



HAWKESBURY

Wastewater Treatment Plant 2024 Annual Performance Report

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Introduction

The Corporation of the Town of Hawkesbury owns and operates the Wastewater Treatment Plant located at 815, Main East Street in Hawkesbury, Ontario, which services a population of around 10,000. The plant has a rated capacity of 13,800 m³/d, a peak flow rate of 41,000 m³ and, is designated a Class IV Wastewater Treatment Facility.

This Annual Performance Report for the January 1, 2024, to December 31, 2024, reporting period has been prepared to meet the requirements of the Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) #4692-8DVQTW for the design and operation of the Corporation of the Town of Hawkesbury Wastewater Treatment Plant. It also serves to explain the operations of an essential part of the Town’s infrastructure. All efforts have been made to ensure the information presented is accurate.

Wastewater Treatment Plant Process

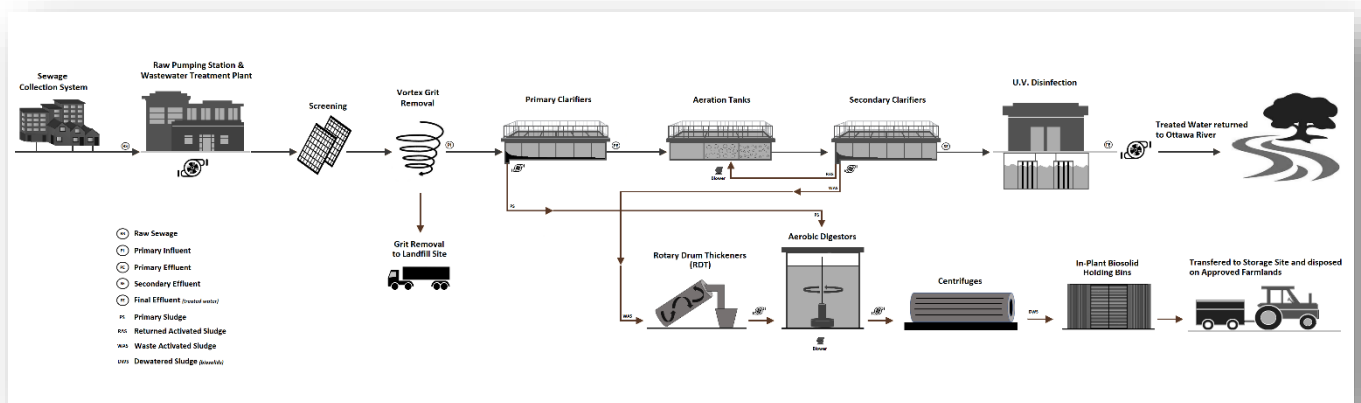
The Hawkesbury wastewater system is primarily composed by a Sewage Collection System and a Wastewater Treatment Plant. The Sewage Collection System consists of more than 45 km of sanitary sewers, approximately 4.7 kilometres of combined sewers, 1 combined sewer overflow by-pass manhole and 5 sewage lift stations to convey wastewater from lower-lying areas. The Wastewater Treatment Plant includes a raw sewage pumping station with several treatment process buildings and reservoirs.

Wastewater that leaves all homes and businesses in the town travels via gravity through the underground sewage collection system towards the raw sewage pumping station where four pumps are available to deliver the wastewater to the treatment plant.

The Wastewater Treatment Plant uses the activated sludge process, a multi-stage treatment process which consists of two screens, two vortex grit removal, three primary clarifiers, three aeration tanks, four secondary clarifiers, 128 ultraviolet lamps for disinfection, two aerobic digesters, one sludge stabilizer and two centrifuges.

Once the treatment process is completed, the effluent is discharged into the Ottawa River and the biosolids (*dewatered sludge*) are disposed of on approved and certified farmlands.

Treatment Process Flowchart



The treatment plant operations and performance are monitored by licenced operators. The plant is controlled by a computerized supervisory control and data acquisition (SCADA) system that is monitored 24 hours per day, 7 days a week. Alarms automatically notify operators in the event of failure of critical operational requirements.

The plant is also equipped with a standby power generator to ensure critical equipment can continue to operate in the event of a power failure.

Flow Capacity Assessment

The Hawkesbury Wastewater Treatment Plant has a Rated Capacity of 13,800 m³/d and a Peak Flow Rate of 41,000 m³/d. Condition 6(2) of the Amended ECA requires to use all best efforts to operate within the Rated Capacity of the plant.

