Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Stephan Burt
District Manager
Hamilton District Office
Ministry of the Environment, Conservation and Parks

March 28, 2025

Re: 2024 Annual Performance Report for the Simcoe Wastewater Treatment Facility, Sewage Pumping Stations and the Simcoe Linear Infrastructure.

Attached is the 2024 Annual Performance Report for the Simcoe Wastewater Treatment Facility (WWTF) located at 16 Oakwood Avenue in Simcoe, Norfolk County and all associated sewage pumping stations (SPS's). This report has been completed in accordance with the following approvals:

- Section 11(4)(a) through (n) cited in Environmental Compliance Approval #5789-BDHNWH issued October 10, 2019 to the Corporation of Norfolk County.
- Schedule E, Section 4.6 cited in the Consolidated Linear Infrastructure – Environmental Compliance Approval #070-W601 issue number 1 issued on July 27, 2022 to the Corporation of Norfolk County

This report, as it pertains to the WWTF and the SPS's and forcemains was prepared by the Ontario Clean Water Agency on behalf of Norfolk County, based on the information contained in our records. The information included in the reports on the Simcoe gravity separate sewers was provided by Norfolk County.

The report covers the period from January 1, 2024 to December 31, 2024.

Sincerely,

Allison Billingsley
Process and Compliance Technician
Ontario Clean Water Agency
Southwest Region - Norfolk Cluster

Cc:
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Shaun Earls - Manager, Water & Wastewater Compliance, Norfolk County
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*Appendices available by request

Introduction:

The Simcoe Wastewater Treatment Facility (WWTF) is a conventional activated sludge facility with a rated capacity of 15,400 m^3/d. Simcoe also has three pumping stations. The overall facility comprises of the following key components:

- A headworks and preliminary treatment facility comprised of screening, raw sewage pumping and grit removal;
- A hauled waste receiving facility;
- A leachate receiving facility;
- Two liquid trains called plant 1 and plant 2 with individual capacities of 2,671 m^3/d and 12,729 m^3/d respectively
- Fine bubble aeration system with dissolved oxygen control
- Common chlorination/dechlorination based disinfection system;
- Common tertiary filtration system; and,
- Anaerobic digestion based sludge stabilization and storage facility.

Sewage Pumping Stations

The Norfolk County Municipal Wastewater Collection System is made up of five separate wastewater collection systems. The Simcoe wastewater collection system (population 16,121) conveys sewage to the Simcoe Wastewater Treatment Facility through a total of 91 kilometres of gravity separate sewers, 2.7 kilometres of forcemains and three (3) sewage pumping stations (SPS) in the system. There are no overflow or bypass systems in the SPS's of Simcoe. For additional information on the individual SPS's listed below, please refer to CLI-ECA #070-W601 Issue #1.

- WW467 – 2nd Avenue SPS located at 205 Second Ave in Simcoe Ontario. 2nd Ave SPS is a duplex pumping station equipped with 2 pumps (1 duty, 1 standby), with a wet well of 58 m^3 capacity. The station is connected to a 300 mm diameter forcemain discharging to manhole at the intersection of Norfolk Street and Second Avenue. There is no overflow.
- WW492 – Decou Road SPS located at on the Southeast corner of Decou Road and Butternut Drive in Simcoe Ontario. Decou Rd. SPS is a duplex pumping station equipped with 2 pumps (1 duty, 1 standby), with a wet well of 57 m^3 capacity. The station is connected to a 100 mm diameter forcemain discharging to manhole at the intersection of Norfolk Street South and Decou Road.
- WW493 – Talbot Street SPS located at 302 Talbot Street North in Simcoe Ontario. Talbot St. SPS is a duplex pumping station equipped with 2 pumps (1 duty, 1 standby), with a wet well of 13 m^3 capacity. The station is connected to a 150 mm diameter forcemain discharging to manhole at the intersection of Talbot Street North and Maple Street. There is no overflow.

Raw Wastewater Collection

The east half of the pump house contains the dry well and the west half contains the wet well. A full height concrete wall running in the north-south direction divides the two wells. Above the wet well is an electrical equipment room, which houses the Motor Control Centers (MCCs) and

Variable Frequency Drives (VFDs). The wet well is a reservoir situated below grade and includes a recessed section that extends underground to the west of the pump house building. Raw sewage enters the west side of the wet well through a 900mm pipe. A vertical steel bar screen in the wet well protects the raw sewage pump suction intakes from large debris. The bar screen is located across the width of the wet well on the east side of the pit. There are four raw sewage pumps located at the bottom of the pump house dry well. The suction intakes for the pumps extend through the common wall between the wet well and the dry well such that sewage is drawn from the east side of the wet well.

Inlet Works
Primary influent is pumped from the raw sewage pump house and sent through a 400mm forcemain to the influent works, located to the south of the pump house. These works consist of a grit vortex chamber (TEACUP). The grit collection bin is approximately 1m^3 and this bin is emptied twice a week.

Primary Clarification
The degritted wastewater from the influent works flow through a 500mm pipe to the distributing chamber that is situated in the center of the four primary clarifiers. The operator may control the flow from the distributing chamber to each clarifier using a manually operated sluice gate on each clarifier inlet pipe. The primary clarifiers reduce the suspended solids content of the sewage by sedimentation.

The degritted wastewater to each primary clarifier flows from the distributing chamber through a 400mm pipe. The suspended solids with a specific gravity, which is higher than that of the liquid tend to settle to the bottom of the clarifier. The bottom of each clarifier is conical as it slopes toward the center of the tank.

The sludge collection mechanism slowly rotates around the bottom of the tank pushing the settled sediment. The sediment settles to the sludge thickening zone and subsequently into the sludge pocket. The sludge is periodically drawn from the sludge pocket by the raw sludge pumps. The suspended solids with a specific gravity, which is lower than that of the liquid tend to rise to the surface. As the skimmer arm slowly rotates, it sweeps the floating solids toward the periphery of the clarifier around to the scum trough. The solids flow down through the scum trough into the scum pit where it is collected and pumped out by the raw sludge pumps.

Aeration Tanks
Air Diffusion
The primary effluent from the primary clarifiers is collected on the outlet side of the distributing chamber and sent to the aeration tanks through a 750mm pipe. An influent channel distributes the liquid to the four parallel aeration tanks. Influent enters the tanks on the north side and effluent exits the tanks on the south side. Each aeration basin is equipped with fine bubble diffuser and air is supplied by 1 of 3 multi-stage centrifugal blowers powered by 100 HP electric motors.

Secondary Clarification
Ferrous chloride is added to the distribution chamber upstream of the primary clarifiers as well as to the aeration discharge channel. There is one adjacent ferrous chloride storage tanks

located east of Plant #2. The capacity of the tank is approximately 20,000 liters. The activated wastewater produced from the aeration process flows into the four secondary clarifiers where most sludge is settled. The solids that settle to the bottom of the secondary clarifier are either returned to the aeration tanks or sent to the primary clarifiers for co-thickening.

Disinfection Phase

Chlorine Contact Chamber

The secondary effluent from the aeration tanks flow through a 750mm pipe and enters the northwest corner of the chlorine contact chamber. The chlorine contact chamber is a square basin containing 5 baffles which is designed to slow flow and prevent short circuiting of the tank to allow for a minimum of 30 minutes of chlorine contact time. A chemical feed pipe in the chlorine room of the chlorination building delivers a dose of 12% hypochlorite solution to the incoming effluent stream at the chamber inlet. The turbulence at the chamber inlet causes the effluent and hypochlorite to mix. The mixture flows through the tank and finally passes through a 24 inch Montana flume flow measuring device.

