THE CORPORATION OF THE CITY OF BARRIE

Barrie

Wastewater Treatment Facility

249 Bradford Street

2024 Annual Monitoring Report

Environmental Compliance Approval 0284-B2ML52

March 24, 2025

The City of Barrie
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Overview and Summary

The City of Barrie's Wastewater Treatment Facility (WwTF) is located at 249 Bradford Street and in 2024 operated under Amended Environmental Compliance Approval No. 0284-B2ML52 ("the ECA") dated August 24th, 2018, issued by the Ministry of the Environment, Conservation and Parks (MECP). Compliance will be evaluated against Section 11 reporting requirements of the ECA.

Sewage treatment processes included:

- Mechanical bar screens,
- Grit removal,
- Primary settling,
- Selector tank,
- High purity oxygen activated sludge treatment (UNOX process),
- Dual point chemical addition for removal of phosphorus and suspended solids,
- Secondary settling,
- Nitrification by Rotating Biological Contactors (RBC),
- Sand filtration,
- Ultraviolet disinfection,
- Treated effluent is discharged to Kempenfelt Bay through a staged diffuser,
- Biosolids are separated from the liquid sewage and are processed via dual digestion of sludge (aerobic & anaerobic), and
- Methane gas generated from biosolids processing is 'scrubbed' and used for co-generation of heat and electricity to offset plant energy demands.

The effluent average daily flow of 52.2 Megalitres per day (MLD) of treated sewage represents approximately 69% of the plant's rated capacity of 76 MLD. The maximum daily effluent flow was 82.2 MLD on July 11th, due to excessive precipitation and runoff accessing the sanitary collection system.

The WwTF continues to accept volumes of imported sewage. A total of 16,793.95 m^3 of domestic septage was received at the WwTF's Septage Receiving Facility from five (5) haulage companies.

Over the reporting period, the WwTF remained in full compliance with all effluent concentration and loading limits. The plant met all ECA objectives on a monthly average basis, with some daily exceptions related to total phosphorous (TP), total suspended solids (TSS), and minimum pH parameters. Effluent pollutants such as TP, dissolved reactive phosphorus (DRP), carbonaceous biochemical demand ($cBOD_5$), and E. coli were often below analytical detection limits.

The City continues to submit Municipal Utility Monitoring Program (MUMP) reports on-line using the MECP digital reporting system.

Over the reporting period, the WwTF functioned well, producing high quality treated effluent as indicated by minimal effluent nutrient levels. The effluent phosphorous monthly average concentrations all met the monthly average concentration limit of 0.18mg/L, and the effluent annual average phosphorous concentration of 0.036 mg/L (rounded to 0.04 mg/L) was well below the Lake Simcoe Phosphorus Reduction Strategy limit of 0.1 mg/L. The final effluent phosphorous annual loading was 765 kg, representing 27.6% of the annual compliance loading limit of 2,774 kg. The average ammonia-N effluent concentration based on all samples was 0.23 mg/L and all ammonia-N limits, monthly objectives and loadings were consistently met.

The WwTF had one spill event. On November 8, a spill of approximately 3.8 m^3 of stabilized biosolids occurred when a biosolids loading station was activated without a receiving truck being present at the WwTF. All material involved in the spill was contained within the boundary of the WwTF property line. The spill was reported to the Ontario Spills Action Centre (SAC) (Event Number 1-D8JHDR) on November 11, 2024. A spill report and a corrective action report were completed that outlined the details of the event, site remediation completed, and preventative measures taken to avoid a recurrence. Both reports were submitted to the MECP.

The reporting sections in this report follow the specific reporting requirements of Section 11(4) of the ECA. Copies of relevant Biosolids Land Application Summary are found in Appendix “A”, and Overflows/Bypasses and Abnormal Events are in Appendix “B”.

Effluent reporting statistics such as monthly average or yearly average concentrations in this report are calculated as per Schedule F of the ECA (i.e. arithmetic mean of all single sample results obtained during a month or calendar year respectively).

Reporting Section 11(4) (a): Summary/Interpretation of Influent & Imported Sewage Quality and Flows and Historical Trends

WwTF influent sampling was conducted as per the requirements of the ECA and results are presented in Table 1. The sampling and flow monitoring data was previously sent to MECP in monthly R1 and R2 MUMP reports. Influent concentrations are typical of domestic sewage.

