Corporation de la ville de of the Town of HAWKESBURY

Wastewater Treatment Plant
2021
Annual Performance Report

Prepared by the Environmental Service
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Introduction

The Corporation of the Town of Hawkesbury owns and operates the Wastewater Treatment Plant (WWTP) located at 815, Main East street. The plant has a rated capacity of 13,800 m^3/d, is designated a Class IV Wastewater Treatment Facility and is operated 24 hours a day, 7 days a week.

This Annual Performance Report for the January 1, 2021, to December 31, 2021, 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 (WWTP). It also serves to explain the operation of an essential part of the town's infrastructure. All efforts have been made to ensure the information presented is accurate.

Wastewater Treatment Process

The 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, 6 km of combined sewers and 6 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 three 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 disinfected supernatant is discharged into the Ottawa River and the dehydrated biosolids are disposed of on approved and certified farmlands for amendments.

Interpretation of Monitoring and Analytical Data

In 2021, one effluent parameter exceeded the Monthly Average Effluent Limits outlined in Condition 7(1) to 7(4) of the amended ECA and was reported in accordance with the requirements prescribed in the ECA. Please refer to *Appendix A* for a detailed summary of monthly concentrations and waste loadings. *Table 1* (below) compares the Monthly Average Effluent Concentration range and Waste Loading range with the Amended ECA Monthly Criteria Effluent Compliance Limits, whereas *Table 2* summarizes the individual Notification of Monthly Average Effluent Quality Non-Compliance with the ECA issued during the year.

Pursuant to condition 9(5) of the ECA, un-ionized ammonia was calculated on weekly total ammonia nitrogen, temperature and pH sample results and ranged from 0.0003 mg/L to 0.0391 mg/L with an annual average of 0.0053 mg/L during 2021. Please refer to *Appendix C* for the detailed monthly results. Acute lethality for rainbow trout and Daphnia magna was also tested with Aquatox Testing and Consulting Inc. laboratory. The certificate of analysis from the lab showed 0% mortality, meaning no lethality for rainbow trout and *Daphnia magna*.

TABLE 1
Monthly Average Effluent Concentration Range and Waste Loading Range compared with the Amended ECA Monthly Criteria Effluent Compliance Limits

Effluent Parameter	Monthly Average Effluent Concentration Range in mg/L	ECA Monthly Effluent Concentration Limit in mg/L	Monthly Average Effluent Waste Loading Range in kg/day	ECA Monthly Effluent waste Loading Limit in kg/day
CBOD-5	3.0 – 3.6	**25.0**	15.3 – 32.7	**345**
Total Suspended Solid	3.0 – 6.5	**25.0**	18.1 – 43.6	**345**
Total Phosphorous	0.05 – 0.12	**0.89**	0.28 – 1.15	**12.3**
E.coli (ct/100ml)	1.0 – 1510	**200 ct/100ml**	**n/a**	**n/a**
Total Ammonia	0.08 – 0.35	**12.0 (June 1 to Sept 30)**	0.51 – 2.04	**166 (June 1 to Sept 30)**
Total Ammonia	0.40 – 3.55	**20.0 (Oct. 1 to May 31)**	2.49 – 29.94	**276 (Oct. 1 to May 31)**
pH	7.2 to 7.6	**6.0 to 9.5**	**None**	**None**

**** Monthly Geometric Mean Density***

TABLE 2
Notification of Monthly Average Effluent Quality Non-Compliance

Month	Parameter & Limit	Result
January	None (Effluent Quality in Compliance with ECA)	
February	None (Effluent Quality in Compliance with ECA)	
March	None (Effluent Quality in Compliance with ECA)	
April	None (Effluent Quality in Compliance with ECA)	
May	None (Effluent Quality in Compliance with ECA)	
June	None (Effluent Quality in Compliance with ECA)	
July	None (Effluent Quality in Compliance with ECA)	
August	None (Effluent Quality in Compliance with ECA)	
September	None (Effluent Quality in Compliance with ECA)	
October	None (Effluent Quality in Compliance with ECA)	
November	None (Effluent Quality in Compliance with ECA)	
December	E. coli*: 200ct/100 ml	1510

**** Monthly Geometric Mean Density***

Operating Problems Encountered and Correction Actions Taken

During this reporting period, one main operating equipment failure occurred with the effluent disinfection system that led to a monthly average effluent exceedance. Maintenance and sampling corrective actions were immediately taken and resolved the situation.