Sodium Bisulphite

Sodium Bisulphite is stored in a 2,000L chemical storage tank with adequate spill containment. It is dosed at the outlet from the tertiary disk filters by means of a feed pipe along with two (2) 5.5L/h metering pumps (one standby).

Tertiary Treatment

Tertiary treatment is provided by two (2) automatic disk filters which run together starting up based on the level in the tank and rotating to introduce clean filter media to the effluent. A backwash pump and spray bar are used to clean the filters as they rotate to backwash any captured solids. Solids are then returned to the headworks of the facility.

Anaerobic Digestion Facility

Primary Digester

The raw sludge removed in the primary clarification process is sent through a 200mm raw sludge line from the primary clarifiers to the primary digester. The primary digester has a fixed steel dome and a holding capacity of 2,507m^3. The sludge entering the primary digester is heated to an internal temperature of 35ºC. This temperature must be maintained for the process to work. The primary digester uses a gas mixing system. The compressor supplying the compressed air to the lances is located in the compressor room on the second floor of the digester control building. The sludge mixer is operated continuously throughout the year. The gas pressure in the digester is controlled using pressure switches. These switches indicate if the gas pressure is either too high or too low. The gas mixing system will shut down if either condition is detected.

Secondary Digesters

The content in the primary digester will gradually rise and flow into an overflow chamber. The sludge in the chamber will continue to flow by gravity into the secondary digesters for additional thickening of the digested sludge. The two secondary digesters each have a floating steel dome and a combined holding capacity of 2,437m^3. There is no assisted mixing in the secondary digesters. Sludge is either emptied onto a tanker truck or transferred between secondary

digesters. The digested sludge from the two secondary digesters are emptied and hauled to the Townsend Lagoons for interim storage or directly land applied to agricultural fields.

Standby Power
The emergency power for the entire plant is supplied from:
SDMO X700UC2 Supplied by GAL Power
4353 L Diesel fuel tank
700KW 1045HP

Simcoe WWTF Facts:

Environmental Compliance Approval	ECA 5789-BDHNWH (issued October 10, 2019)
Rated Capacity	15,400m^3/day
Receiving Water	Lynn River

For 2024, the Simcoe WWTF was operated in accordance with provincial regulations as required in ECA #5789-BDHNWH (ECA) issued October 10, 2019.The following report is presented such that it corresponds with ECA #5789-BDHNWH Section 11(4) (a) through (n) and satisfies the requirements for the sewage pumping stations and the Simcoe linear infrastructure in CLI-ECA #070-W601 Issue #1 dated July 27, 2022.

Section A: Influent Monitoring Data

As outlined in ECA#5789-BDHNWH Section 11(4)(a) the following is a summary and interpretation of all influent and imported sewage monitoring data and a review of the historical trend of the sewage characteristics.

(I) Sewage Pumping Stations

In accordance with CLI-ECA Schedule E Condition 4.6.3, below is a summary of all required monitoring data. Currently there is no flow monitoring at the Simcoe SPS's. The following Tables 1 and 2, show the total pump run time hours for each station in 2024 compared to 2023. There is no additional monitoring data that required interpretation or conclusions for the Simcoe sewage pumping stations in 2024. There is no need for future modifications to the sewage pumping stations at this time.

Table 1. Pump Run Hours for the Simcoe SPS's in 2024 and 2023

Sewage Pumping Station (SPS)	Year	Pump #1 (hours)	Pump #2 (hours)
2nd Avenue	2023	172.50	165.90
	2024	186.70	158.30
Decou Road	2023	353.60	350.20
	2024	390.70	384.10
Talbot Street	2023	418.38	416.20
	2024	415.20	414.20

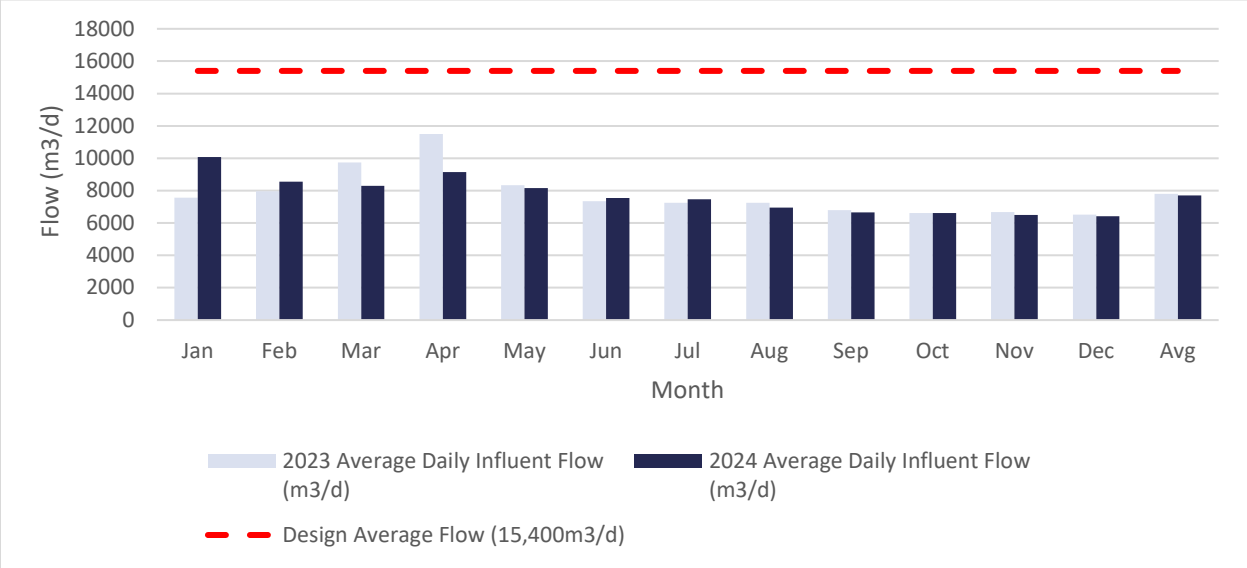
Table 2. Total Pump Run Hours for the Simcoe SPS's in 2024 compared to 2023

Sewage Pumping Station (SPS)	Total Hours 2023 (hours)	Total Hours 2024 (hours)	Percent Change (%)
2nd Avenue	338.40	345.00	+2.0%
Decou Road	703.80	774.80	+10.1%
Talbot Street	834.58	829.4	-0.6%

(II) Influent Flow Monitoring

The average daily flow of raw wastewater (influent) to the Simcoe WWTF in 2024, was 7,697m^3/d which is a 1.31% decrease from 2023. The rated capacity identified in the ECA is 15,400m^3/d. As depicted in Graph 1, the WWTF is currently at 50.0% of the rated design capacity. The following Graph 1 shows the average daily influent flows per month for 2024 compared to 2023.