Table 1 WwTF 2024 Monthly Average Influent Concentrations and Total Flows

Month (2024)	Total Effluent Flow (m^3)	BOD_5 (mg/L)	Total Suspended Solids (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorus (mg/L)	Dissolved Reactive Phosphorus (mg/L)	NH_3-N (mg/L)
January	1,594,847	213	283	44.98	5.1	1.34	25.87
February	1,480,881	197	326	45.51	5.1	1.44	25.66
March	1,649,011	189	308	45.41	5.0	1.34	25.38
April	1,825,816	198	322	43.89	5.0	1.11	23.42
May	1,739,113	194	318	45.00	5.1	1.05	24.11
June	1,608,177	215	334	45.76	5.2	1.06	24.63
July	1,695,255	196	322	45.31	5.0	0.92	25.58
August	1,555,285	236	311	40.98	5.0	1.09	24.37
September	1,461,451	240	312	38.89	4.9	1.18	23.89
October	1,489,305	209	288	42.79	5.5	1.50	26.26
November	1,432,832	209	277	45.48	5.4	1.52	29.01
December	1,584,672	191	220	44.11	5.4	1.47	27.16
Average	**1,593,054**	**207**	**302**	**44.01**	**5.1**	**1.25**	**25.45**
Sum	**19,116,643**						

Five (5) years of historical trending of WwTF influent concentrations and flow data is shown in Figures 1-4 below:

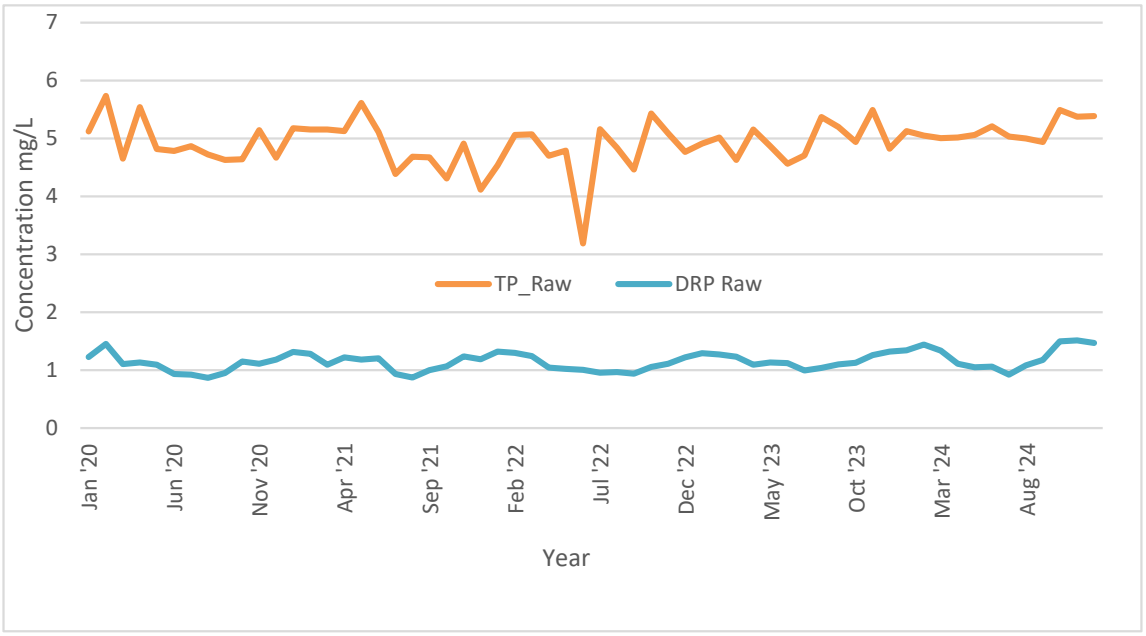

Figure 1 WwTF Average Monthly Influent Total Phosphorus and Dissolved Reactive Phosphorus Concentrations (mg/L)