Maintenance Summary

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

- Maintenance and training on the centrifuges
- New software (IFIX) and computer system installation to improve cybersecurity
- New UPS installation at the raw water pumping station
- Grit pump reparation
- Primary pump replacement
- Centrifuge major maintenance and flow meter installation
- Air blower rebuilt

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 Environmental Compliance Approval (ECA).

Analytical tests to monitor the required parameters of the ECA, including the dewatered cake (biosolids) 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.

Additionally, this year, the Town of Hawkesbury was selected by the Ministry of the Environment, Conservation and Parks (MECP) to be part of the Ontario Wastewater Surveillance Initiative, an initiative that monitors the presence of COVID-19 in wastewater. Sampling results were performed at the Queen's University in Kingston and can be found under the Eastern Ontario Health Unit (EOHU) COVID-19 Update's web page.

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
- Lifting devices by Corbett & Corbett Inc.
- Fire extinguishers by Champlain Fire Protection
- Fire alarm system by Chubb Edwards
- Electrical safety by Electrical Safety Authority
- Heating maintenance by Airon Group of Companies

Effluent Objectives

Table 3 (below) illustrates the Monthly Average Effluent Concentration Range compared to the Monthly Average Effluent Objectives outlined in Conditions 6(1) and 6(2) (a), (b) and (c) of the amended ECA.

TABLE 3
Monthly Average Effluent Concentration Range Vs Monthly ECA Average Effluent Objectives

Effluent Objectives Parameter	Monthly Average Effluent Concentration Range in mg/L	Monthly ECA Avg. Effluent Objectives
CBOD-5	3.0 – 3.6	15.0
Total Suspended Solids	3.0 – 6.5	15.0
Total Phosphorus	0.05 – 0.012	0.5
Total Ammonia (June 1 to Sept 30)	0.08 – 0.35	8.0
Total Ammonia (Oct 1 to May 31)	0.40 – 3.55	12.0
pH	7.2 – 7.6	6.5 to 8.5
E. Coli* (ct/100ml)	1 – 1510	100 ct/100ml
Rated Capacity	2,594 – 35,928 m^3/day	13,800 m^3/day

**** Monthly Geometric Mean Density***

Biosolids Generation

During 2021, the Hawkesbury WWTP hauled 190.76 dry Tons of Organic Waste (biosolids) to the transfer site (Ferme A.G.L. Malette, ECA # 8311-8UZJ8K). The *Table 4* (below) summarizes the amounts and locations of the soil conditioning activities in 2021. We anticipate the volume of biosolids to be 185 dry tons for 2022.

TABLE 4
Location of Spreading the Organic Waste

Hawkesbury Organic Soil Conditioning Summary			
Organic Soil Conditioning Location	**NASM plan**	**Field #**	**Dry Ton (kg)**
Ferme A.G.L. Malette	23299	n/a	190.76
HAWKESBURY WWTP TOTAL ORGANIC WASTE GENERATED			190.76

Summary of Complaints

There were no complaints reported in 2021.

By-passing / Spills / Abnormal Discharges

There were 3 Combined Sewer Overflow (CSO) and 3 Primary Bypass (PB) in 2021. Please refer to *Appendix F*, 2021 Bypass Event Report and *Appendix G*, 2021 Annual Bypass Summary Report. All bypasses were reported to the Spill Action Center and the Ministry of the Environment, Conservation and Parks (MECP) and the laboratory results of the bypasses were communicated to our MECP Environmental Officer by email. These bypasses represent 0.401% of the total annual raw sewage flow. There were no spills or abnormal discharge events to report during this year.

Additional Information Requested

Ongoing communication with the MECP has occurred throughout the reporting year, addressing the MUMP's data to Ottawa and Etobicoke area offices. There was no additional information requested during this reporting period. We trust this satisfies 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 (WWTP).

