet sample holding time requirements due to stat holiday.
September 29, 2025	October 1, 2025	Moved weekly raw & effluent samples to meet sample holding time requirements due to stat holiday.
November 10, 2025	November 12, 2025	Moved weekly raw & effluent samples to meet sample holding time requirements due to stat holiday.

Operating Problems & Corrective Actions

The Stratford WPCP faced significant operational pressures in 2025, and in addition to operational difficulties related to aging infrastructure and equipment breakdowns, the facility experienced several effluent objective and limit exceedances. There were single-sample effluent objective exceedances for pH and DO, none of which resulted in limit exceedances. In addition, there were monthly average effluent objective exceedances for TP and TSS, with the TSS exceedance resulting in one corresponding limit exceedance. Refer to the ***Summary of Efforts Made to Achieve Design Objectives*** section for additional details on objective and limit exceedances.

Total Phosphorus

In response to rising chemical costs, operations staff at the Stratford WPCP have been working towards optimizing the chemical dosages applied to wastewater treated at the plant in 2025. As a result, settling characteristics and phosphorus removal can be variable from month-to-month while dosages are optimized for plant flows, and average monthly Total Phosphorus (TP) concentrations can increase from 2024 averages as instances of chemical overdosing are reduced. Despite the ongoing dosage trials, unexpected operational issues throughout 2025 contributed to four (4) monthly average effluent TP concentration objective exceedances. Refer to ***Summary of Efforts Made to Achieve Design Objectives*** for more information on the monthly TP objective exceedances.

Solids Handling, Storage,

Sludge storage presents ongoing challenges for the WPCP due to limited space and land application capabilities. Wet weather in spring of 2025 delayed the start of sludge haulage until late May. Inflow and infiltration in the collection system continues to cause operational challenges at the WPCP. High flows during significant rain and snowmelt events resulted in multiple Primary Treated Overflows and also resulted in high volumes of organic and inorganic solids being carried into the WPCP. These solids contribute to high sludge levels within the primary clarifiers and can result in upsets if daily sludge volumes fed to the digester are rapidly increased. Additionally, inorganic solids can build up as inert material within the primary clarifiers, aeration tanks, and anaerobic digester, which then contributes to the volume of sludge hauled each year, as well as wear on process equipment (e.g. pumps and pipes).

Filtration

Filter media and underdrain replacement in 2022–2023 improved the filter's ability to remove fine suspended solids from wastewater and modestly increased filter flows. However during high flow conditions, or during periods where secondary clarifier effluent contains high TSS concentrations, the increased removal efficiency resulted in more frequent media fouling, which reduced available filter through-flow capacity. Under these conditions, tertiary bypasses occurred in April, May, and October when filter levels rose to the high-level alarm set point. Refer to the ***Bypass, Overflow, Spills & Abnormal Discharge*** section for additional details.

Operational measures were implemented to restore filter capacity, including manual backwashes. OCWA staff and third-party contractors worked to troubleshoot issues with filter high level alarms in SCADA by replacing float switches and repairing associated wiring. While alarm functionality has been restored, the current filter configuration allows only one filter to be backwashed at a time.

Extended backwash cycle intervals driven by mud well pumping capacity limitations and lack of integrated remote monitoring of filter levels and backwash valve status in SCADA can delay optimal backwashing under peak conditions. These system constraints increase the potential for filter fouling and reduced capacity during high-flow events. Refer to the ***Maintenance Activities*** section for recommended corrective actions and SCADA upgrade opportunities.

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Aging Infrastructure and Equipment Failures

The Stratford Water Pollution Control Plant (WPCP) is equipped with three screw pumps, each rated at 427 L/s, as well as a high-capacity storm pump rated at 2,600 L/s to support reliable influent conveyance under a range of operating conditions. During 2025, planned maintenance needs were identified for the 427 L/s pumps, including upper and lower bearing replacements. During this period, the high-capacity storm pump was utilized to ensure uninterrupted wastewater pumping and continuous plant operation.

The storm pump ensured continued system operation; however, as it is not equipped with a variable frequency drive, it operated at full speed during extended runtimes and was managed accordingly while longer-term maintenance and repair options continue to be pursued

Efforts to complete lift pump maintenance have required careful planning due to site conditions such as wet well depth, existing infrastructure configuration, and the age of certain concrete components. Plant staff and engineering resources are actively evaluating practical repair and rehabilitation approaches, and lift pumps #1 and #2 remain out of service during this assessment.