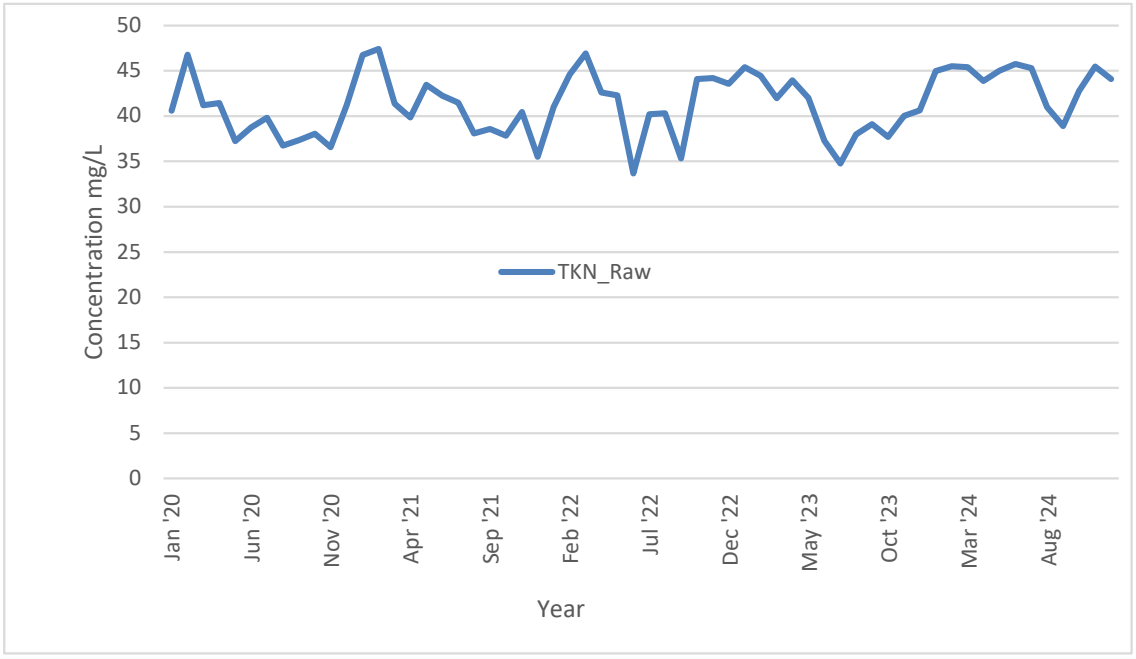

Figure 2 WwTF Average Monthly Influent Total Kjeldahl Nitrogen (mg/L

Figure 3 WwTF Average Monthly Influent Five-Day Biochemical Oxygen Demand and Total Suspended Solids Concentrations (mg/L)

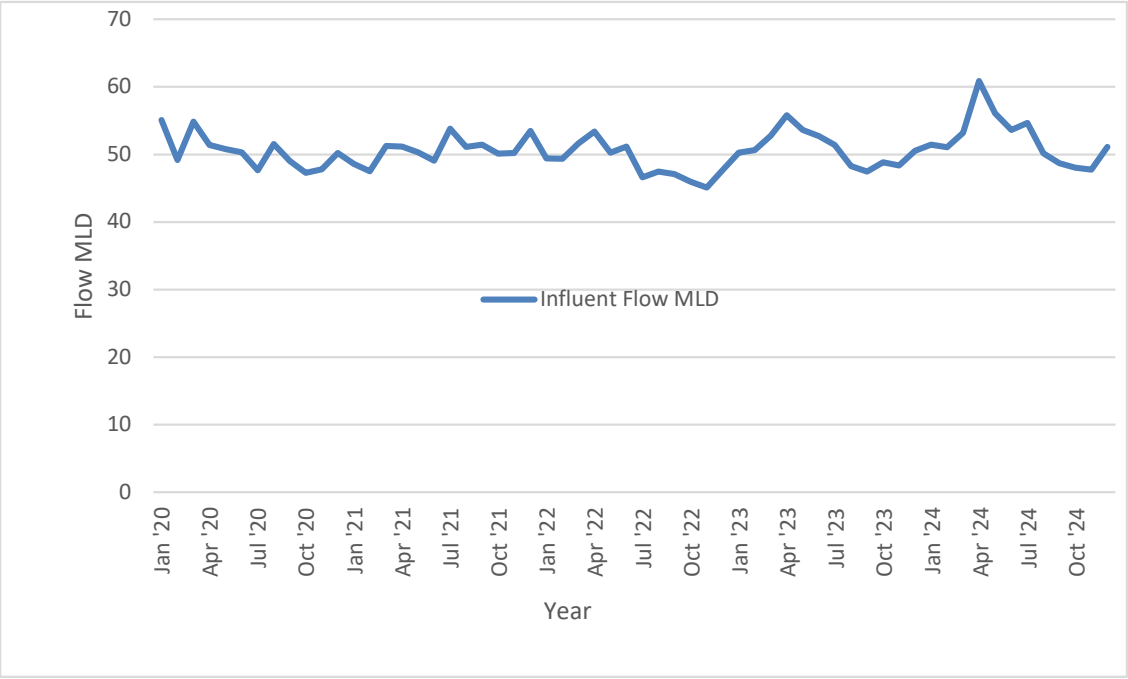

Figure 4 WwTF Average Monthly Influent Flow (MLD)

Table 2 compares average daily effluent flow per month with maximum daily effluent flow for that month. A maximum daily effluent flow of 82.2 MLD occurred on July 11th, due to heavy rain that resulted in excessive water runoff entering the sanitary collection system.

Table 2 WwTF 2024 Monthly Average and Monthly Maximum Daily Influent Flows (MLD)

Month (2024)	Average Daily Flow (MLD)	Maximum Daily Flow (MLD)
January	51.447	61.333
February	51.065	56.315
March	53.194	58.342
April	60.861	79.938
May	56.100	63.469
June	53.606	65.511
July	54.686	82.178
August	50.170	55.710
September	48.715	52.623
October	48.042	50.667
November	47.761	54.522
December	51.118	64.527
Average	**52.230**	

The WwTF continued to accept hauled septage over the reporting period, which consisted of domestic septic tank and holding waste from residential, industrial/commercial, and educational facility sources. Samples were taken from the WwTF septage receiving tank. The monthly volumes and analytical results are shown below in Table 3:

Table 3 Total Monthly Volumes Results of Sampling and Analysis of Imported Sewage