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
2021 Monthly Performance Assessment Report

Raw Flow Summary (m^3)	January	February	March	April	May	June	July	August	September	October	November	December
Raw Total Monthly Flow	173,541	142,292	337,714	236,295	187,661	181,146	191,789	167,388	177,064	216,246	259,737	270,023
Raw Avg. Daily Flow	5,598	5,082	10,894	7,876	6,054	6,038	6,187	5,400	5,902	6,976	8,658	8,710
Raw Max. Daily Flow	6,434	5,599	36,192	14,019	10,365	16,312	9,813	10,696	12,482	20,385	13,140	13,213
Raw Min. Daily Flow	4,847	4,805	5,405	5,865	5,003	3,637	5,331	2,736	2,695	3,852	6,193	5,730

Total Annual Raw Flow (m^3) = 2,540,895

Average Annual Raw Daily Flow (m^3) = 6,948

Effluent Flow Summary (m^3)	January	February	March	April	May	June	July	August	September	October	November	December
Effluent Total Monthly Flow	169,882	139,003	333,541	232,280	183,269	175,775	187,241	162,532	172,844	212,162	253,521	263,842
Effluent Avg. Daily Flow	5,480	4,964	10,759	7,743	5,912	5,859	6,040	5,243	5,761	6,844	8,451	8,511
Effluent Max. Daily Flow	6,297	5,458	35,928	13,824	10,255	15,739	9,630	10,267	12,643	20,194	13,045	12,923
Effluent Min. Daily Flow	4,734	4,688	5,294	5,733	4,856	3,550	5,176	2,622	2,594	3,726	6,004	5,510

Total Annual Effluent Flow (m^3) = 2,485,892

Average Annual Effluent Daily Flow (m^3) = 6,797

Biochemical Oxygen Demand	January	February	March	April	May	June	July	August	September	October	November	December
Raw Avg. CBOD (mg/L)	70.0	68.5	40.4	44.5	58.5	88.8	106.0	70.4	106.3	59.0	56.4	59.0
Effluent Avg. CBOD (mg/L)	3.0	3.0	3.0	3.0	3.0	3.6	3.0	3.0	3.0	3.0	3.0	3.0
CBOD Loading (kg/d)	16.8	15.2	32.7	23.6	18.2	21.7	18.6	16.2	17.7	20.9	26.0	26.1
Percent Removal	95.7	95.6	92.6	93.3	94.9	95.9	97.2	95.7	97.2	94.9	94.7	94.9

Suspended Solids	January	February	March	April	May	June	July	August	September	October	November	December
Raw Avg. SS (mg/L)	218.8	253.8	132.0	168.8	204.0	222.8	321.5	173.4	320.0	146.8	137.2	165.0
Effluent Avg. SS (mg/L)	3.8	3.8	3.6	4.0	3.3	3.0	3.3	4.2	6.5	4.0	4.0	5.0
SS Loading (kg/d)	21.0	19.1	39.2	31.5	19.7	18.1	20.1	22.7	38.4	27.9	34.6	43.6
Percent Removal	98.3	98.5	97.3	97.6	98.4	98.7	99.0	97.6	98.0	97.3	97.1	97.0

Phosphorous	January	February	March	April	May	June	July	August	September	October	November	December
Raw Avg. PHOS (mg/L)	3.12	4.33	3.22	2.88	3.11	3.54	4.05	2.53	3.54	2.42	2.31	2.95
Effluent Avg. PHOS (mg/L)	0.12	0.10	0.11	0.08	0.07	0.05	0.05	0.06	0.08	0.07	0.06	0.05
PHOS Loading (kg/d)	0.66	0.51	1.15	0.63	0.39	0.30	0.28	0.32	0.44	0.51	0.55	0.46
Percent Removal	96.23	97.69	96.71	97.22	97.91	98.59	98.89	97.63	97.88	97.01	97.23	98.22

Nitrogen Series	January	February	March	April	May	June	July	August	September	October	November	December
Raw Avg. NH3 as N (mg/L)	13.475	15.65	8.994	11.13	12.91	14.4	13.5	13.94	14.45	12.25	9.302	9.3075
Effluent Avg. NH3 as N (mg/L)	0.45	3.55	2.75	1.46	0.54	0.20	0.08	0.32	0.35	1.28	0.40	0.92
NH3 Loading (kg/d)	2.49	18.03	29.94	11.48	3.27	1.21	0.51	1.73	2.04	8.89	3.45	8.01
Percent Removal	96.70	77.33	69.45	86.91	95.82	98.61	99.39	97.70	97.61	89.59	95.72	90.12

Disinfection	January	February	March	April	May	June	July	August	September	October	November	December
Effluent Geo. Mean E. Coli / 100mL	7.2	13.5	4.6	1.0	4.6	5.2	8.0	3.3	13.3	16.8	8.9	1510.0

pH	January	February	March	April	May	June	July	August	September	October	November	December
Effluent Avg. pH	7.5	7.2	7.5	7.6	7.5	7.3	7.3	7.5	7.4	7.4	7.5	7.2