From April 22 to April 30, the WPCP detritor was temporarily taken out of service to allow for the fabrication and installation of new grit arms, replacing original components that had reached the end of their service life. During this brief maintenance window, increased solids loading required operational adjustments to filter backwashing and solids handling processes to maintain consistent treatment performance. These conditions contributed to higher total suspended solids (TSS) effluent concentrations observed during April. Refer to ***Summary of Efforts Made to Achieve Design Objectives*** for details. In addition, age-related air distribution system components within the aeration tanks were addressed through targeted maintenance activities. Operations staff isolated individual aeration cells as required, repaired piping, and replaced diffuser gaskets to maintain uniform air delivery and treatment efficiency. Looking ahead, a comprehensive aeration system upgrade is planned for 2026–2027, which is expected to further enhance operational reliability and system efficiency.

Maintenance Activities

Capital and major maintenance recommendations have been submitted by OCWA to the City of Stratford to address aging infrastructure and ongoing maintenance requirements for the WPCP to continue to produce high quality effluent. Items included on the list for 2026 are:

- Annual inspections and maintenance of:
    - Backflow preventers
    - Emergency diesel generator
    - Fire extinguishers
    - Forklift
    - Gas detectors
    - Lifting devices
    - Turbo blower
    - Administration and digester building boilers
    - Weather station

- Annual aeration cell cleanout and maintenance
- SCADA support and upgrades, including:
  - filter level monitoring
  - alarms when filter back wash intervals exceed a maximum duration
  - ability to monitor filter backwash valve settings
- Raw sludge pump and grinder replacement parts and repairs
- Bar screen Maintenance and repairs
- Administration building upgrades and repairs
- Raw sewage pump rebuild
- Portable submersible pumps (Grindex)
- Ferrous chloride building pump and floor repairs
- Spare/replacement mudwell pump
- Boiler recirculation pump repairs and maintenance
- Digester pump, valve, and pipe replacement parts and maintenance
- Final clarifier maintenance
- Aeration DO system maintenance
- Milltronic level transmitter replacements
- Detritor main flow flowmeter
- Raw sludge flowmeter
- Blower building MCC electrical upgrades
- Shop/detritor building heating system/recirculation and hot water maintenance
- Air handling unit replacement parts
- Primary digester roof repairs
- Filter building valve and actuator maintenance
- UV system replacement parts and maintenance
- Filter building surface wash arm parts
- Backwash flow control
- Facility building improvements
- Overflow sampling
- Health and safety improvements
- Lab equipment and supplies
- Chemical piping repairs/replacements
- SCADA touchdown stations
- Spill clean-up materials
- Trailer/large pumps
- Blower control
- Paint
- Final effluent flowmeter
- Primary clarifier level sensors
- Grit removal system replacement
- New aeration blower
- Aeration piping and valve replacement

Preventative and corrective maintenance is assigned and monitored within OCWA's Workplace Management System (WMS) program. Refer to ***Appendix C Maintenance Summary*** for the WMS report for 2025. Refer to Table 4 for a list of normal and emergency repairs and replacements that took place in 2025.

Table 4. Major Maintenance

Major Maintenance
Heat exchanger, 3-way hot loop valve, and sludge recirculation maintenance
Detritor maintenance/replace corroded rake arms
Ferrous pumps and system maintenance
Administration and digester building boiler maintenance
Filter 2 wiring repairs
Bar screen, bar screen sensor, and grit rake maintenance
Snake and flush primary sludge lines; primary sludge pump maintenance; clean scum pits
Turbo blower maintenance and replace faulty HMI screen
Insurance inspections and concrete assessment of digester roof and raw sewage lift pump volute channels
Network switch replacement and SCADA support
Set up caustic soda feed for secondary digester pH adjustment and complete LOF
Replace digester high level alarm float
Replace upper and lower bearing assembly's in raw sewage screw lift pumps
Surface wash pump #1 repairs and reinstallation
Aeration tank clean out and repair aeration piping leaks and replace diffuser O-rings
Reinstall digester gas compressor
Dewatering auger repairs
Repair filter screw pump oil leak
Repair Cl_2 pipework to EQ contact chamber
Repair filter effluent and back wash valves
Third party calibration of flow meters, D.O. and level sensors; handheld pH and colorimeters
Rebuild chemical building louvres and replace seized motor and motor damper
Replace UV lamps and other components; remove old UV agitator blower
Replace ferrous tank #1 flange bolts
Office AC inspection and service
Build new stairs to access oil containment and storage area
Third party backflow prevention device inspections and service
Build and install walking platform over UV channel
Fabricate and install replacement hot water circulation pump coupling