The Rated Capacity is defined as the Average Daily Flow for which the plant is approved to handle, whereas the Average Daily Flow is defined as the cumulative total sewage flow to the plant during a calendar year divided by the number of days during which sewage was flowing to the plant that year. The Peak Flow Rate is defined as the Maximum Rate of Sewage Flow for which the plant is designed to handle.

Table 1 below compares Monthly Daily Influent Flows to the Amended ECA Rated Capacity and Peak Flow Rate. Based on the 2024 flow data, the Wastewater Treatment Plant maintained operations within the approved Rated Capacity. Peak flows exceeding 41,000 m³/d were occasionally observed during spring and summer months due to rapid snow melt & heavy rains.

Table 1
Comparison of the Monthly Daily Influent Flows to the Amended ECA Rated Capacity and Peak Flow Rate

Month	Monthly Avg. Daily Flow (m ³ /d)	% of Rated Capacity (13,800 m ³ /d)	Monthly Peak Daily Flow (m ³ /d)	% of Peak Flow Rate (41,000 m ³ /d)	Total Influent Flow (m ³)
January	6,431	47%	31,799	78%	199,354
February	6,483	47%	46,732	114%	188,000
March	9,856	71%	29,429	72%	305,534
April	9,644	70%	47,749	116%	289,334
May	7,720	56%	43,969	107%	239,320
June	7,346	53%	52,632	128%	220,387
July	9,996	72%	59,022	144%	309,888
August	11,997	87%	59,744	146%	371,911
September	7,071	51%	44,254	108%	212,117
October	5,745	42%	22,437	55%	178,085
November	6,010	44%	32,954	80%	180,297
December	7,768	56%	31,100	76%	240,810
Total					2,935,037

High flows in March & April are due to rapid snow melt & heavy rains whereas July & August are due to heavy rainfalls.

Flow trends are critical to assessing the adequacy of the Wastewater Treatment Plant capacity. *Table 2* below compares Annual Influent Flow Rates to the Amended ECA Rated Capacity for the past 10 years.

Table 2
Comparison of Annual Influent Flow Rates by Year to the Amended ECA Rated Capacity

Year	Avg. Daily Flow (m ³ /d)	% of Rated Capacity (13,800 m ³ /d)	Total Influent Flow (m ³)
2024	8,006	58%	2,935,037
2023	8,567	62%	3,133,436
2022	7,455	54%	2,722,565
2021	6,948	50%	2,540,895
2020	6,682	48%	2,451,205
2019	7,366	53%	2,688,254
2018	7,167	52%	2,605,466
2017	8,686	63%	3,169,354
2016	9,684	70%	3,544,510
2015	7,893	57%	2,883,804
2014	6,462	47%	2,358,255

Interpretation of Monitoring and Analytical Data

In 2024, no effluent parameter exceeded the Monthly Average Effluent Limits outlined in Condition 7(1) to 7(4) of the Amended ECA. Please refer to *Appendix A* for a detailed summary of monthly concentrations and waste loadings.

Table 3 below compares the Monthly Average Effluent Concentration Range and Waste Loading Range with the Amended ECA Monthly Average Criteria Effluent Compliance Limits, whereas *Table 4* below summarizes the individual Monthly Average Effluent Exceedance of the Amended ECA.

Pursuant to condition 9(5) of the Amended ECA, un-ionized ammonia was calculated weekly using total ammonia nitrogen, temperature and pH. Sample results ranged from 0.0003 mg/L to 0.0487 mg/L with an annual average of 0.0088 mg/L. Please refer to *Appendix C* for the detailed monthly results.

Acute lethality for rainbow trout and *Daphnia magna* was also tested with Nautilus Environmental laboratory. The certificate of analysis from the lab showed 0% mortality, meaning no lethality for rainbow trout and *Daphnia magna*.