Graph 1. Influent average daily flows for 2024 compared to 2023

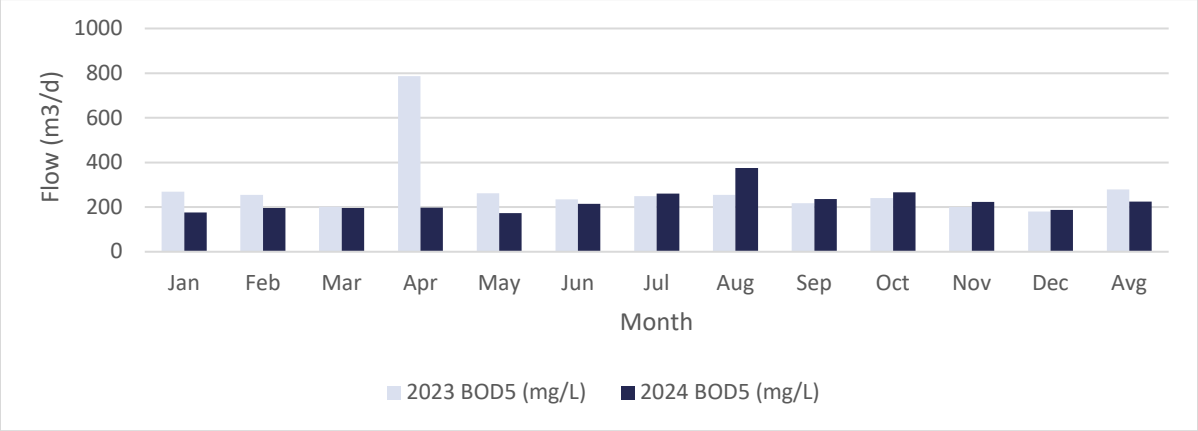


(III) Influent Data

The influent is monitored for BOD_5, total suspended solids (TSS), total phosphorus (TP) and total kjeldahl nitrogen (TKN), at a minimum on a weekly basis by means of a composite sample. Refer to Appendix A for more detailed monthly results.

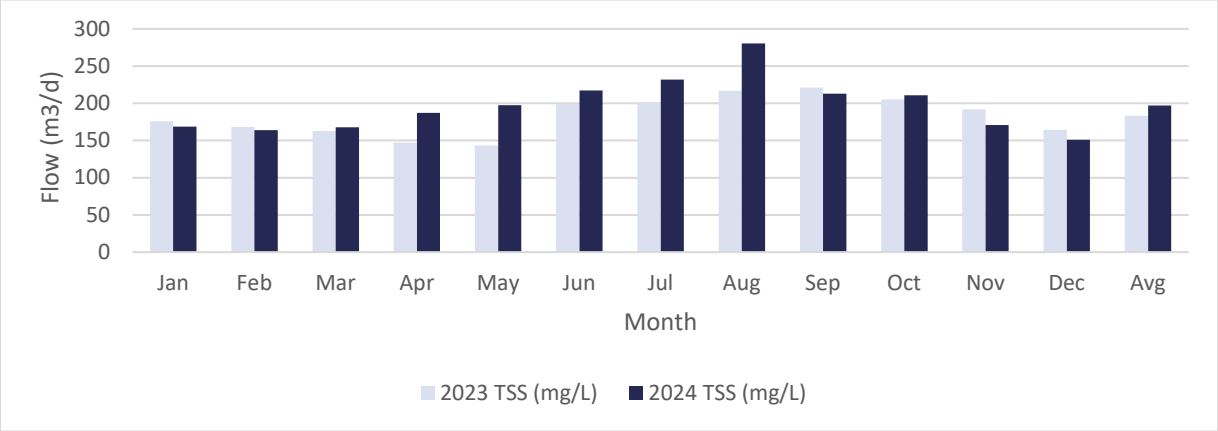
The annual average influent BOD_5 concentration to the plant in 2024 was 225mg/L. This is a decrease from 2023 by 19.4%. Refer to Graph 2 for a comparison of monthly concentrations in 2024 and 2023.

Graph 2. Influent monthly average concentration of BOD_5 for 2024 compared to 2023.



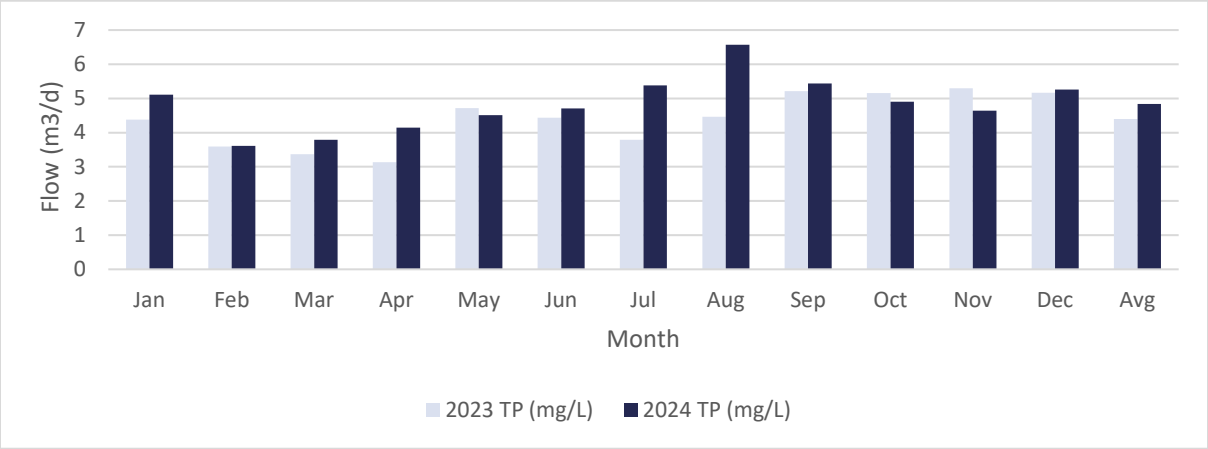
The annual average influent total suspended solids (TSS) concentration to the plant was 197mg/L. This is an increase from 2023 by 7.6%. Refer to Graph 3 for a comparison of monthly concentrations in 2024 to 2023.

Graph 3. Influent average monthly concentration of TSS for 2024 compared to 2023.



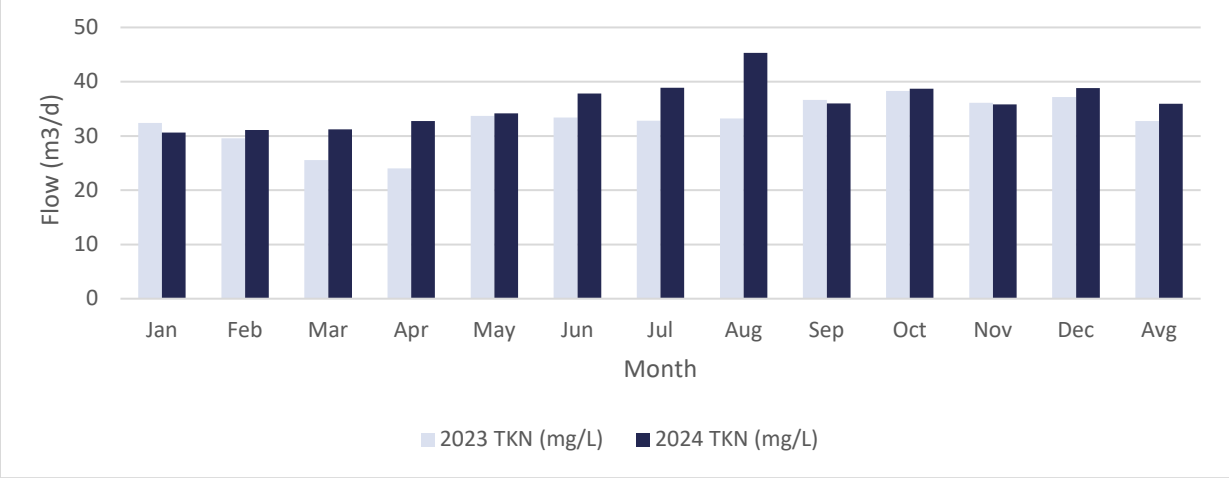
The annual average influent total phosphorus (TP) concentration to the plant was 4.84mg/L. This is an increase from 2023 by 10.1%. Refer to Graph 4 for a comparison of monthly concentrations in 2024 to 2023.