Effluent Quality Assurance

Effluent quality assurance is evaluated by monitoring parameters and changes throughout the facilities processes. Operational staff monitor plant performance by performing in-house laboratory analyses twice per week on; raw sewage, raw sludge, secondary sludge, mixed liquor suspended solids (MLSS) and mixed liquor volatile suspended solids (MLVS), activated sludge, and effluent. These tests include dissolved oxygen, pH, temperature, settling tests and Suspended Solids. Chemical dosages and wasting volumes are also monitored and recorded. Data collected from these tests provide valuable information to the operators to make the appropriate adjustments in the treatment process and take corrective actions before the plant reaches its effluent limits.

Calibration Records

Influent and effluent flow meters were calibrated by Pierce Services & Solutions Inc. on November 20th, 2025. The flow meters met the accuracy tolerance of within 15% of the actual flow rate. Imported sewage volumes are calculated utilising the haul truck manifests. All in-house handheld chlorine residual analyzers, D.O. probes, and lab equipment were also calibrated by Pierce Services & Solutions Inc., in accordance with manufactures instructions. Aeration cell D.O probes and analyzers were calibrated on October 29th, 2025, by Cancoppas Limited. The D.O. probes were found accurate within ± 0.3 ppm O_2. Gas detection meters were calibrated on June 16, 2025 by HETEK Solution Inc. Operational staff complete routine pH meter calibrations and verifications. Refer to ***Appendix D Calibration Reports*** for the 2025 calibration records.

Summary of Efforts Made to Achieve Design Objectives

In 2025, the Stratford WPCP experienced seven (7) effluent objective exceedances for TSS (1), TP (4), DO (1), and pH (1) concentrations as well as one (1) limit exceedance for TSS

In February, there was a monthly effluent TP concentration objective exceedance that did not result in a limit exceedance. This exceedance was due to additional phosphorus loading placed on the plant by returning solids with high TP content from sludge spilled during the February digester spill back into the treatment process.

Monthly average effluent TP concentration objective exceedances occurred in April and May. Although there were multiple bypass events during those months (see the ***Bypasses, Overflows & Abnormal Discharge Events*** section for more details), the TP exceedances can primarily be attributed to grab samples with extremely high TP collected during tertiary bypass events on April 26th and May 1st. The tertiary bypasses resulted in a temporary, but significant increase in effluent TP concentrations during this event. 24-hour composite samples collected through the rest of the day of the tertiary bypasses, returned significantly lower concentrations for all monitoring parameters, including TP.

A monthly average effluent TP objective exceedance occurred for the month of October and is attributed to issues related to ongoing efforts to optimize chemical doses within the WPCP's treatment process and reduce chemical costs. A second factor contributing the October TP objective exceedance was elevated phosphorus concentrations within composite samples collected during a tertiary bypass event on October 23rd.

A monthly average effluent Total Suspended Solids (TSS) concentration limit exceedance occurred in April. As with the TP exceedances, the TSS limit exceedance was primarily due to a single composite effluent sample with extremely high TSS, collected immediately after the April 26 bypass event. 24-hour composite samples collected through the rest of the day of the tertiary bypass, and into the next, returned much lower concentration values for TSS and other effluent monitoring parameters.

An effluent TSS concentration objective exceedance occurred in May due to a grab sample that contained a high concentration of suspended solids, collected immediately following the May 1st tertiary bypass event. TSS concentrations within a 24-hour composite samples collected through the rest of the day of the tertiary bypass, and into the next, returned much lower concentration values for TSS and other effluent monitoring parameters. Refer to Table 5 for a summary of monthly average objective exceedances.