TABLE 3
Monthly Average Effluent Concentration Range and Waste Loading Range compared with the Amended ECA Monthly Average Criteria Effluent Compliance Limits

Effluent Parameter	Monthly Average Effluent Concentration Results in mg/L	ECA Monthly Average Effluent Concentration Limits in mg/L	Monthly Average Effluent Waste Loading Results in kg/day	ECA Monthly Average Effluent Waste Loading Limit in kg/day
CBOD-5	3.0 – 4.2	25.0	17.2 – 37.0	345
Total Suspended Solid	3.0 – 10.5	25.0	19.5 – 103.5	345
Total Phosphorous	0.04 – 0.18	0.89	0.28 – 1.41	12.3
E. Coli* (ct/100ml)	4.1 – 79.6	200	n/a	n/a
Total Ammonia	0.11 – 0.51	12.0 (June 1 to Sept 30)	0.76 – 3.73	166 (June 1 to Sept 30)
Total Ammonia	0.08 – 3.66	20.0 (Oct. 1 to May 31)	0.47 – 31.90	276 (Oct. 1 to May 31)
pH	7.1 to 7.7	6.0 to 9.5	n/a	n/a

* *Monthly Geometric Mean Density*

TABLE 4
Monthly Average Effluent Exceedance of the Amended ECA

Month	Exceedance	Parameter	ECA Limit	Result
January	0			
February	0			
March	0			
April	0			
May	0			
June	0			
July	0			
August	0			
September	0			
October	0			
November	0			
December	0			

Operating Problems Encountered and Correction Actions Taken

There were no major breakdown or major operating problems in 2024. Occasional problems were diagnosed quickly and corrected immediately. The plant was effective at treating the wastewater and maintaining the effluent parameters levels within the non-compliance limits.

Maintenance Summary

Regular preventive and scheduled maintenance were performed throughout the year to ensure availability of equipment and continuous operation of the plant. The following are the major maintenance completed this year:

- Inspection, cleaning and replacement of UV lights as required
- Air blower rebuilt
- Primary and secondary Clarifiers inspection and maintenance
- Intensive maintenance on Centrifuge #1
- New water levels, flow monitoring and alarm devices installation at the Wastewater Treatment Plant and at the Combined Sewer Overflow (CSO) location
- Cameron Street (*between Lansdowne and Aberdeen Street*) combined sanitary sewer main replacement with separate pipe systems for stormwater and wastewater

Effluent Quality Assurance and Control Measures Undertaken

All sampling and plant operations were performed by licenced operators, in accordance with the Terms and Conditions of the Amended ECA.

Analytical tests to monitor the required parameters of the Amended ECA, including the biosolids (*dewatered sludge*) for land application, were performed by the Caduceon Environmental Laboratories, accredited to the ISO/IEC 17025 standard by the Canadian Association for Laboratory Accreditation Inc.

Calibration and Inspection

The following calibrations and inspections were performed:

- Flowmeters and level sensors by Capital Controls and Instrumentation Inc
- Gas sensors from every building by CDTEC Calibrations Inc (*twice, every six month*)
- Backflow preventers by Backflow Preventer and Plumbing
- Fire extinguishers by Champlain Fire Protection
- Fire alarm system by Chubb Edwards
- Heating maintenance by BGIS Integrated Technical Services Canada Ltd
- Lifting devices by Corbet & Corbet Inc
- Generator load bank test by GenExpert
- Air blower's inspection by Aerzen

Efforts and Results Achieved in Meeting Effluent Objectives

Efforts made to achieve effluent objectives included:

- Continuous monitoring and process adjustments (*as required*)
- In-house and 3rd party laboratory sampling and testing
- Regular data review
- Preventive maintenance routines of essential equipment and process components
- Monitoring & sampling wastewater of commercial and industrial facilities that have special sewer discharge agreements with the Town

Table 5 below illustrates the Monthly Average Effluent Concentration Range compared to the Monthly Average Effluent Concentration Objectives outlined in Condition 6-of the Amended ECA.

TABLE 5
Monthly Average Effluent Concentration Range Vs ECA Monthly Average Concentration Objectives

Effluent Objectives Parameter	Monthly Average Effluent Concentration Results in mg/L	ECA Monthly Average Effluent Concentration Objectives in mg/L
CBOD-5	3.0 – 4.2	15.0
Total Suspended Solids	3.0 – 10.5	15.0
Total Phosphorus	0.04 – 0.18	0.5
Total Ammonia (June 1 to Sept 30)	0.11 – 0.51	8.0
Total Ammonia (Oct 1 to May 31)	0.08 – 3.66	12.0
pH	7.1 – 7.7	6.5 to 8.5
E. Coli* (ct/100ml)	4.1 – 79.6	100
Capacity (m ³ /day)	8,006	13,800

* Monthly Geometric Mean Density

Biosolid Generation

The Hawkesbury Wastewater Treatment Plant biosolids are being managed as Non-Agricultural Source Material (NASM). During 2024, the plant generated and hauled 239.36 dry tons of biosolids (*dewatered sludge*) to the transfer site (*Ferme A.G.L. Malette, ECA # 8311-8UZJ8K*). The Table 6 below summarizes the amounts and locations of the soil conditioning activities in 2024. We anticipate the volume of biosolids to be 231 dry tons for 2025. This estimation is based on a five-year average.