Graph 4. Influent average monthly concentration of TP for 2024 compared to 2023.



The annual average influent total kjeldahl nitrogen (TKN) concentration to the plant was 35.9mg/L. This is an increase from 2023 by 9.8%. Refer to Graph 5 for a comparison of monthly concentrations in 2024 to 2023

Graph 5. Influent average monthly concentration of TKN for 2024 compared to 2023.



The influent characteristics have remained fairly consistent from 2023 to 2024. A slight decrease was noted for BOD_5 while a slight increase was noted for TSS, TP and TKN. . Influent data is subject to fluctuation as expected with the flow variations that are experienced.

(IV) Imported sewage

As required by the ECA, imported sewage (septage) is to be sampled on a monthly basis and tested, at a minimum, for BOD_5, total suspended solids, total phosphorus, total kjeldahl nitrogen, pH and alkalinity. The addition of an imported sewage receiving station is part of the proposed

upgrades for the Simcoe WWTF. The Simcoe WWTF received a total of 1,406.76m^3 of septage in 2024 as broken down in Table 3 below.

Table 3. Total Volume of Imported Sewage to the Simcoe WWTF in 2024

Month	Holding Volume (m^3)	Septic Volume (m^3)	Portable Waste Volume (m^3)
January	169.20	-	-
February	57.50	-	-
March	35.90	-	-
April	117.60	-	-
May	74.26	6.06	-
June	136.76	-	1.70
July	214.46	8.52	1.74
August	84.41	3.03	3.79
September	68.13	3.03	2.84
October	86.30	9.84	10.22
November	58.67	-	-
December	246.78	6.06	-
Total	**1349.93**	**36.54**	**20.29**

(V) Leachate Monitoring

As required by the ECA, leachate is to be sampled on a quarterly basis. The addition of a leachate receiving station is part of the proposed upgrades for the Simcoe WWTF. The Simcoe WWTF received a total of 42,939.91m^3 of leachate in 2024 as shown in Table 4 below.

Table 4. Total Leachate received at the Simcoe WWTF in 2024

Month	Leachate Volume (m^3)
January	4,114.9
February	4,561.0
March	4,082.0
April	4,175.0
May	3,819.2
June	3,936.0
July	4,831.4
August	4,658.2
September	3,834.0
October	2,410.4
November	1,201.6
December	1,316.2
Total	**42,939.91**

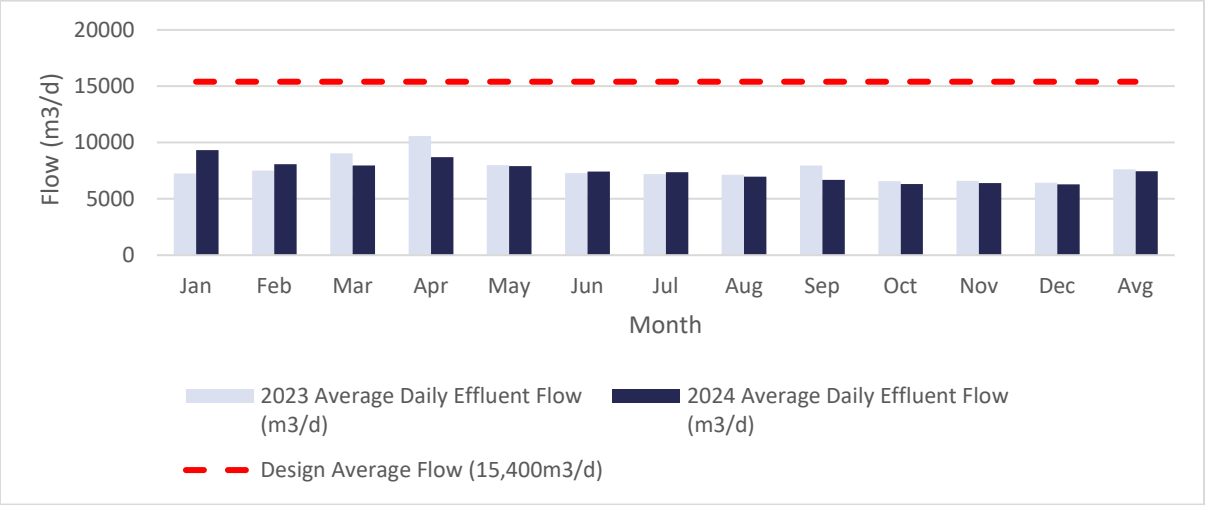
Section B: Effluent Monitoring Data

As outlined in the ECA #5789-BDHNWH Section 11(4)(b) the following is a summary and interpretation of all effluent monitoring data including concentrations and flow rates. Also included is a comparison of effluent concentrations to the design objectives and compliance limits in the approval and an overview of the success and adequacy of the Works.

(I) Effluent Flow Monitoring

The average daily flow of effluent wastewater discharged from the Simcoe WWTF in 2024 was 7,448m^3/d compared to 7,630m^3/d in 2023.

Graph 6. Average monthly effluent flows for 2024 compared to 2023



(II) Effluent Data

The final effluent is sampled on a weekly basis and tested for $cBOD_5$, total suspended solids, and total kjeldahl nitrogen, as a composite sample. Grab samples are collected weekly and tested for E. coli. Three times a week composite samples are obtained for total phosphorus and total ammonia nitrogen, un-ionized ammonia as calculated, pH and temperature. Total residual chlorine is tested daily with the exception of weekends and statutory holidays when the plant is not staffed. Detailed results are found in Appendix A. Table 5 below shows the monthly average effluent results and loadings.

Table 5. Monthly average effluent results for 2024 obtained from composite sampling.

Month	cBOD5 (mg/L)	TSS (mg/L)	TP (mg/L)	TAN (mg/L)
January	2.0	1.8	0.12	0.09
February	2.1	3.0	0.18	0.21
March	2.0	2.8	0.17	0.21
April	2.0	2.0	0.19	0.09
May	2.0	4.6	0.17	0.36
June	2.0	4.0	0.16	0.15
July	2.3	4.3	0.17	0.87
August	2.0	5.0	0.26	0.19
September	2.0	4.0	0.22	0.13
October	2.4	4.0	0.20	0.38
November	2.1	3.5	0.21	0.11
December	2.1	4.3	0.25	0.10
Average	**2.1**	**3.6**	**0.19**	**0.24**
Objective	5.0	7.5	0.15	0.75 (3.0)*
Limit	10.0	15.0	0.45	1.0(5.0)*

*value in brackets is the limit from Nov 1 to Apr 31

Table 6. Monthly average effluent ranges for 2024 obtained from weekly grab samples.

Month	Unionized Ammonia (mg/L)***	Temp (°C)	E. coli (cfu/100mL)*	pH **	Total Residual Chlorine** (mg/L)
January	0.0006	12.1	5.4	7.28-7.75	0.00-0.02
February	0.0009	12.3	24.6	7.04-7.59	0.00-0.02
March	0.0007	12.8	2.5	7.01-7.56	0.00-0.02
April	0.0004	13.9	2.2	7.08-7.74	0.00-0.02
May	0.0041	17.4	1.8	7.24-7.65	0.00-0.02
June	0.0009	18.7	7.1	7.09-7.61	0.00-0.02
July	0.0101	19.7	6.3	6.86-7.67	0.00-0.02
August	0.0017	20.2	14.7	7.17-7.56	0.00-0.02
September	0.0009	19.6	16.3	7.08-7.46	0.00-0.02
October	0.0032	17.5	9.5	7.02-7.45	0.00-0.02
November	0.0012	16.9	7.7	7.35-7.65	0.00-0.02
December	0.0004	13.3	2.2	6.90-7.69	0.00-0.02
Average	**0.0021**	**16.2**	**8.4**	**6.86-7.75**	**0.00-0.02**
Objective	n/a	n/a	150	6.5-8.0	0.02****
Limit	n/a	n/a	200	6.5-8.5	0.02

*expressed as geometric mean
**minimum and maximum result range
***As calculated
**** non-detect = 0.02mg/l due to the limitations of in house colorimeters.