Table 5: Monthly average exceedances

Date	Parameter	Concentration (mg/L)	Objective (mg/L)	Limit (mg/L)	Issue & Actions Taken
Feb-2025	TP	0.13	0.1	0.2	Increased loading from high TP solids being returned to the WPCP – increased chemical dosages to improve TP removal.
Apr-2025	TSS	10.1	5	10	High TSS and TP in grab samples collected during tertiary bypass events. Increased WAS rates to remove excess solids within the plant and manually backwashed filters to improve flow rates and end the bypass events.
Apr-2025	TP	0.18	0.1	0.2	High TSS and TP in grab samples collected during tertiary bypass events. Increased WAS rates to remove excess solids within the plant and manually backwashed filters to improve flow rates and end the bypass events.
May-2025	TSS	9.1	5	10	High TSS and TP in grab samples collected during tertiary bypass events. Increased WAS rates to remove excess solids within the plant and manually backwashed filters to improve flow rates and end the bypass events.
May-2025	TP	0.16	0.1	0.2	High TSS and TP in grab samples collected during tertiary bypass events. Increased WAS rates to remove excess solids within the plant and manually backwashed filters to improve flow rates and end the bypass events.
Oct-2025	TP	0.11	0.1	0.2	Chemical dosage optimization and high TP samples collected during a tertiary bypass event.

A maximum effluent pH objective exceedance that did not result in a limit exceedance, occurred in March. The exceedance is attributed to sludge from the February digester upset, and subsequent cleanups during March, and decant water from the secondary digester and sludge lagoon which was returned to the WPCP for reprocessing. A second contributing factor was the green dye spill event which also occurred during this month. Refer to Spills section of the ***Bypass, Overflows, Spills & Abnormal Discharge Events*** for additional details**.**

There was one (1) D.O. objective exceedance, that did not result in a limit exceedance, out of three-hundred and sixty-two (362) total D.O. measurements in 2025. This exceedance is attributed to maintenance on the WPCP's aeration cells causing the turbo blower to trip offline due to excess discharge pressure, resulting in a rapid decrease in DO concentrations. The blower was restarted and operations staff adjusted the aeration system's isolation valves to help relieve excess system pressure. Refer to Table 6 for a summary of single sample limit exceedances.

Table 6: Single sample exceedances

Date	Parameter	Concentration (mg/L)	Objective (mg/L)	Limit (mg/L)	Issue & Actions Taken
28-Mar-2025	pH	8.66	8.5	9.5	Digester sludge returned to WPCP for reprocessing. Reduced volume of decant water from sludge being returned to WPCP.
18-Jul-2025	DO	4.93	5	4	Aeration blower tripped off due to over pressure. Blower restarted and air valves adjusted to reduce discharge pressure.

No monitoring parameters exceeded design objectives or limits more than 50% of the time in 2025 and there were no trends in deterioration of final effluent quality. In addition, the average influent flow has not reached or exceeded 80% of the WPCP's rated capacity.

Notice of Modification to the Works

Due to persistent digester instability and foaming events that led to multiple unplanned sludge discharges, a pilot trial was implemented in late February to dose the secondary digester with sodium hydroxide for pH control. The trial was successful in reducing digester upsets and subsequent sludge spills. On September 24th, 2025, a Notice of Modification of Sewage Works was completed under the Limited Operational Flexibility (LOF) provisions within the WPCP's ECA to provide digester pH correction on a continuing basis. Refer to ***Bypass, Overflows, Spills & Abnormal Discharge Events*** for more details on events in 2025. Refer to ***Appendix E Modification of Works*** for a copy of the digester pH correction Limited Operational Flexibility (LOF) form.

Sludge Generation & Haulage

The Stratford WPCP has the capacity to store a total of 4,370 m^3 of sludge. The storage tank is rated for 2,850 m^3 and the storage lagoon is rated for 1,520 m^3. Sludge is periodically hauled between April 1st and November 30th for field application. Refer to Table 7 for summary of 2025 land application sites and volumes. For a comparison of the total hauled sludge over the last five (5) years, refer to Figure 15.

In response to numerous digester upsets and sludge spills in 2025, operations staff maintained lower sludge levels within the secondary digester by transferring sludge to storage more frequently. Despite this change to operational processes, a lower total volume of sludge was hauled than projected for 2025. This discrepancy is attributed to the Stratford WPCP no longer receiving sewage from the Conestoga Meat Packers WPCP after May, 2024. As a result, imported sewage volumes received by the Stratford WPCP decreased by 92% from 2024 to 2025. Refer to ***Appendix F Sludge Analysis*** for a summary of stored sludge data from 2025. The anticipated sludge production value for 2026 is approximately 17,000 m^3.