TABLE 6
Location of Spreading the Organic Waste

Biosolids Conditioning Location	NASM Plan	Field #	Dry Ton (kg)
Ferme A.G.L. Malette	60329	n/a	239.36

Summary of Complaints

In the 2024 reporting year, the Hawkesbury Wastewater Treatment Plant received no official complaints regarding the plant or the treatment process.

Bypassing / Spills / Abnormal Discharges

There were 5 Wastewater Treatment Plant by-pass and 4 Combined Sewer Overflow (CSO) in 2024. Please refer to *Appendix F, 2024 Bypass & Overflow Event Report*.

For the 5 Wastewater Treatment Plant by-pass, they represent 1.56% of the total annual raw sewage flow. Please refer to *Appendix G, 2024 Annual Plant Bypass Summary Report*.

As required by regulation, all overflow and bypass events are promptly reported to the Ministry of Environment, Conservation and Parks, the Federal Ontario Region, the Spills Action Centre (SAC) and the Eastern Ontario Health Unit (EOHU). These events are also published as they occur on the Town of Hawkesbury's website.

There were no spills or abnormal discharge events to report during this year.

Additional Information Requested

No additional information was requested during this reporting period. As required per regulation, quarterly MECP Municipal Utility Monitoring Program (MUMP) reporting and quarterly reporting under the Federal Wastewater Systems Effluent Regulation was performed.

We trust this satisfies the Ministry of the Environment, Conservation and Parks Amended Environmental Compliance Approval (ECA) #4692-8DVQTW for the design and operation of the Corporation of the Town of Hawkesbury Wastewater Treatment Plant.

Availability of Report

This report is available at no charge at the following places:

- 1. Environmental Service**
Corporation of the Town of Hawkesbury
815 Main East, Hawkesbury (Ontario) K6A 1B5
(613) 678-9269
- 2. Hawkesbury Public Library**
550 Higginson Street, Hawkesbury, Ontario, K6A 1H1
- 3. Town's website www.hawkesbury.ca**

Additionally, this report is provided to the Ministry of the Environment, Conservation and Parks.

If the format of this document is inadequate, the Clerk's office can be contacted at 613-632-0106 and the municipality can provide, to the best of its abilities, the required assistance.

Appendix A 2024 Monthly Performance Assessment Report

Appendix A

Raw Sewage Flow	January	February	March	April	May	June	July	August	September	October	November	December
Total (m ³ /mth)	199,354	188,000	305,534	289,334	239,320	220,387	309,888	371,911	212,117	178,085	180,297	240,810
Avg. (m ³ /day)	6,431	6,483	9,856	9,644	7,720	7,346	9,996	11,997	7,071	5,745	6,010	7,768
Max. (m ³ /day)	9,040	10,775	24,683	16,181	12,370	15,497	26,379	38,840	10,321	8,909	8,073	16,821
Min. (m ³ /day)	5,141	5,434	6,434	6,127	6,015	5,602	6,512	6,299	5,666	4,959	5,267	5,367

Total Annual Raw Flow (m³) = 2,935,037

Average Annual Raw Daily Flow (m³) = 8,006

Final Effluent Flow	January	February	March	April	May	June	July	August	September	October	November	December
Total (m ³ /mth)	193,946	182,915	300,881	284,512	234,421	215,335	304,710	367,128	206,855	173,269	174,935	235,725
Avg. (m ³ /day)	6,256	6,307	9,706	9,484	7,562	7,178	9,829	11,843	6,895	5,589	5,831	7,604
Max. (m ³ /day)	8,863	10,631	24,516	16,018	12,204	15,334	26,236	38,697	10,150	8,739	7,880	16,666
Min. (m ³ /day)	4,980	5,273	6,260	5,942	5,846	5,429	6,332	6,122	5,502	4,796	5,068	5,189