Temperature	January	February	March	April	May	June	July	August	September	October	November	December
Effluent Avg. Temp.	6.2	5.3	5.4	7.5	10.4	13.6	15.0	16.0	15.3	13.2	10.3	7.4

Appendix B
2021 Monthly Raw Sewage Data Report

Flow Summary (m^3)	January	February	March	April	May	June	July	August	September	October	November	December
Raw Total Monthly Flow	173,541	142,292	337,714	236,295	187,661	181,146	191,789	167,388	177,064	216,246	259,737	270,023
Raw Avg. Daily Flow	5,598	5,082	10,894	7,876	6,054	6,038	6,187	5,400	5,902	6,976	8,658	8,710
Raw Max. Daily Flow	6,434	5,599	36,192	14,019	10,365	16,312	9,813	10,696	12,482	20,385	13,140	13,213
Raw Min. Daily Flow	4,847	4,805	5,405	5,865	5,003	3,637	5,331	2,736	2,695	3,852	6,193	5,730

TKN (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Average	20.43	27.70	17.44	16.53	19.63	22.68	23.48	19.38	25.13	19.95	16.90	17.28
Maximum	20.70	38.80	24.30	21.10	21.80	32.30	35.50	21.00	30.10	22.60	28.90	21.60
Minimum	20.30	19.90	10.10	12.20	15.80	12.30	17.70	15.00	21.90	17.40	8.40	12.40

Total Phosphorous (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Average	3.12	4.33	3.22	2.88	3.11	3.54	4.05	2.53	3.54	2.42	2.31	2.95
Maximum	3.61	5.91	5.78	4.22	3.56	4.79	7.72	2.94	4.16	2.52	3.49	4.10
Minimum	2.76	3.01	2.15	2.10	2.82	1.71	2.24	2.14	2.74	2.32	0.90	2.17

pH	January	February	March	April	May	June	July	August	September	October	November	December
Average	7.4	7.2	7.4	7.4	7.2	7.3	7.2	7.2	7.2	7.2	7.3	7.2
Maximum	7.7	7.2	7.6	7.6	7.4	7.6	7.4	7.4	7.5	7.2	7.5	7.3
Minimum	7.2	7.1	7.2	7.2	7.1	7.1	6.9	7.1	6.8	7.2	7.2	7.1

Suspended Solids (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Average	218.8	253.8	132.0	168.8	204.0	222.8	321.5	173.4	320.0	146.8	137.2	165.0
Maximum	300.0	400.0	165.0	210.0	255.0	380.0	660.0	200.0	375.0	165.0	180.0	260.0
Minimum	150.0	175.0	80.0	120.0	156.0	106.0	106.0	138.0	250.0	132.0	56.0	104.0

CBOD - 5 (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Average	70.0	68.5	40.4	44.5	58.5	88.8	106.0	70.4	106.3	59.0	56.4	59.0
Maximum	97.0	98.0	56.0	61.0	77.0	137.0	148.0	96.0	217.0	75.0	79.0	89.0
Minimum	54.0	45.0	18.0	35.0	33.0	49.0	73.0	56.0	37.0	43.0	25.0	35.0

Appendix C
2021 Monthly Effluent Data Report

Flow Summay (m^3)	January	February	March	April	May	June	July	August	September	October	November	December
Effluent Total Monthly Flow	169,882	139,003	333,541	232,280	183,269	175,775	187,241	162,532	172,844	212,162	253,521	263,842
Effluent Avg. Daily Flow	5,480	4,964	10,759	7,743	5,912	5,859	6,040	5,243	5,761	6,844	8,451	8,511
Effluent Max. Daily Flow	6,297	5,458	35,928	13,824	10,255	15,739	9,630	10,267	12,643	20,194	13,045	12,923
Effluent Min. Daily Flow	4,734	4,688	5,294	5,733	4,856	3,550	5,176	2,622	2,594	3,726	6,004	5,510

TKN (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Average	1.78	5.60	4.58	2.70	1.70	1.32	0.98	1.32	1.38	2.43	1.32	1.95
Maximum	2.20	9.50	6.90	4.80	2.00	2.10	1.20	2.30	1.60	5.10	1.60	2.80
Minimum	1.20	3.10	2.70	1.40	1.50	0.80	0.80	1.00	1.00	1.10	1.10	1.00