Table 7. Sludge Land Application

NASM Plan Site ID	Month	Volume (m^3)
24608	April	2,945
24504 | 62680	July	1,989
24504 | 62680	August	3,502
24504	September	4621
24661	November	3,496
	Total	**16,553**

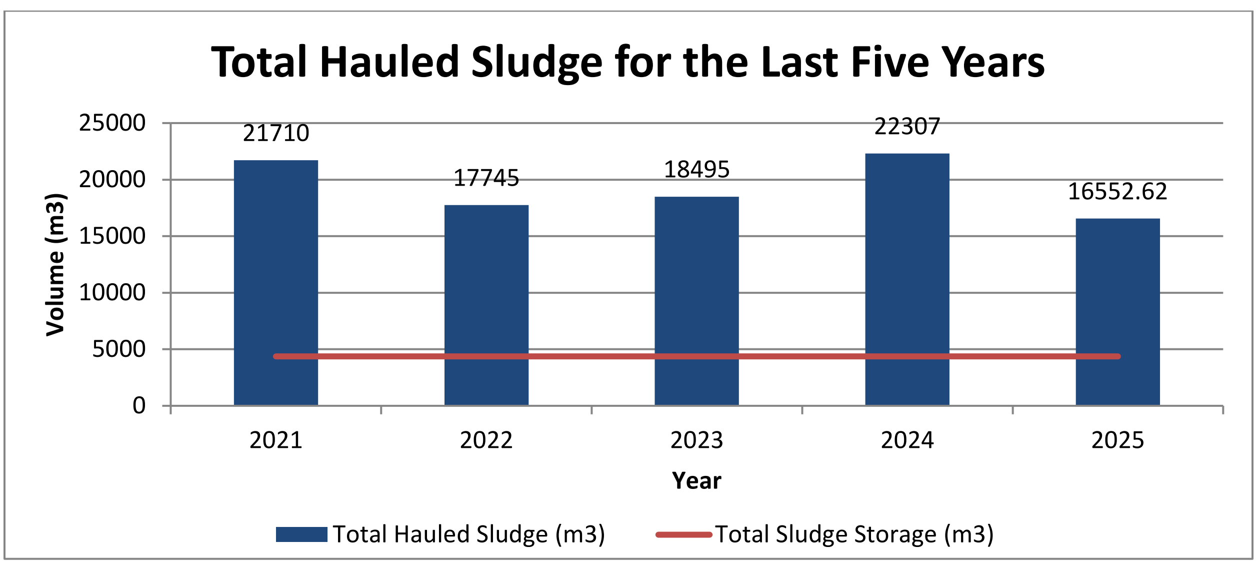

Figure 15. Total Hauled Sludge Volumes

Complaints

The Stratford WPCP has received one (1) community complaint in 2025. On March 11, a community complaint was received by the WPCP after sludge from the February 17 digester spill was discovered to have pooled on the walking path next to the WPCP. In response, staff undertook an extensive inspection of the grounds surrounding the digester within the WPCP property line, as well as the full length of the walking trail downhill from the digester. All identified areas were thoroughly cleaned, with sludge removed using a vac truck to ensure the site was fully restored.

Bypass, Overflows, Spills & Abnormal Discharge Events

A Bypass is the diversion of sewage around one or more treatment processes, within the WPCP. An Overflow is the discharge to the environment from designed location(s) other than the approved effluent discharge location. A bypass or overflow can occur during heavy precipitation and/or snowmelt events when the raw flow exceeds the rated capacity or if a treatment component is out of service for maintenance purposes.

There were four (4) overflow events, all of which have been due to heavy rain and/or snowmelt, five (5) tertiary bypasses, some due to wet weather and some due to operational/mechanical issues within the WPCP, and one (1) secondary bypass in 2025. Table 8 summaries all bypass and overflow events in 2025. Quarterly Bypass and Overflow reports are submitted to the MECP summarizing the events and providing sample results.

Table 8. Summary of Bypass and Overflow Events

Date	Type: Bypass/Overflow	Volume (m^3)
February 25 - April 9	**Overflow**	**979,168**
April 3	**Bypass**	**22,611**
April 7	**Bypass**	**360**
April 26	**Bypass (Spill)***	**876**
May 1	**Bypass (Spill)***	**70**
October 23	**Bypass (secondary)**	**443**
October 23	**Bypass (tertiary)**	**301**
October 23-24	**Overflow**	**8,938**
December 19-20	**Overflow**	**37,483**
December 28 - January 1	**Overflow**	**140,100**

* Non-wet weather bypass event defined as a spill by the SAC.