Total Annual Effluent Flow (m³) = 2,874,632

Average Annual Effluent Daily Flow (m³) = 7,840

Biochemical Oxygen Demand	January	February	March	April	May	June	July	August	September	October	November	December
Raw Avg. CBOD (mg/L)	87.0	67.8	65.5	53.2	51.0	61.0	63.0	50.0	71.5	84.6	109.8	55.0
Eff. Avg. CBOD (mg/L)	4.2	3.0	3.8	3.2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
CBOD Loading (kg/d)	27.0	19.4	37.0	30.9	23.2	22.0	30.0	36.0	21.2	17.2	18.0	23.3
Percent Removal (%)	95.2	95.6	94.3	94.0	94.1	95.1	95.2	94.0	95.8	96.5	97.3	94.5

Suspended Solids	January	February	March	April	May	June	July	August	September	October	November	December
Raw Avg. SS (mg/L)	237.0	166.5	140.5	150.6	314.8	217.5	171.4	153.3	251.3	191.0	205.0	181.4
Eff. Avg. SS (mg/L)	5.0	6.3	10.5	4.2	4.0	3.5	3.4	5.0	3.0	3.4	4.3	4.4
SS Loading (kg/d)	32.2	40.5	103.5	40.5	30.9	25.7	34.0	60.0	21.2	19.5	25.5	34.2
Percent Removal (%)	97.9	96.2	92.5	97.2	98.7	98.4	98.0	96.7	98.8	98.2	97.9	97.6

Phosphorous	January	February	March	April	May	June	July	August	September	October	November	December
Raw Avg. PHOS (mg/L)	3.31	3.09	2.81	2.41	2.89	3.67	2.57	2.15	5.81	3.76	3.31	3.05
Eff. Avg. PHOS (mg/L)	0.07	0.13	0.08	0.08	0.08	0.05	0.04	0.05	0.05	0.05	0.05	0.18
Phos. Loading (kg/d)	0.46	0.86	0.79	0.77	0.58	0.35	0.44	0.54	0.34	0.28	0.32	1.41
Percent Removal (%)	97.8	95.7	97.2	96.7	97.4	98.7	98.3	97.9	99.2	98.7	98.4	94.0

Appendix A 2024 Monthly Performance Assessment Report

Nitrogen Series	January	February	March	April	May	June	July	August	September	October	November	December
Inf . Avg. NH3 as N (mg/L)	16.28	19.50	8.86	8.64	9.87	12.67	11.48	10.56	20.05	24.46	13.90	12.39
Eff. Avg. NH3 as N (mg/L)	2.57	3.66	2.55	3.31	1.23	0.51	0.23	0.11	0.11	0.08	0.62	1.67
NH3 Loading (kg/d)	16.53	23.73	25.11	31.90	9.48	3.73	2.28	1.26	0.76	0.47	3.74	12.99
Percent Removal	84.21	81.23	71.23	61.70	87.57	95.99	98.01	99.01	99.46	99.66	95.52	86.51
Disinfection	January	February	March	April	May	June	July	August	September	October	November	December
Eff. Geo. Mean E. Coli (ct/100mL)	11.5	16.9	60.8	54.3	4.1	6.6	8.2	23.6	5.6	11.3	60.4	79.6
pH	January	February	March	April	May	June	July	August	September	October	November	December
Eff. Avg. pH	7.7	7.5	7.5	7.7	7.2	7.1	7.2	7.5	7.7	7.4	7.3	7.3
Temperature	January	February	March	April	May	June	July	August	September	October	November	December
Eff. Avg. Temp. (C°)	6.3	6.2	6.3	7.7	10.5	13.5	14.8	15.2	15.0	13.3	10.9	7.9

Appendix B 2024 Monthly Raw Sewage Data Report

Raw Sewage Flow	January	February	March	April	May	June	July	August	September	October	November	December
Total (m ³ /mth)	199,354	188,000	305,534	289,334	239,320	220,387	309,888	371,911	212,117	178,085	180,297	240,810
Avg. (m ³ /day)	6,431	6,483	9,856	9,644	7,720	7,346	9,996	11,997	7,071	5,745	6,010	7,768
Max. (m ³ /day)	9,040	10,775	24,683	16,181	12,370	15,497	26,379	38,840	10,321	8,909	8,073	16,821
Min. (m ³ /day)	5,141	5,434	6,434	6,127	6,015	5,602	6,512	6,299	5,666	4,959	5,267	5,367