Table 7. Monthly average loadings for 2024.

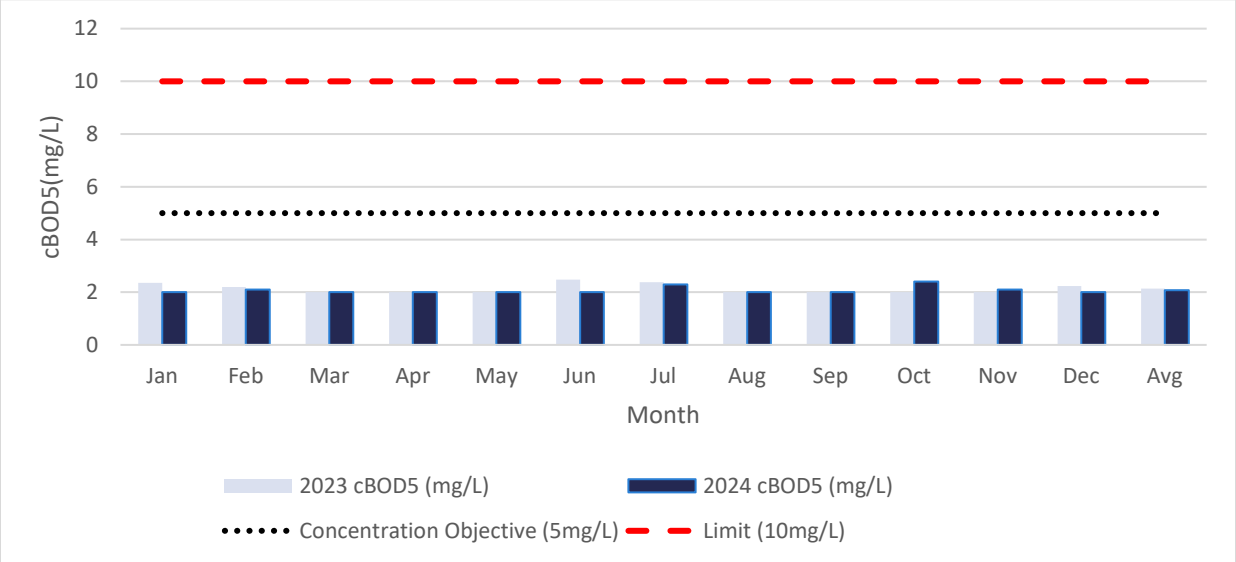
Month	$cBOD_5$ (kg/d)	TSS (kg/d)	TP (kg/d)	TAN (kg/d)
January	18.66	16.80	1.12	0.84
February	16.99	24.27	1.46	1.70
March	15.90	22.26	1.35	1.67
April	17.39	17.39	1.65	0.78
May	15.79	36.31	1.34	2.84
June	14.87	29.74	1.19	1.12
July	16.92	31.27	1.25	6.40
August	13.92	34.79	1.81	1.32
September	13.35	26.69	1.47	0.87
October	15.15	25.25	1.26	2.40
November	13.41	22.36	1.34	0.70
December	12.57	27.03	1.57	0.63
Average	**15.41**	**26.21**	**1.40**	**1.77**
Limit	154	231	6.93	15.4 (77.0)

*value in brackets is the limit from Nov 1 to Apr 31

(III) Comparison to Compliance Limits and Objectives

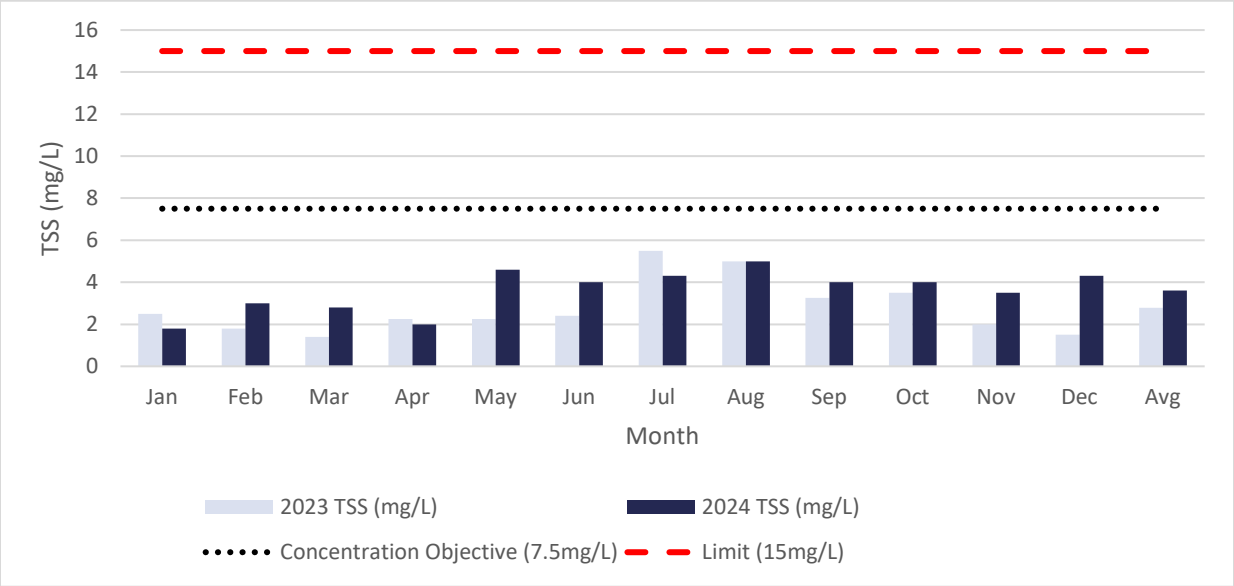
The annual average for effluent $cBOD_5$ in 2024 was 2.1mg/L; this value is the same as the annual average in 2023. The annual loading of $cBOD_5$ was 15.41kg/d. The concentration objective, limit and loading limit for $cBOD_5$ were not exceeded in 2024. Refer to Graph 7 for a comparison of effluent monthly average concentration of $CBOD_5$.

Graph 7. The effluent monthly average concentration of $cBOD_5$ in 2024 compared to 2023.