Monthly Vol. Received (m^3)	Sample Date	BOD_5 (mg/L)	TSS (mg/L)	TKN (mg/L)	TP (mg/L)
January					
1335.81	2024-01-03	1550	4360	333	57.7
	2024-01-08	>5142	17400	665	140
	2024-01-09	3410	13400	528	134
	2024-01-16	2840	17700	855	221
	2024-01-22	3200	7430	415	81.1
	2024-01-29	1250	2470	169	26.9
	2024-01-31	6540	20800	741	172
February					
857.37	2024-02-20	3160	14700	667	191
	2024-02-21	2830	18100	497	169
	2024-02-22	2290	7230	398	67.6
	2024-02-27	2060	5130	275	43.6
March					
854.48	2024-03-04	9060	31400	692	260
	2024-03-13	3310	11000	473	93.4
	2024-03-14	580	27300	757	158
	2024-03-19	2060	6230	335	49.4
April					
1897.18	2024-04-03	2120	7000	361	58.1
May					
1803.53	2024-05-06	1630	6130	357	46.5
	2024-05-28	7320	14100	496	96.5
	2024-05-29	1220	13700	512	84.2
June					
1147.72	2024-06-04	4700	21600	732	177
	2024-06-11	3580	9370	441	74
	2024-06-18	2540	9370	388	66
July					
1817.78	2024-07-03	2240	8100	393	59.1
	2024-07-10	2740	5800	395	59.7
	2024-07-17	3260	12700	503	74.1
August					
1806.89	2024-08-07	1460	4550	254	38.5
	2024-08-20	3380	7960	390	68.3
	2024-08-28	11800	18800	577	158

September					
1170.16	2024-09-04	6720	9870	360	60.4
	2024-09-11	3220	11700	490	77.5
	2024-09-18	3260	12800	517	98
October					
2135.62	2024-10-30	4320	11500	499	94.4
November					
1438.49	2024-11-06	3580	6030	401	152
December					
528.92	2024-12-06	676	12100	502	123
	2024-12-30	1040	3630	294	59.5
Total: 16,793.95					

Volumes of imported sewage increased from 11,867.09 m^3 in 2023, to 16,793.95 m^3 in 2024. The imported sewage was received from five (5) haulage companies, Pump My Tank, Regional Septic, Innisfil Disposal, WESSUC, and Swaffield Septic. The majority of the annual volume was contributed by Pump My Tank with a volume of 14,277.97 m^3 deposited. The imported sewage sampling data indicated that BOD5, TSS, and TP parameters have increased significantly in many samples when compared to previous years data however remain typical characteristics of domestic septage. Large variances in septage strength are expected due to the nature of the waste, storage time and/or biological action in the receiving tank, sampling procedures, or a combination thereof. All imported sewage received full treatment and did not create any treatment process issues or regulatory concerns. Samples were taken a minimum of once a month up to twice weekly depending on process monitoring initiatives or system maintenance activities. The septage receiving station was out of service for cleaning and maintenance during the weeks of March 25th, June 24th, September 23rd, and December 16th.

Individual Sewage Waste Manifests were not included in this report but are available upon request.

Reporting Section 11(4) (b): Summary and Interpretation of All Final Effluent Monitoring Data and Comparison to Design Objectives and Limits

Final Effluent monitoring data results are often below the analytical detection limits of laboratory methods. Detection limits for target parameters are as follows: TP, 0.02 mg/L; DRP, 0.01 mg/L; $cBOD_5$, 2.0 mg/L and ammonia-N, 0.03 mg/L. E. coli counts of <1 CFU/100 mL are recorded as 1.0 CFU/100 mL to allow calculation of the geometric mean. E. coli is monitored in two locations, the North UV effluent channel and the South UV effluent channel. The higher monthly average E. coli result is used for comparison with regulatory requirements.

Non-detect results are assumed to be at the detection limit for averaging purposes. As a result, the reported average effluent concentrations for cBOD5, TP, DRP, and E. coli are typically overestimated compared to the actual values. Effluent ammonia-N concentrations are generally above detection limits.

The frequent occurrence of effluent data below detection limits highlights the City's commitment to continuous improvement, environmental stewardship, and maintaining effluent quality that exceeds the

standards of a secondary treatment facility. The WwTF was designed to achieve effluent total phosphorus levels of 0.15 mg/L and ammonia-N concentrations ranging from 3 to 8 mg/L, depending on the season. On average, WwTF effluent surpasses these objectives by an order of magnitude for ammonia and nearly an order of magnitude for total phosphorus.

Tables 4, 5 and 6 summarize all effluent monitoring results, flow rates and loadings, and evaluate compliance with all effluent limits, objectives, and loadings limits stipulated in the ECA. As noted above, where concentrations of pollutants are below detection limits the concentration is assumed to be at the limit of detection.

Table 4 shows that no monthly average effluent concentration **limits** were exceeded.