NH3 as N (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Average	0.45	3.55	2.75	1.46	0.54	0.20	0.08	0.32	0.35	1.28	0.40	0.92
Maximum	0.72	6.16	4.41	3.15	0.84	0.62	0.13	1.21	0.50	3.52	0.80	1.47
Minimum	0.14	1.61	1.25	0.48	0.31	0.04	0.05	0.07	0.25	0.10	0.21	0.37

Un-Ionized Ammonia (NH3) mg/L	January	February	March	April	May	June	July	August	September	October	November	December
Average	0.0022	0.0078	0.0121	0.0112	0.0045	0.0012	0.0008	0.0030	0.0028	0.0122	0.0030	0.0025
Maximum	0.0036	0.0116	0.0155	0.0212	0.0088	0.0026	0.0017	0.0111	0.0041	0.0391	0.0067	0.0036
Minimum	0.0007	0.0052	0.0075	0.0031	0.0009	0.0003	0.0003	0.0007	0.0014	0.0004	0.0011	0.0013

Total Phosphorous (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Average	0.12	0.10	0.11	0.08	0.07	0.05	0.05	0.06	0.08	0.07	0.06	0.05
Maximum	0.18	0.13	0.15	0.09	0.08	0.06	0.08	0.09	0.14	0.11	0.10	0.06
Minimum	0.07	0.07	0.07	0.07	0.06	0.04	0.03	0.04	0.04	0.04	0.03	0.05

Suspended Solids (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Average	3.8	3.8	3.6	4.0	3.3	3.0	3.3	4.2	6.5	4.0	4.0	5.0
Maximum	6.0	4.0	5.0	7.0	4.0	3.0	4.0	8.0	11.0	5.0	7.0	8.0
Minimum	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

CBOD - 5 (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Average	3.0	3.0	3.0	3.0	3.0	3.6	3.0	3.0	3.0	3.0	3.0	3.0
Maximum	3.0	3.0	3.0	3.0	3.0	6.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

pH	January	February	March	April	May	June	July	August	September	October	November	December
Average	7.5	7.2	7.5	7.6	7.5	7.3	7.3	7.5	7.4	7.4	7.5	7.2
Maximum	7.8	7.3	7.6	7.7	7.8	7.8	7.7	7.7	7.6	7.6	7.7	7.3
Minimum	7.3	7.1	7.3	7.5	7.1	6.9	7.1	7.3	7.2	7.1	7.2	7.2

Temperature	January	February	March	April	May	June	July	August	September	October	November	December
Average	6.2	5.3	5.4	7.5	10.4	13.6	15.0	16.0	15.3	13.2	10.3	7.4
Maximum	9.4	6.1	6.1	8.9	12.2	14.4	21.4	16.9	22.0	14.3	11.5	8.9
Minimum	4.8	4.7	4.6	5.8	8.2	12.3	13.9	14.8	13.9	11.4	8.8	6.3

Appendix D
2021 Monthly Chemical Data Report

Disinfection \ Effluent E. Coli (cfu / 100 mL)	January	February	March	April	May	June	July	August	September	October	November	December
Average	7.2	13.5	4.6	1.0	4.6	5.2	8.0	3.3	13.3	16.8	8.9	1510.0
Maximum	43.0	19.0	22.0	1.0	11.0	19.0	62.0	33.0	112.0	89.0	93.0	1900.0
Minimum	1.0	8.0	1.0	1.0	1.0	1.0	1.0	1.0	4.0	4.0	2.0	900.0

Phosphorous Removal \ Chem. Add Coagulant (kg)	January	February	March	April	May	June	July	August	September	October	November	December
Average	100	93	226	163	124	129	131	114	122	149	216	164
Total	3,114	2,607	7,005	4,877	3,852	3,856	4,074	3,535	3,660	4,609	6,480	5,081

Coagulant Dosage (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December
Average (dry)	9.0	10.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	13.0	9.9
Maximum (dry)	11.0	13.0	11.0	11.0	11.0	16.0	16.0	12.0	12.0	15.0	20.0	18.2
Minimum (dry)	2.0	3.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	10.0	6.0	1.9

Polymer	January	February	March	April	May	June	July	August	September	October	November	December
Total (kg)	548.4	733.2	737.7	744.0	722.8	871.7	824.3	472.4	709.9	691.9	772.5	1085.8