Outside Normal Operating Condition Samples

The ECA requires additional daily sampling for the WPCP when the plant is operated outside of normal operating conditions. Results are included in final effluent monthly as seen in effluent results. There were no days where the Stratford WPCP exceeded its rated capacity, however, twenty-eight (28)

Outside Normal Operating Condition effluent samples were collected in 2025. Table 9 summarizes the dates and purpose for collecting additional effluent samples.

Table 9. Summary of Outside Normal Operating Conditions Events

Date	Event Description	Date	Event Description
February 19, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	March 29, 2025	Green dye Spill
February 20, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	March 30, 2025	Green dye Spill
February 21, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	April 27, 2025	High solids in WPCP after April 26th tertiary bypass
February 22, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	April 29, 2025	High solids in WPCP after April 26th tertiary bypass
February 23, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	May 2, 2025	Effluent samples collected after May 1 Tertiary bypass
February 25, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	May 13, 2025	Effluent samples collected after May 12 & 13 digester upset and sludge spill
February 26, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	June 6, 2025	Effluent samples collected during high flows and digester upset/foaming event
February 27, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	July 10, 2025	Raw influent samples following digester upset and sludge spill
February 28, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	July 11, 2025	Raw influent samples following digester upset and sludge spill
March 1, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	July 15, 2025	Effluent samples collected after TAN spike on July 14 weekly sample
March 4, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	July 23, 2025	Raw influent sample collected after abnormal color and odor noted in primary clarifiers
March 5, 2025	Post-sludge secondary digester upset and sludge spill effluent monitoring	July 24, 2025	Additional raw influent and final effluent samples collected after TP concentration discrepancies between in-house and accredited lab results

Date	Event Description	Date	Event Description
March 27, 2025	Green dye Spill	July 25, 2025	Additional raw influent and final effluent samples collected after TP concentration discrepancies between in-house and accredited lab results
March 28, 2025	Green dye Spill	July 29, 2025	Effluent sampled after foaming and possible filamentous observed in aeration

Overflows

The ECA requires additional sampling for the WPCP when the plant experiences an overflow or bypass event. Bypass sample results are included in the final effluent results. For the overflow events, samples are collected every hour and combined into an eight-hour composite sample for the duration of the event. The samples are analyzed for BOD_5, total suspended solids and total phosphorous. All applicable notifications have been made and samples were collected during all overflow events, as required by the Environmental Compliance Approval (ECA).

An overflow event occurred at the WPCP between February 25th – April 9th due to heavy rain and snowmelt. All applicable notifications have been made, however, the ECA requirement to collect overflow samples every 8 hours was not met. Overflow samples were not collected between February 28 – March 1, and between March 23 – 24, resulting in a non-compliance. Improved chain of custody practices, and additional reviews and verifications of collected samples were adopted by operations and management staff to help prevent similar issues from occurring in the future. Refer to Table 10 for a monthly summary of overflow sample results.

Table 10. Overflow Event Results

Month	BOD_5 (mg/L)	TSS (mg/L)	TP (mg/L)
January*	65.00	23.23	1.70
February	88.43	33.00	1.98
March	45.71	23.99	1.26
April	40.96	27.85	1.04
May	---	---	---
June	---	---	---
July	---	---	---
August	---	---	---
September	---	---	---
October	42.00	45.00	1.31
November	---	---	---
December	43.24	31.65	0.90
Average	**49.04**	**26.10**	**1.28**

* Includes overflow samples collected in January during the Dec. 26, 2024-Jan 9, 2025 event.

Bypasses

A tertiary bypass occurred during an extreme wet weather event on April 3rd after high inflows to the WPCP clogged the filter media and caused the filters to go into high level alarm, automatically shutting down the filter lift pumps. The tertiary bypass valve automatically opened once the filter inlet trough level reached the high level alarm setpoint. Operations staff performed manual filter backwash cycles to increase filter through-flow; however, extreme rainfall increased water levels within the WPCP's primary and secondary clarifiers above the height of the V-notch weirs. This resulted in short circuiting within the clarifiers, and high solids within the clarifier effluent continued to clog the filter media and hindered manual backwash efforts until water levels within the plant decreased.

On April 7th, a tertiary bypass occurred at the WPCP after automatic filter backwash cycles were suspended due to the filter inlet valve being set to a mode that prevented automated operation. The extended interval between backwashes led to clogging of the filter media and caused filter levels to reach the high-level alarm setpoint, which automatically shut down the filter lift pump. Once the mud well level reached its high-level alarm setpoint, the filter bypass valve opened as designed. Staff performed manual backwashes to clean the filter media and restore normal filter flow.