Table 4 WwTF 2024 Monthly Effluent Concentrations vs Effluent Limits

2024	Avg. $cBOD_5$ (mg/L)	Avg. TSS (mg/L)	Avg. NH_3 - N (mg/L)	Avg. NH_3 - N (mg/L)	Avg. Total P (mg/L)	Log Avg. E. coli CFU per 100 ml	Avg. pH	Min. pH	Max. pH
January	2.00	1.93		0.29	0.02	1.00	6.58	6.44	6.67
February	2.00	2.54		0.11	0.02	1.00	6.74	6.64	6.82
March	2.00	3.08		0.33	0.02	1.00	6.61	6.53	6.74
April	2.00	5.85		0.22	0.15	1.25	6.61	6.49	6.69
May	2.00	3.71		0.37	0.03	1.42	6.52	6.45	6.58
June	2.00	2.58	0.16		0.02	1.00	6.56	6.46	6.87
July	2.00	2.86	0.49		0.03	1.00	6.69	6.58	6.82
August	2.02	1.77	0.05		0.02	1.33	6.63	6.54	6.71
September	2.01	1.77	0.07		0.02	1.00	6.62	6.51	6.83
October	2.30	1.57	0.08		0.02	1.00	6.87	6.80	6.94
November	2.00	2.83		0.40	0.04	1.00	6.86	6.78	6.99
December	2.00	3.08		0.17	0.04	1.04	6.82	6.65	6.99
ECA Sch. "C" Limit	15	15	4	10	0.18	200		6.0	9.5
ECA Limit exceedances	**0**	**0**	**0**	**0**	**0**	**0**		**0**	**0**

Table 5 evaluates compliance with effluent concentration **objectives** for the WwTF, with non-compliant daily values listed with the date of occurrence. In terms of meeting monthly effluent objectives on a daily basis, the WwTF did not meet the TSS,TP, and min pH sporadically throughout 2024.

The elevated concentrations of TSS and TP were a result of high flows due to rain and snowmelt runoff entering the sanitary collection system, causing solids to accumulate in secondary clarifiers and carry over into the tertiary filters decreasing the processes efficiency.

Low effluent pH is known to be attributed to the high degree of biological treatment and insufficient natural buffering capacity of the sewage at the WwTF. Since the final pH sampling point is hundreds of meters upstream from the effluent diffuser in the bay, the actual pH of the final discharge is higher than that measured. This is a result of carbon dioxide de-gasification which takes place naturally in the effluent over time, raising the pH.

Table 5 WwTF Individual Daily Non-Compliances with Effluent Objectives

Date	cBOD Final (mg/L)	SS Final (mg/L)	NH3 Final (mg/L)		TP Final (mg/L)	E. coli Final	pH Final	
			Jun - Oct	Nov - May			Low	High
2024-01-25							6.46	
2024-01-26							6.44	
2024-01-27							6.49	
2024-04-04		12.00			0.24			
2024-04-05					0.29			
2024-04-06					0.13			
2024-04-07					0.14			
2024-04-13					1.04			
2024-04-14					0.94			
2024-04-15		22.00			0.45			
2024-04-17					0.12			
2024-04-19					0.16			
2024-04-30							6.49	
2024-05-01								
2024-05-14							6.46	
2024-05-15					0.23			
2024-05-22							6.45	
2024-05-23					0.14		6.49	
2024-05-25							6.48	
2024-05-29							6.48	
2024-06-12							6.48	
2024-06-13							6.49	
2024-06-20							6.46	
2024-05-21							6.49	
2024-06-22							6.46	
2024-06-26							6.47	
	Avg. $cBOD_5$ (mg/L)	Avg. TSS (mg/L)	Avg. NH_3 - N (mg/L)	Avg. NH_3 - N (mg/L)	Avg. Total P (mg/L)	Log Avg. E. coli CFU per 100 ml	Min. pH	Max. pH
ECA Sch. "B" Objective	10	10	3	8	0.12	100	6.5	8.5
Number of ECA Objective exceedances*	**0**	**2**	**0**	**0**	**11**	**0**	**15**	**0**

*Compliance with Concentration objectives is based on any single sample.

Table 6 summarizes pollutant loadings and ECA loading limits. The Monthly Average Daily Effluent Loadings are calculated as follows:

Monthly Average Daily Effluent Loadings (kg/d) = Monthly Average Effluent Concentrations (mg/L from Table 4) x Monthly Average Daily Flow (MLD from Table 3)

ECA Schedule C Loading Limits are shown, and the number of exceedances is summarized at the bottom of the table. There were **no exceedances** of monthly effluent loading limits over the reporting period. None of the monthly average flows exceeded the plant rated capacity of 76 MLD.