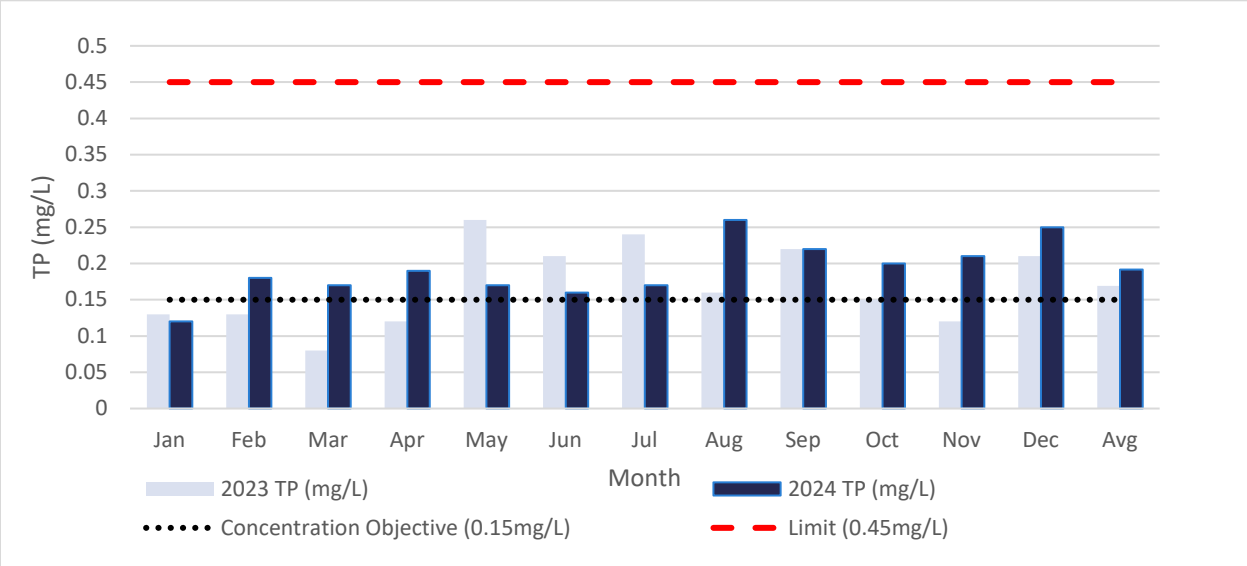
The annual average for effluent TSS in 2024 was 3.6mg/L; this value has increased by 23% from the annual average in 2023.The annual loading of TSS was 26.21kg/d. The concentration objective, limit and loading limit were not exceeded in 2024. Refer to Graph 8 for the effluent monthly average concentration of TSS.

Graph 8. The effluent monthly average concentration of TSS in 2024 compared to 2023.



The annual average for effluent TP in 2024 was 0.19mg/L; this value has increased by 11.7% from the annual average in 2023. The annual loading of TP was 1.40kg/d. The concentration limit and loading limit were not exceeded in 2024. There were eleven (11) objective exceedances in 2024 as discussed below in ***Section G: Summary of Efforts Made to Achieve Design Objectives.*** (Refer to Table 5). Refer to Graph 9 for a comparison of the effluent monthly average concentration of TP.

Graph 9. The effluent monthly average concentration of TP in 2024 compared to 2023.

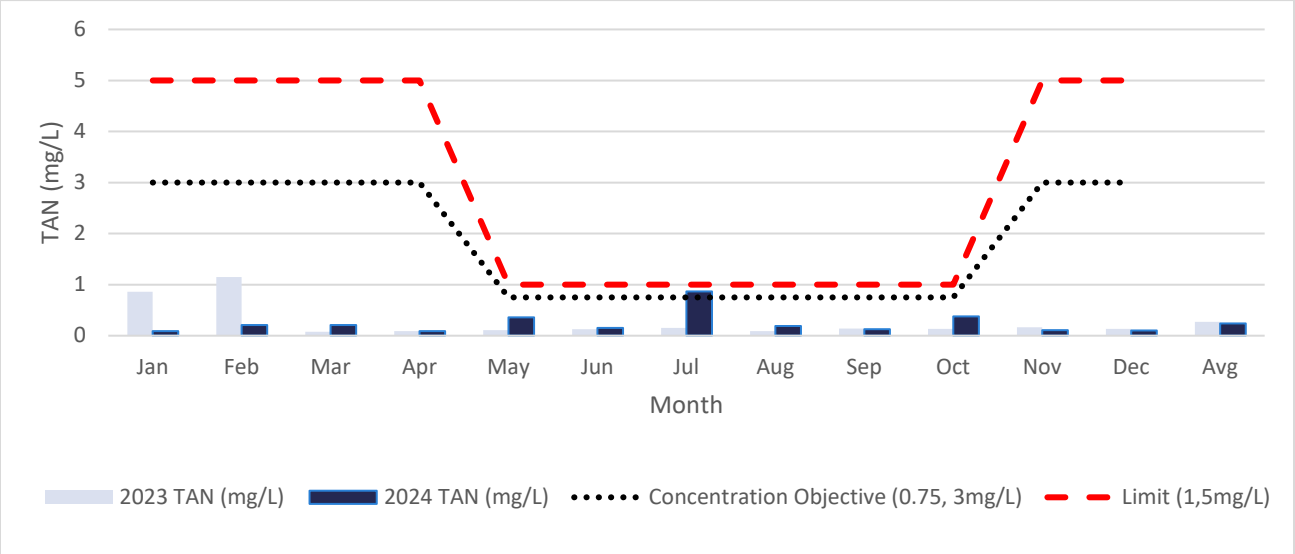


The annual average for effluent Total Ammonia Nitrogen (TAN) in 2024 was 0.24mg/L; this value has decreased by 11.7% from the annual average in 2023. The annual loading of TAN was 1.77kg/d. The limits and objectives for TAN vary based on the freezing period:

- November 1st to April 30th - the objective is 3.0mg/L and the limit is 5.0mg/L.
- May 1st to October 31st - the objective is 0.75mg/L and the limit is 1.0mg/L.

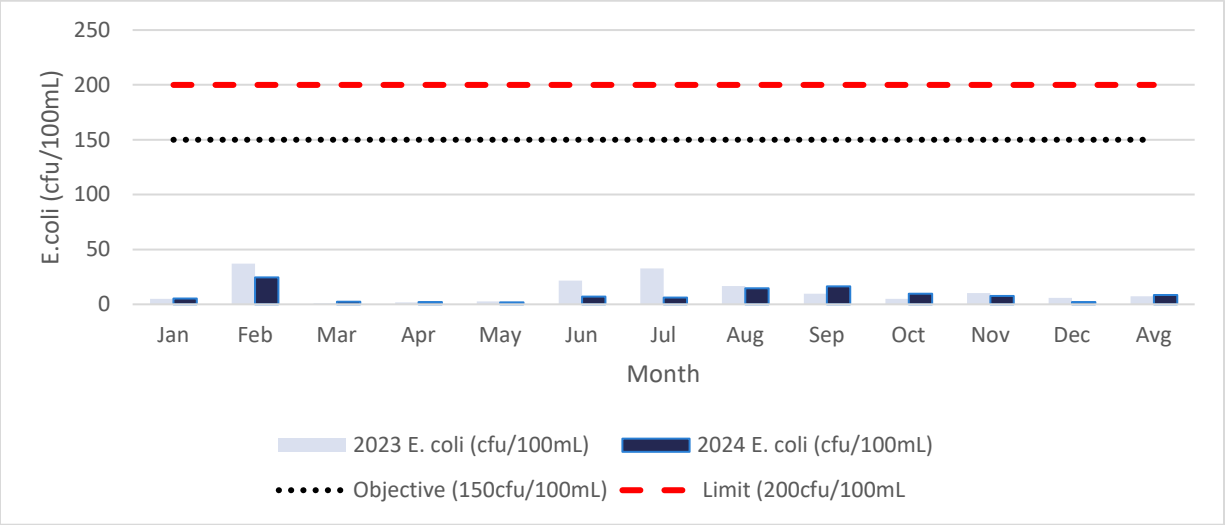
The concentration limit and loading limit were not exceeded in 2024. There was one (1) objective exceedance in 2024 as discussed below in ***Section G: Summary of Efforts Made to Achieve Design Objectives.*** (Refer to Table 5). Refer to Graph 10 for a comparison of the effluent monthly average concentrations.

Graph 10. The effluent monthly average concentration of TAN in 2024 compared to 2023.