A tertiary bypass occurred on April 26 after the Waste Activated Sludge (WAS) volume setpoint was adjusted to a level that prevented routine WAS removal. This resulted in solids accumulating within the WPCP, eventually leading to solids overflowing the secondary clarifier weirs and clogging the filter media. As the filters reached their high-level alarm condition, the filter bypass valve opened automatically once mudwell levels triggered the high-level alarm setpoint. It should be noted that although this event meets the definition of a bypass as outlined in the facility's Environmental Compliance Approval (ECA) and was reported to the SAC as such, it was re-classified as a spill by SAC because it was unrelated to a wet-weather event.

Another tertiary bypass occurred on May 1st, due to the WAS volume set point being adjusted to a level that prevented routine WAS removal. The filters became clogged and bypassed in the same manner as the April 26th event. It should be noted that this event was reported to the SAC as a bypass, however, the SAC also re-classified this event as a spill due to it being unrelated to wet weather. No further correspondence has been received by the MECP at this time regarding the reasoning for the re-classification of these events or future reporting requirements for non-wet weather related bypasses.

On October 23rd, secondary bypass occurred after high inflows to the WPCP during an extreme wet weather event caused the level within the primary effluent pump chamber to reach the overflow pipe. Additional flow entering the primary effluent chamber would have diverted through the overflow and through the secondary bypass channel to be discharged to the Avon River.

A partial tertiary bypass also occurred on October 23rd after high plant flows caused water levels within the filter pump wet well to reach the high level alarm point and the tertiary bypass valve to automatically open. It should be noted the filter levels did not reach the high level alarm set point. As a result, the filter lift pumps continued running and directed some of the secondary clarifier effluent through the filters, per the WPCP's usual operating configuration, throughout the duration of the bypass.

Spills

A primary digester overpressure event in May 2024 resulted in the digester roof lifting and separating from the rest of the digester structure. The primary digester has been isolated, and raw sludge diverted directly to the secondary digester. Digester repair assessments have been completed and repair designs are being finalized and pending approval. Using the secondary digester alone to process raw sludge has created series of operational challenges.

Approximately 20 m^3 of secondary digester sludge spilled on February 17th after a digester upset resulted in excessive foaming. Meltwater from snow accumulated on top of the roof seeped into the digester, increasing the water level within. Foam within the digester seeped around the gas skirt of the digester's floating roof and flowed down the digester walls. The primary digester was isolated following the spill, and sludge was transferred to the storage day bed to reduce the tank level. Vac trucks were brought on site to clean up the spilled sludge, however, cold temperatures caused much of the spilled material to rapidly freeze.

Frozen sludge was broken up and transferred to the sludge storage lagoon. As warmer weather melted snow cover, additional sludge from the February 17th spill was located on March 5th and 12th. The sludge was cleaned up by vacuum truck and transferred to the sludge storage lagoon for storage until it could be hauled off site. The facility met all SAC notification requirements for the event in accordance with the ECA.

On March 27, a discharge within the city's wastewater collection system, of what is believed to be dye, turned the influent entering the WPCP a strong green color. The treatment process was unable to remove the pigment agent from the water, resulting in discolored effluent entering the Avon River at the plant's outfall for approximately five (5) days. All required notifications were made and samples of the discolored water were collected at various stages of the treatment process and tested for all required Outside Normal Operating Conditions (ONOC) parameters, Refer ***to Appendix A for Influent & Effluent Data***. In addition, analysis was conducted for F1-F4 hydrocarbons and metals.

A raw influent sample, collected shortly after the discoloration was first observed, returned an F3 concentration of 486 µg/L. All effluent samples analyzed for F1-F4 hydrocarbons returned results below the detection threshold. Effluent samples showed elevated pH shortly after the discoloration entered the WPCP, however, no abnormal results were observed for additional ONOC parameters. The March 27 green dye spill event is a contributing factor to which contributed to the March effluent pH objective exceedance.

On April 3rd, the WPCP experienced a collection system spill after extreme rainfall resulted in the collection system surcharging. Sewage began to overflow from manhole covers near the lift station at the WPCP's headworks building. The WPCP's high capacity storm pump was started, and the collection system surcharge was cleared from the trunk mains entering the WPCP. Hydraulic restrictions within the plant from preliminary bar screen loading resulted in the piping within the WPCP surcharging, and raw sewage began to spill from the primary distribution chamber.