Table 6 WwTF 2024 Monthly Average Daily Effluent Loadings

Month (2024)	Avg. Daily Flow (MLD)	$cBOD_5$ (kg/d)	TSS (kg/d)	NH_3 - N (kg/d)	NH_3 -N (kg/d)	Total Phosphorus (kg/d)
January	51.45	103	99		15	1.0
February	51.06	102	130		6	1.0
March	53.19	106	164		17	1.1
April	60.86	122	356		13	9.1
May	56.10	112	208		21	1.7
June	53.61	107	138	9		1.1
July	54.69	109	156	27		1.6
August	50.17	101	89	3		1.0
September	48.72	98	86	4		1.0
October	48.04	110	75	4		1.0
November	47.76	96	135		19	1.9
December	51.12	102	158		9	2.0
ECA Schedule "C" Limit	**76***	**1140**	**1140**	**304**	**760**	**13.7**
Number exceeding Schedule "C" Limit	**0**	**0**	**0**	**0**	**0**	**0**

*Rated Capacity

Table 7 summarizes compliance with the Lake Simcoe Phosphorus Reduction Strategy (LSPRS) Compliance Limits set forth in Schedule C of the ECA. The average annual effluent concentration of total phosphorus is the arithmetic mean of all single sample results. The total flow is the sum of monthly total flow volumes. The annual loading is the product of these two quantities. The result is that the WwTF met effluent phosphorus concentration and loading compliance limits set by the ECA and the LSPRS.

Table 7 WwTF 2024 Final Effluent Quality Comparison with Lake Simcoe Phosphorus Reduction Strategy Total Phosphorus Loading Limits

Effluent Parameter	Annual Average TP Concentration (mg/L)	Annual Total TP Loading (kg/yr.)
WwTF (2024)	0.04	765
ECA Schedule" C" Limit	0.1	2,774
Number exceeding Schedule "C" Limit	**0**	**0**

The final effluent is sampled quarterly for leachate-related parameters. The analytical results of each sample are shown below in Table 8:

Table 8 WwTF 2024 Sampling and Analytical Results for Leachate Parameters in Final Effluent

Effluent Parameter	Detection Limit (mg/L)	Sample Jan. 24 (mg/L)	Sample April 24 (mg/L)	Sample July 24 (mg/L)	Sample October 21 (mg/L)
Bis (2-ethyhexyl) phthalate	0.0004	0.0007	0.0026	<0.0004	0.004
Boron	0.050	0.329	0.188	0.150	0.137
Cobalt	0.007	<0.007	<0.007	<0.007	<0.007
Magnesium	0.02	17.5	16.5	18.1	15.7
Manganese	0.020	0.040	0.049	0.047	0.067
Potassium	0.05	14.1	14.9	16.6	16.0
Strontium	0.020	0.337	0.448	0.399	0.323

All samples were analyzed by E3 Laboratories Inc. except for all Bis (2-ethyhexyl) phthalate analysis that was sub-contracted to Eurofins Environment Testing.

Except for strontium, the leachate parameter values appear to be consistent with expected contributions from domestic water use and are consistent with the previous five (5) years of sample results. Strontium results were consistent in 2023 and 2024.

Effluent acute lethality monitoring was conducted quarterly in accordance with the federal Wastewater Systems Effluent Regulations (WSER). Sampling dates were January 24, April 24, July 24, and October 21. All four (4) quarterly effluent samples were determined to be not acutely lethal according to methods EPS 1/RM/14 and EPS 1/RM/13.

Laboratory data sheets have been omitted but are available upon request.

Figures 5 and 6 offer a 10-year overview of WwTF final effluent nutrient level trends which demonstrate the ongoing success and adequacy of the sewage works in protecting the Lake Simcoe aquatic habitat.

The average annual effluent concentration shown is the arithmetic mean of all single sample results for the year.

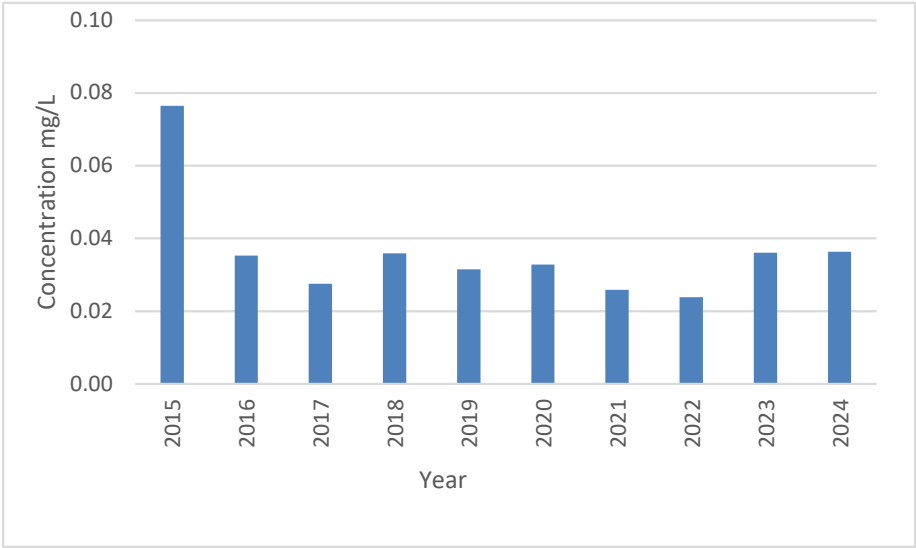

Figure 5 WwTF Average Annual Effluent Total Phosphorus Concentration (mg/L)