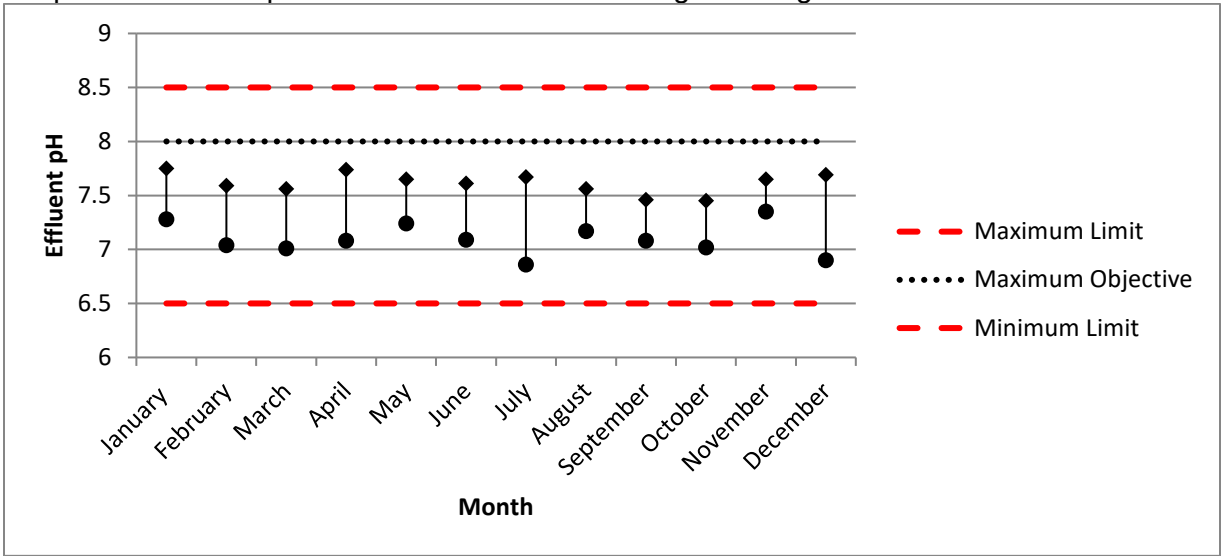
The annual geometric mean for effluent E.coli in 2024 was 8.4cfu/100mL; this value has increased by 12% from the annual average in 2023. There were no objective or limit exceedances in 2024 for E. coli. Refer to Graph 11 for a comparison of the monthly effluent geometric mean concentration (geomean) of E.coli

Graph 11. The effluent monthly geomean of E.coli in 2024 compared to 2023.



The effluent pH is monitored three times/week, at a minimum, at the Simcoe WWTF. Overall, the plant has provided effective treatment as there were no results below or above the compliance limits of 6.5-8.5 in 2024. The pH is required to be maintained between 6.5-8.5 at all times. Refer to Graph 12 for the monthly minimum and maximum range for the pH readings.

Graph 12. Effluent pH minimum and maximum range readings for 2024.



The Simcoe Wastewater Treatment Facility performed well in 2024 producing quality effluent meeting all limits for all required parameters however there were eleven (11) objective exceedances for TP and one (1) for TAN as discussed below in ***Section G: Summary of Efforts Made to Achieve Design Objectives.***

Section C: Operating Problems and Corrective Actions

In 2024, there were challenges in meeting the Total Phosphorus objectives. Operations staff continued to make adjustments to chemical feed rates strictly based on the ferrous chloride dosing calculator provided by Blue Sky as part of the phosphorous optimization study undertaken by the Corporation of Norfolk County. More information on these objective exceedances is included in ***Section G: Summary of Efforts Made to Achieve Design Objectives.***

As per the CLI-ECA Schedule E Condition 4.6.4, there were no operating problems at the sewage pumping stations that required corrective actions for 2024. In the collection system (gravity separate sewers) there was one (1) sewermain blockage caused by grease buildup on September 24, 2024. High velocity flushing was utilized to clean sewermain and remove blockage.

Section D: Maintenance Activities

Regular scheduled monthly, preventative maintenance for the Simcoe WWTF and associated SPS's (as per the CLI-ECA Schedule E Condition 4.6.5) is assigned and monitored using the Workplace Management System (WMS) program. Refer to Appendix B for preventative maintenance schedules. Norfolk County's preventative maintenance of gravity separate sewers involves a sanitary flushing program (including manhole inspections), aiming to flush 20% of each system on an annual basis. Items that were repaired or replaced in 2024 were as follows:

Table 8. Simcoe WWTF Major Maintenance Completed in 2024

Date	Major Maintenance
January 17	Contractor replaced cooling fan on influent pump VFD
February 7	Contractor on site to remove blockage from sludge recirculation suction line
March 6	Operations replaced O2 sensor in north pump house
March 7	Contractor onsite to start installation of the replacement gradient may for the high voltage switch – completed March 21
March 15	Electrical Contractor onsite to replace emergency light in north pump house
March 25	Mechanical contractor removed old electric hoist and replaced with a chain fall hoist
April 2	Contractor replaced hydrogen sulfide sensor in effluent building
April 5	Generator serviced by third party
April 11	Contractor rebuilt and reinstalled piston pump in north pump house
April 18	Electrical Contractor installed new emergency/exit light in north pump house
April 26	Contractor onsite to service boiler #2
April 30	Gas detector calibrations completed by third party
May 6	Flow meters calibrated by third party
May 8	Electrical Contractor replaced limit switch for primary clarifier #2
May 17	Generator serviced by third party
September 26	Contractor cleared debris from sludge line from the north pump house to primary digester
October 21	Contractor installed inspection port on primary digester piston pump intake line

Date	Major Maintenance
October 31	Contractor replaced primary clarifier #1 sludge intake line elbow
November 6	Boilers serviced by third party
November 28	Electrical Contractor replaced backwash pump #2 controller display
December 2	Backflow preventer inspections started by third party – completed December 27
December 11	ESA inspection completed
December 13	Electrical Contractor replaced lights in effluent building – completed December 16
December 13	Contractor onsite to repair boiler #1
December 20	Contractor onsite for wet well clean out

Table 9. 2nd Ave SPS Major Maintenance Completed in 2024

Date	Major Maintenance
May 24	Generator serviced by third party
June 12	Replaced generator battery

Table 10. Decou Road SPS Major Maintenance Completed in 2024

Date	Major Maintenance
March 18	Generator serviced by third party
May 10	Contractor completed wet well clean out
May 28	Generator serviced by third party
July 31	Contractors onsite to decommission old Decou sewage pumping station
November 4	Contractor completed wet well clean out

Table 11. Talbot Street SPS Major Maintenance Completed in 2024

Date	Major Maintenance
May 10	Contractor completed wet well clean out
May 27	Generator serviced by third party
June 21	Repaired fencing for station enclosure
November 4	Contractor completed wet well clean out

Section E: Effluent Quality and Assurance

Effluent quality assurance is evaluated by monitoring parameters and changes throughout the plants processes. The operators monitor the basin by performing weekly tests on the mixed liquor. These tests include dissolved oxygen, pH, temperature, settling tests and Mixed Liquor Suspended Solids (MLSS). As well, monitoring of chemical dosages and wasting volumes are completed. 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.

Section F: Calibration Records

The influent and effluent flow meters were calibrated by JBF Controls Ltd. on May 6, 2024. In-house meters for pH and dissolved oxygen were calibrated by JBF Controls Ltd. on October 17, 2024 as per manufacturer's instructions.

As per the CLI-ECA Schedule E Condition 4.6.5 - There are no flow meters at the Simcoe sewage pumping stations that required calibration in 2024.