Appendix E
2021 Monthly Cake Analysis Report

Month	Cake Hauled (Dry Ton)	pH	Total Solids (%)	NH_3 (µg/g)	TKN (µg/g)	NO_2 (µg/g)	NO_3 (µg/g)	P (µg/g)	K (µg/g)	Al (µg/g)	As (µg/g)	Ca (µg/g)	Cd (µg/g)	Cr (µg/g)	Co (µg/g)	Cu (µg/g)	Pb (µg/g)	Hg (µg/g)	Mo (µg/g)	Ni (µg/g)	Se (µg/g)	Zn (µg/g)
January	11.81	6.06	22.2	955	56500	10	10	30100	1770	65000	3	15800	0.6	33	3	321	16	0.230	4	19	2	986
February	15.56	5.18	21.5	274	47300	10	49	32500	1980	66800	4	17000	0.9	36	4	327	17	0.240	5	19	2	1110
March	13.61	5.32	32	293	46000	10	44	34000	1630	72400	4	16300	0.7	34	4	355	15	0.29	5	18	2	1060
April	11.25	5.35	23.3	433	36600	10	38	35600	1660	76600	4	17200	0.9	38	3	343	14	0.230	4	19	2	990
May	17.08	6.18	29.1	696	42350	10	147	31850	1915	74700	5	17600	0.8	43	3	346	17	0.330	5	22	2	1082
June	22.95	6.15	25	294	33300	10	10	27800	1990	67000	3	17800	0.5	37	3	269	13	0.280	4	17	2	910
July	19.60	5.34	21.8	108	18600	10	10	6000	3120	82700	6	45600	1.5	94	7	657	52	0.400	9	42	6	1670
August	9.33	5.56	20.3	133	14900	10	13	5530	1670	65600	3	19200	0.7	39	4	341	19	0.370	5	18	2	958
September	14.62	6.12	21.6	2920	11500	10	10	7370	1680	72300	4	13500	0.6	38	4	337	18	0.360	5	18	3	1160
October	15.84	5.47	19.9	84	40200	10	80	24700	1780	66600	3	12100	0.7	34	3	327	17	0.29	5	18	3	1130
November	17.19	5.87	21.1	370	35300	10	10	14500	1860	67300	3	13600	0.5	35	4	354	20	0.230	6	22	2	1270
December	21.93	5.86	23.4	379	19300	10	12	37800	2060	70500	4	14700	0.5	35	3	324	22	0.430	6	23	2	1240

Total Cake Hauled (dry ton) = 190.76

Appendix F
2021 Bypass Event Report

Date	Location	Type	Duration (hours)	Volume (m^3)	Reason (Code)
March 26, 2021	Main East & Cameron Street intersection	CSO	3 1/2 hours	1,260	1 & 2
March 26, 2021	Wastewater Treatment PlantSPS Diversion Chamber	PB	6 hours	6,898	1 & 2
June 26, 2021	Main East & Cameron Street intersection	CSO	2 hour and 40 minutes	960	1
August 13, 2021	Wastewater Treatment Plantpumping station	PB	55 minutes	928	1
September 15, 2021	Main East & Cameron Street intersection	CSO	25 minutes	120	1
September 15, 2021	Wastewater Treatment Plantpumping station	PB	5 minutes	14	1

Type
PB (Primary Bypass)
SB (Secondary Bypass)
STPO (Sewage Treatment Plant Overflow)
PSO (Pumping Station Overflow)
CSO (Combined Sewer Overflow)

Reason Codes	
1 : Heavy Precipitation	5 : Sewer Problems
2 : Snow Melt	6 : Power Failure
3 : Equipment Failure	7 : Exceed Design Capacity
4 : Maintenance/upgraded	O : Others

Appendix G
2021 Annual Bypass Summary Report

Month	WasteWater Treatment Plant Primary Bypass		
	Number (days)	Duration (minutes)	Volume (m^3)
January	0	0.0	0
February	0	0.0	0
March	2	570.0	8158
April	0	0.0	0
May	0	0.0	0
June	1	160.0	960
July	0	0.0	0
August	1	55.0	928
September	2	30.0	134
October	0	0.0	0
November	0	0.0	0
December	0	0.0	0
Total	6	815.0	10180
Volume of ByPass as % of Average Daily			0.401%