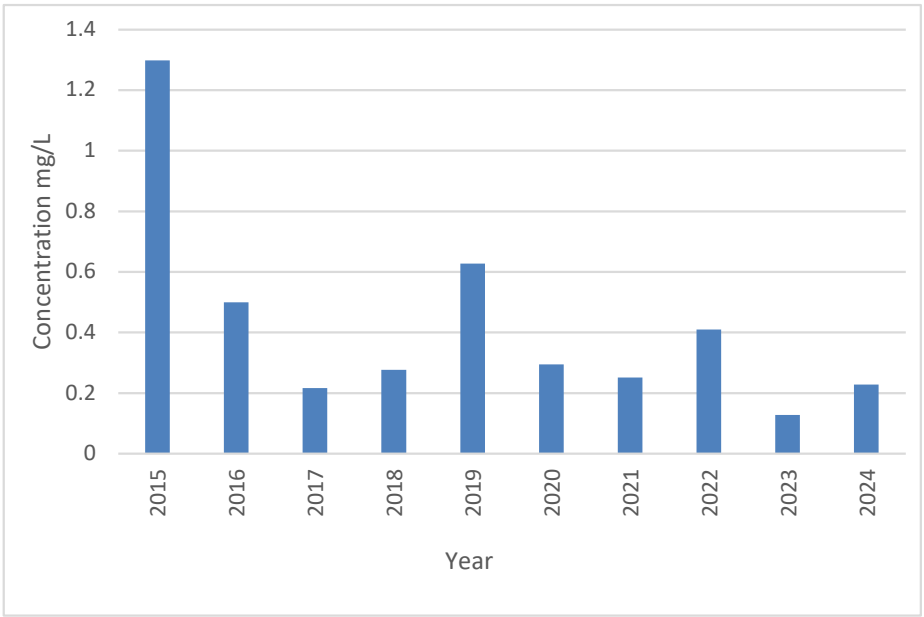

Figure 6 WwTF Average Annual Effluent Ammonia-N Concentration (mg/L)

It is evident from the figures and tables above that the Barrie WwTF achieved aggressive removal of two nutrients – total phosphorus and ammonia-N. These target parameters have the potential to cause toxicity and eutrophication in the aquatic environment of Lake Simcoe.

In summary, final effluent from the Barrie WwTF was of very high quality when evaluated against provincial and federal regulatory standards.

Reporting Section 11(4) (c): Summary of Deviations from Monitoring Schedule

The City of Barrie sampling schedule meets or exceeds the minimum sampling requirements stipulated by Schedule “D” of the ECA. For example, the City monitors effluent total phosphorus daily (7 days per week) including weekends and holidays. Although this ensures that the City meets its sampling requirements, it raises the number of potential exceedances of effluent objectives which are applied daily for purposes of compliance. However, it also provides a more accurate estimate of pollutant concentrations and loadings.

Regarding the four (4) sampling schedules prescribed in Schedule D, the City’s performance was as follows:

- Influent Sampling: Minimum weekly sampling requirements were completed in accordance with the ECA.
- Imported Sewage: Imported sewage was received 12 months of the year and samples were taken and analyzed at a minimum of once per month, in accordance with the ECA. The intent was for Operations staff to sample the tank once per week, this was deviated based on operational and maintenance functions that affected the process area.
- Effluent Sampling: Minimum weekly sampling requirements were completed in accordance with the ECA.
- Leachate Related: Four quarterly samples were completed in accordance with the ECA.

Section 9 of the ECA requires that a sampling schedule for Schedule D parameters be created and rotated annually except where sampling is conducted three (3) or more times per week. The sampling schedule that was utilized for Schedule D influent and effluent parameters in 2024 is shown in Table 9 and is in full compliance with all sampling requirements.

Table 9 WwTF Schedule 'D' Sampling Schedule

Day	Total Suspended Solids	$CBOD_5$	BOD_5	E. coli	Total Kjeldahl Nitrogen	Total Ammonia Nitrogen	Nitrate as Nitrogen	Total Phosphorus	Dissolved Reactive Phosphorus
Influent									
Monday	X		X		X			X	X
Tuesday	X		X		X			X	X
Wednesday	X		X		X			X	X
Thursday	X		X		X			X	X
Friday									
Saturday									
Sunday									
Effluent									
Monday	X	X		X	X	X	X	X	X
Tuesday				X		X		X	X
Wednesday	X	X		X	X	X	X	X	X
Thursday	X	X			X	X	X	X	X
Friday								X	
Saturday								X	
Sunday								X	

Any deviations from the above schedule resulted from lab closures over the Christmas and statutory holidays, however minimum regulatory sampling requirements were maintained at all times. Hauled sewage sampling was scheduled for a minimum of once weekly, with actual frequency adjusted based on operational and process needs or initiatives.