Section G: Summary of Efforts Made to Achieve Design Objectives

As per Table 12 below, the Simcoe WWTF did not achieve compliance with the design objectives more than 50% of the time in the reporting year. Throughout 2024, Operations staff worked diligently to monitor and adjust the chemical feed rates, utilizing a duel point ferrous-dosing strategy and using the ferrous chloride dosing calculator provided by Blue Sky Engineering as part of the phosphorous optimization study undertaken by the Corporation of Norfolk County.

Table 12. Individual sample results compared against the effluent objectives and loading limits.

Parameter	Effluent Objective (mg/L)	Monthly Effluent Result Ranges (mg/L)	# of Objective Exceedances	Effluent Loading Limit (kg/d)	Monthly Loadings Result Ranges (kg/d)	# of Limit Loading Exceedances
$cBOD_5$	5.0	2.0-2.4	0	154	12.57-18.66	0
TSS	7.5	1.8-5.0	0	231	16.80-36.31	0
TP	0.15	0.12-0.26	11	6.93	1.12-1.81	0
TAN*	0.75 (3.0)	0.09-0.87	1	15.4 (77.0)	0.63-6.40	0
E. coli (cfu/100mL)**	150	1.8-24.6	0	n/a	n/a	n/a
TRC	0.02	0.00-0.02	0	n/a	n/a	n/a
pH***	6.5 – 8.5	6.86-7.75	0	n/a	n/a	n/a

*effluent objectives and limits are seasonal
**expressed as geometric mean
***minimum and maximum result (not monthly averages)

Table 13. Objective exceedances in 2024.

Date	Parameter	Concentration mg/L	Loadings kg/d	Issue and Proactive Actions Taken
02/2024	Total Phosphorus	0.18	1.46	Monitored/Adjusted Chemical Feed
03/2024	Total Phosphorus	0.17	1.35	Monitored/Adjusted Chemical Feed
04/2024	Total Phosphorus	0.19	1.65	Monitored/Adjusted Chemical Feed
05/2024	Total Phosphorus	0.17	1.34	Monitored/Adjusted Chemical Feed
06/2024	Total Phosphorus	0.16	1.19	Monitored/Adjusted Chemical Feed
07/2024	Total Ammonia Nitrogen	0.87	6.40	Increased Dissolved Oxygen in Aeration Basin

Date	Parameter	Concentration mg/L	Loadings kg/d	Issue and Proactive Actions Taken
07/2024	Total Phosphorus	0.17	1.25	Monitored/Adjusted Chemical Feed
08/2024	Total Phosphorus	0.26	1.81	Monitored/Adjusted Chemical Feed
09/2024	Total Phosphorus	0.22	1.47	Monitored/Adjusted Chemical Feed
10/2024	Total Phosphorus	0.20	1.26	Monitored/Adjusted Chemical Feed
11/2024	Total Phosphorus	0.21	1.34	Monitored/Adjusted Chemical Feed
12/2024	Total Phosphorus	0.25	1.57	Monitored/Adjusted Chemical Feed

Section H: Sludge Handling and Generation

Sludge sampling results can be found in Appendix C. Sludge is removed from the Simcoe WWTF and sent to the Townsend Lagoon for processing or taken to field for land application. The total volume generated in 2024 was 10,525m^3, refer to Table 14 below for a breakdown and Table 15 for the sludge disposal locations. It is expected that 2025 will be similar to 2024 with approximately 11,000m^3 of sludge being removed from the Simcoe WWTF.

Table 14. Volume Hauled from the Simcoe WWTF - Sludge Generation 2024.

Month	Townsend Lagoon (m^3)	Field (m^3)	Total (m^3)
January	763	-	763
February	-	-	1,035
March	983	-	983
April	1,251	-	1,251
May	89	800	889
June	573	-	573
July	786	592	1,378
August	754	-	754
September	435	-	435
October	807	-	807
November	270	891	1,161
December	496	-	496
Total	**7,207**	**2,283**	**10,525**

Table 15. Sludge Disposal Locations 2024.

Site	NASM#	Simcoe WWTF (m^3)	Dates Spread
OX1110	24975	180	May 3, 2024
OX1110	24975	620	May 6, 2024
HN1068	60406	332	July 22, 2024
HN1068	60406	176	July 23, 2024
HN1068	60406	84	July 24, 2024
HN1340	60746	445	November 4, 2024

Site	NASM#	Simcoe WWTF (m^3)	Dates Spread
HN1340	60746	446	November 5, 2024
TOTAL		**2,283.0**	

Section I: Complaints

There were no complaints received for the Simcoe WWTF in 2024.

As per the CLI-ECA Schedule E Condition 4.6.6 - there were no community complaints received for the Simcoe sewage pumping stations or gravity separate sewers in 2024.

Section J: By-pass, Overflow, Spill or Abnormal Discharge Events

There were no bypass, overflow, spill or abnormal discharge events at the Simcoe WWTF in 2024.

As per CLI-ECA Schedule E Condition 4.6.3, 4.6.8 and 4.6.9 - There were no overflow events (raw sewage spills) at the Simcoe SPS's or gravity separate sewers in 2024.

Section K: Notice of Modification to the Works and Construction and Commissioning of Proposed Works

The Simcoe WWTF's construction scheduling time frame has not changed and there are no new updates at this time. The scope of the upgrade remains as stated in the most recent Simcoe ECA #5789-BDHNWH issued on October 10, 2019.

As per the CLI-ECA Schedule E Condition 4.6.7 – There was one (1) alteration to the Simcoe SPS's in 2024 as discussed below. A Form SS2 Record of Future Alteration Authorized for Components on the Municipal Sewage Collection System, along with a Director'sNotification form was submitted to the MECP for the following:

1. Asset ID and Name: WW492 - Decou Road Pumping Station SPS 3
   Site Location: Decou Road and Butternut Drive (Southeast corner), Simcoe, Ontario

   The Decou Road SPS overflow, located in Manhole B130, was decommissioned by removing the overflow valve, plugging the pipe, parging the manhole, and obtaining the CCTV inspection of the pipe to ensure completion.

As per the CLI-ECA Schedule E Condition 4.6.7 – There were four (4) SS#1 forms issued for alterations completed within the linear infrastructure in 2024. These included alterations for Colborne St, Talbot St and Homewood Ave/Potts Road.

Section L: Efforts made to achieve conformance with F-5-1

The Simcoe WWTF is a conventional activated sludge treatment facility and is comprised of two liquid trains both equipped with primary treatment, aeration basins, and secondary clarification with a combined chlorination/dechlorination based disinfection system and a tertiary filtration system. Supplementary phosphorus removal is also achieved with the addition of a ferrous chloride solution. The treatment components are capable of producing effluent quality that exceeds the effluent design objectives specified in F-5-1. The Simcoe WWTF is required to achieve higher effluent quality standards than the Effluent guideline criteria as specified in the ECA.

The Corporation of Norfolk County completes the following in the sanitary sewer system to eliminate bypass and overflows:

- CCTV flushing and camera inspections
- Manhole inspections

Section M: Changes or Updates for Construction at Plant

There were no changes or updates to the schedule for the completion of construction and commissioning operations of major process(es) / equipment groups in the Proposed Works at the Simcoe WWTF in 2024.

Section N: Summary of Incidences of Shock Loading and Impacts on performance

There was one (1) incident of shock loading by an industrial establishment in March of 2024. Effluent quality was maintained within the compliance limits and there were no incidents of non-compliance that resulted from this event. The Corporation of Norfolk County continues to monitor any potential events by means of the sewer use bylaw and any overuse agreements created between industrial establishments and the County.