A raw sewage spill occurred at the WPCP on April 21 after a large and sudden inflow of water entered the WPCP through the Queensland trunk main. The inflow surcharged piping within the WPCP and resulted in sewage overflowing at the vactor truck dumping station. WPCP staff contacted the City of

Stratford's Environmental Services Department to report a potential water main break, or sewer blockage. Collection system operators investigated the catchment area of the trunk main, but did not find any water main breaks or leaks, and a visual inspection of the sewer mains found no blockages within the affected main.

Secondary digester sludge spills, with combined volume of approximately 7 m^3, occurred on May 12 and 13 due to significant foaming within the digester. This foam was able to seep past the gas skirt of the structure's floating roof and flow down the sides of the digester, and on to the surrounding grass and asphalted areas of the WPCP. All required regulatory notifications were made, and samples of sludge were collected from the digester during upsets. Sludge pooled on the ground was transferred to the WPCP's sludge storage lagoon.

Clean up operations were completed, and process adjustments were made to help prevent similar incidents from occurring. Such measures include:

- Performing sludge transfers at the start and end of the day to help maintain lower sludge levels within the digester.
- Conducting daily checks of digester levels.
- Implementing a weekly sludge sampling program to monitor volatile acids and alkalinity to help provide advance notice of digester upsets.
- A second, later digester check on weekends to make sure the level will be OK through the night
- A 24-hour composite sample of the raw sewage entering the WPCP is collected every day, and following instances of digester upsets, excessive foaming, or sludge spills, the sample is sent for analysis.
- Submitting a request for Limited Operational Flexibility to dose the secondary digester with caustic soda for improved pH and alkalinity adjustment.
- A foam sensor system is being installed in the space between the secondary digester roof and the wall of the structure. There have been delays in this project, it is ongoing.

Following the implementation of these corrective actions and increased monitoring, digester foaming incidents and spills occurred less frequently. The WPCP experienced a spill of approximately 10 L on July 10th after excessive amounts of foam in the secondary seeped past the seal of the floating roof and flowed down the walls of the digester.

A raw sewage spill occurred on July 24th due to high inflows to the WPCP following heavy rains. The inflows triggered a high-level alarm that resulted in the high-capacity storm pump automatically starting while the lower capacity duty lift pump continued running. Both pumps running simultaneously caused the raw sewage piping within the WPCP to surcharge, and sewage spilled from grating outside the head works building an onto the driveway of the WPCP.

At the time of this event, raw lift pumps 1 and 2 were out of service for rebuilding and bearing replacements and repairs, which has since been completed. OCWA is also working to repair age-related wear of the concrete volutes on pumps 1 and 2. Additional capacity from standby lift pumps, other than the high-capacity storm pump, allow the WPCP to maintain head works wet well levels below the storm pump's automatic starting level during moderate to high inflows, and avoid similar events from occurring in the future.

A sludge spill occurred at the WPCP on August 12th after a hauling truck pulled away from the sludge loading pad with an improperly secured fill port lid. Approximately 2 m^3 of sludge spilled from the trailer, which was cleaned up by washing it back into the sludge storage lagoon.

A raw sewage spill occurred after hours on October 23rd and had ended by the time operations staff arrived on site. Debris strewn on the WPCP's driveway suggests the spill originated from the Vac truck dumping station manhole.

Summary of Efforts made to achieve conformance with F-5-1

The City of Stratford continues its efforts to reduce or eliminate bypass and overflow events through reducing inflow & infiltration (I & I) to the sanitary wastewater collection system. Capital projects intended to reduce collection system I & I include replacement of 976 m of sanitary sewer mains in 2025. Refer to the City of Stratford Sewage Collection System, Consolidated Linear Infrastructure Annual Performance Report for a strategy on managing future bypass and overflow events.

Appendix A

Influent and Effluent Data

(Appendices can be provided upon request to Clerk's Office)

Appendix B

Monitoring Schedule

(Appendices can be provided upon request to Clerk's Office)

Appendix C

Maintenance Summary

(Appendices can be provided upon request to Clerk's Office)

Appendix D

Calibration Reports

(Appendices can be provided upon request to Clerk's Office)

Appendix E

Modification of Works

(Appendices can be provided upon request to Clerk's Office)

Appendix F

Sludge Analysis

(Appendices can be provided upon request to Clerk's Office)