Total Annual Raw Flow (m³) = 2,935,037

Average Annual Raw Daily Flow (m³) = 8,006

BOD (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	192.60	128.25	140.25	99.20	86.25	146.50	102.00	91.75	109.25	139.40	171.00	110.60
Max.	273.00	182.00	286.00	149.00	96.00	186.00	149.00	147.00	115.00	177.00	193.00	169.00
Min.	127.00	80.00	49.00	43.00	77.00	94.00	65.00	31.00	104.00	88.00	125.00	82.00

CBOD - 5 (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	87.00	67.75	65.50	53.20	51.00	61.00	63.05	50.00	71.50	84.60	109.75	55.00
Max.	113.00	90.00	128.00	81.00	61.00	81.00	99.00	79.00	92.00	132.00	159.00	69.00
Min.	49.00	51.00	34.00	31.00	34.00	42.00	43.23	11.00	59.00	60.00	68.00	44.00

Suspended Solids (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	237.00	166.50	140.50	150.60	314.75	217.50	171.40	153.25	251.25	191.00	205.00	181.40
Max.	310.00	266.00	176.00	240.00	736.00	320.00	235.00	200.00	365.00	265.00	225.00	210.00
Min.	150.00	50.00	74.00	88.00	158.00	145.00	116.00	38.00	175.00	115.00	185.00	160.00

Appendix B 2024 Monthly Raw Sewage Data Report

Total Phosphorous (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	3.31	3.09	2.81	2.41	2.89	3.67	2.57	2.15	5.81	3.76	3.31	3.05
Max.	5.26	5.37	4.17	3.60	4.53	5.49	3.92	3.03	13.10	5.00	3.97	3.74
Min.	2.48	1.63	1.08	1.34	1.47	2.60	1.25	0.56	2.50	2.66	2.77	1.98

NH3 as N (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	16.28	19.50	8.86	8.64	9.87	12.67	11.48	10.56	20.05	24.46	13.90	12.39
Max.	27.50	34.70	11.30	14.50	11.50	15.50	17.00	15.50	25.10	36.60	16.40	17.00
Min.	11.60	10.90	5.54	6.02	7.85	6.17	7.08	1.94	12.00	18.00	10.60	9.65

TKN (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	24.22	26.38	23.13	14.40	16.75	20.40	17.60	16.25	32.18	32.36	21.40	20.96
Max.	46.20	47.00	33.80	20.50	22.40	27.20	23.60	21.80	42.40	40.90	24.60	29.40
Min.	16.60	16.70	8.70	10.20	12.50	11.20	10.40	4.80	17.50	25.30	17.70	11.70

pH	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	7.4	7.4	7.5	7.5	7.4	7.1	7.1	7.4	7.7	7.5	7.2	7.3
Max.	7.7	7.7	7.6	7.7	7.5	7.6	7.5	7.7	7.7	7.8	7.4	7.5
Min.	7.2	7.3	7.5	7.4	7.1	6.9	6.8	7.0	7.6	7.2	6.9	7.2

Appendix C 2024 Monthly Effluent Data Report

Final Effluent Flow	January	February	March	April	May	June	July	August	September	October	November	December
Total (m ³ /mth)	193,946	182,915	300,881	284,512	234,421	215,335	304,710	367,128	206,855	173,269	174,935	235,725
Avg. (m ³ /day)	6,256	6,307	9,706	9,484	7,562	7,178	9,829	11,843	6,895	5,589	5,831	7,604
Max. (m ³ /day)	8,863	10,631	24,516	16,018	12,204	15,334	26,236	38,697	10,150	8,739	7,880	16,666
Min. (m ³ /day)	4,980	5,273	6,260	5,942	5,846	5,429	6,332	6,122	5,502	4,796	5,068	5,189

Total Annual Effluent Flow (m³) = 2,874,632

Average Annual Effluent Daily Flow (m³) = 7,840

CBOD - 5 (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	4.20	3.00	3.75	3.20	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Max.	9.00	3.00	6.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Min.	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Suspended Solids (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	5.00	6.25	10.50	4.20	4.00	3.50	3.40	5.00	3.00	3.40	4.25	4.40
Max.	6.00	13.00	21.00	7.00	7.00	5.00	5.00	8.00	3.00	5.00	8.00	7.00
Min.	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Total Phosphorous (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	0.07	0.13	0.08	0.08	0.08	0.05	0.04	0.05	0.05	0.05	0.05	0.18
Max	0.11	0.31	0.13	0.12	0.11	0.05	0.05	0.05	0.06	0.07	0.07	0.56
Min.	0.04	0.06	0.05	0.03	0.05	0.04	0.04	0.04	0.04	0.02	0.04	0.04

NH3 as N (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	2.57	3.66	2.55	3.31	1.23	0.51	0.23	0.11	0.11	0.08	0.62	1.67
Max.	5.02	4.30	4.52	5.78	1.64	0.81	0.51	0.17	0.21	0.11	1.12	3.30
Min.	0.62	3.18	0.49	1.94	0.58	0.23	0.08	0.05	0.06	0.06	0.12	0.86

Appendix C 2024 Monthly Effluent Data Report

Un-Ionized Ammonia (NH3) (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	0.0193	0.0209	0.0139	0.0296	0.0051	0.0022	0.0015	0.0014	0.0019	0.0006	0.0026	0.0063
Max.	0.0399	0.0275	0.0252	0.0487	0.0096	0.0043	0.0045	0.0029	0.0043	0.0009	0.0044	0.0127
Min.	0.0067	0.0146	0.0028	0.0095	0.0026	0.0005	0.0003	0.0003	0.0006	0.0004	0.0006	0.0038

TKN (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	3.72	4.73	3.78	4.48	2.25	1.50	1.18	1.03	1.03	1.22	1.80	3.36
Max.	6.30	5.00	6.00	8.00	3.00	1.90	1.30	1.20	1.20	1.40	2.10	5.60
Min.	1.80	4.20	1.40	2.90	1.50	0.80	1.00	0.90	0.90	1.10	1.40	2.00

Geo. Mean E. Coli (ct/100mL)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	11.5	16.9	60.8	54.3	4.1	6.6	8.2	23.6	5.6	11.3	60.4	79.6
Max.	98.0	170.0	480.0	610.0	34.0	16.0	53.0	108.0	24.0	66.0	190.0	520.0
Min.	4.0	4.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0	4.0

pH	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	7.7	7.5	7.5	7.7	7.2	7.1	7.2	7.5	7.7	7.4	7.3	7.3
Max.	7.8	7.7	7.6	7.8	7.5	7.7	7.9	8.0	7.9	7.5	7.4	7.4
Min.	7.6	7.4	7.5	7.4	6.8	6.9	6.9	7.2	7.5	7.3	7.1	7.2

Temperature (°C)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	6.3	6.2	6.3	7.7	10.5	13.5	14.8	15.2	15.0	13.3	10.9	7.9
Max.	7.1	6.9	7.3	8.6	12.5	14.8	15.5	16.3	15.7	14.9	13.0	9.7
Min.	5.6	5.3	5.4	6.3	8.2	12.0	14.0	14.1	13.8	11.4	9.5	6.6

Appendix D 2024 Monthly Chemical Data Report

Coagulant usage (kG)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	80	76	88	109	123	73	92	80	42	42	90	118
Total	2,465	2,206	2,719	3,272	3,812	2,190	2,853	2,480	1,261	1,291	2,696	3,652

Coagulant dosage dry (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Avg.	7.4	6.1	4.4	5.7	8.2	5.1	4.7	3.4	3.3	3.8	7.8	8.1
Max.	56.9	8.8	5.8	8.3	8.5	8.4	6.9	7.1	6.9	9.0	9.1	9.2
Min.	1.4	1.9	1.3	0.9	7.9	1.5	0.9	0.3	1.2	1.6	2.1	2.2

Polymer usage (kG)	January	February	March	April	May	June	July	August	September	October	November	December
Total	741	900	1,171	1,386	1,164	1,078	922	1,064	926	1,071	683	569

Appendix E
2024 Monthly Biosolid Analysis Report

Parameter	January	February	March	April	May	June	July	August	September	October	November	December
Biosolids Hauled (dry ton)	18.23	22.25	22.50	19.04	19.94	22.88	25.26	24.17	21.11	19.61	13.19	11.19
Biosolids Hauled (wet ton)	80.65	103.00	92.22	82.41	69.48	77.81	88.63	72.50	77.03	72.89	54.07	35.76
pH @ 25°C	5.32	5.67	6.45	6.84	6.50	6.56	6.12		5.46	5.5	4.71	5.28
Total Solids (%)	22.6	21.6	24.4	23.1	28.7	29.4	28.5		27.4	26.9	24.4	31.3
Ammonia (N)-Total (µg/g)	117	399	198	212	209	607	578		77	574	386	248
Total Kjeldahl Nitrogen (µg/g)	20400	43700	5570	58400	4080	77400	28700		34600	50800	6580	39000
Nitrite (N) (µg/g)	4	7	1	4	4	4	207		1	1	7	4
Nitrate (N) (µg/g)	25	204	34	584	322	159	21		1620	30	911	652
Phosphorus-Total (µg/g)	7020	33200	3210	36400	3500	31600	17300		23100	33800	5920	26200
Potassium (µg/g)	1760	1630	1690	1900	2410	2200	1600		1770	1740	1660	1740
Aluminum (µg/g)	75500	72100	70200	67500	68600	69300	61900		70700	72600	68200	58100
Arsenic (µg/g)	4	4	4	3	3	4	3		3	3	3	3
Calcium (µg/g)	13800	12900	19400	26800	22900	22400	15500		15300	14500	30300	17000
Cadmium (µg/g)	0.6	0.7	0.5	0.7	0.7	0.7	0.6		0.6	0.5	0.5	0.6
Chromium (µg/g)	36	37	48	56	52	45	46		41	37	35	61
Cobalt (µg/g)	3	3	3	4	4	4	4		4	4	4	4
Copper (µg/g)	281	264	268	272	277	287	249		286	326	309	412
Lead (µg/g)	14	12	12	14	14	21	18		19	16	13	20
Mercury (µg/g)	0.300	0.340	0.250	0.460	0.180	0.290	0.260		0.290	0.330	0.290	0.360
Molybdenum (µg/g)	4	4	3	2	3	3	3		4	4	4	6
Nickel (µg/g)	18	17	17	21	21	18	18		21	21	20	29
Selenium (µg/g)	2	2	2	2	2	2	2		2	2	2	2
Zinc (µg/g)	1050	943	1090	1060	1030	1000	838		1050	1120	910	1060
E-Coli (cfu/g)	4430	4630	377000	95200	6550000	262000	3500		3650	3720	4100	3190

Total Biosolids Hauled (dry ton) = 239.36

**Appendix F
2024 Bypass & Overflow Event Report**

Date of Event	Location	Type	Duration	Estimate volume (m ³)	Reason (Code)
July 15, 2024	Wastewater Treatment Plant	PB	27 minutes	1131	1
July 24, 2024	Wastewater Treatment Plant	PB	3 hours, 35 minutes	11995	1
July 24, 2024	Wastewater Treatment Plant	PB	4 hours, 22 minutes	1408	1
July 24, 2024	Cameron St / Main East St	CSO	3 hours, 35 minutes	167	1
August 9, 2024	Wastewater Treatment Plant	PB	1 hour, 57 minutes	9561	1
August 9, 2024	Cameron St / Main East St	CSO	Multiple overflows over a 13h09 min time frame	1518	1
August 18, 2024	Wastewater Treatment Plant	PB	2 hours, 25 minutes	21368	1
August 18, 2024	Cameron St / Main East St	CSO	2 hours, 25 minutes	234	1
September 1, 2024	Cameron St / Main East St	CSO	2 minutes	23.76	1
Total bypass volume (m³)				47,406	

Type	Reason Codes	
PB (Primary Bypass) SB (Secondary Bypass) STPO (Sewage Treatment Plant Overflow) PSO (Pumping Station Overflow) CSO (Combined Sewer Overflow)	1 (Heavy Precipitation) 2 (Snow Melt) 3 (Equipment Failure) 4 (Maintenance/upgraded)	5 (Sewer Problems) 6 (Power Failure) 7 (Exceed Design Capacity) O (Others)

Appendix G 2024 Annual Plant Bypass Summary Report

	January	February	March	April	May	June	July	August	September	October	November	December
Number (<i>days</i>)	0	0	0	0	0	0	3	2	0	0	0	0
Duration (<i>minute</i>)	0	0	0	0	0	0	504	262	0	0	0	0
Estimated Volume (m^3)	0	0	0	0	0	0	14534	30929	0	0	0	0

Volume of Bypass as % of Average Daily	1.56%
Flow (<i>ADF</i>)*	ADF = 8,006 m^3/day