E. coli sampling was performed Monday through Wednesday with the exception of the weeks following long weekend where Monday is a recognized statutory holiday. The sample schedule was shifted to Tuesday through Thursday when that occurred. E. coli samples and/or composite samples are not analyzed on Fridays, with the exception of TP, as several of the parameters tested have a 48-hour holding time and the contracted external lab is unable to analyze them within that timeframe.

Leachate parameters were sampled as per the 2024 sampling schedule. In 2025 the Leachate-related sampling schedule will be rotated as shown in Table 10.

Table 10 Final Effluent Leachate Related Regulatory Sample Schedule 2025

Quarter	Date	Parameters
First	Thursday, January 23	Boron, Cobalt, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate
Second	Wednesday April 30	
Third	Wednesday July 23	
Fourth	Wednesday October 22	

Reporting Section 11(4) (d): Summary of All Operating Issues and Corrective Actions

There were no major sewage treatment operating challenges that affected treatment efficiency, as is evidenced by the performance data in Reporting Section 11(4) (b). However, there were some notable operating challenges throughout 2024. A summary of challenges and corrective actions is as follows:

- Primary Digester #2 had been out of service since September 7, 2021 for concrete rehabilitation and relining. This required the feed rate to the other Primary Digesters, 1 and 3, to be adjusted while having reduced capacity. WwTF staff began feeding the digester on Oct 24, 2024 and it was fully back in service in mid-December.
- Primary Clarifier #2 was off-line for most of 2024 due to extensive repairs and delayed delivery of replacement parts.
- Mixer on Flash/Floc tank #1 failed on July 18. Maintenance staff replaced the gearbox and it was put back in-service in mid September.
- Tertiary Filter #1 was taken out of service in November due to faulty festoon cable. WwTF staff are taking the opportunity to rebuild several aspects of the filter, including diffusers, backwash system, travelling bridge, and control panel. The filter is expected to return to full service in Q3 of 2025.
- On November 8 the loading pipe at the biosolids truck loading station was damaged when a truck driver pulled away with the pipe still lowered into the trailer. This caused a small spill of treated biosolids outside of the containment area. A summary of that event is located in section 11(4)(k) of this report. The pipe was repaired and returned to service on November 9.

See also ss. 11(4)(j) (Complaints) and 11(4)(k) (Abnormal events).

Reporting Section 11(4) (e): Normal and Emergency Repair Summary on Major Equipment Items

685 work orders were issued and completed related to WwTF treatment processes and equipment; 223 of which were classified as repairs, 46 were corrective action related to internal health and safety inspections, and 416 were scheduled preventative maintenance. A more detailed summary of work order designation is below in Table 11.

Table 11 WwTF Work Order and Repair Summary

Work Order Type and Process Section	Number of Work Orders
Repair	
Preliminary Treatment	29
Primary Treatment	27
Aeration/Secondary Treatment	27
Tertiary and Disinfection	48
Digesters/Gas System/Hot water System	57
Sludge Thickening	11
Process Control/Laboratory/Chemical System	22
Septage	2
Total	**223**
Safety Corrective Action	
Preliminary Treatment	18
Primary Treatment	3
Aeration/Secondary Treatment	3
Tertiary and Disinfection	4
Digesters/Gas System/Hot water System	5
Sludge Thickening	3
Process Control/Laboratory/Chemical System	3
Septage	7
Total	**46**
Preventative Maintenance	
Preliminary Treatment	42
Primary Treatment	17
Aeration/Secondary Treatment	126
Tertiary and Disinfection	140
Digesters/Gas System/Hot water System	79
Sludge Thickening	11
Process Control/Laboratory/Chemical System	1
Septage	0
Total	**416**

Reporting Section 11(4) (f): Summary of Effluent QA/QC Program

The City of Barrie currently uses a member of the Canadian Association for Laboratory Accreditation (CALA), E3 Laboratories Inc., ("E3"), for analysis of all samples taken for regulatory reporting purposes. The following chapter is excerpted from E3's Lab Quality Manual dated September 1st, 2015, and describes QA/QC procedures that were in place for 2024.

7.0 QUALITY CONTROL

Quality Control Samples are used, as appropriate, to ensure that the analytical process is in control. The various types of quality control samples and the characteristics they monitor are summarized as follows:

Type of Quality Control Samples	Characteristic Monitored
Standards/Lab QC	verify
Reference	calibration/stability
Material*	method accuracy
Duplicate	method precision
Samples Analyte	method recovery
Spike Reagent	contamination
Blank	(chemical)
Matrix Spike	sample recovery

* Reference materials may be either certified reference materials or can be prepared by the laboratory using the same compound as the calibration standards but using a different lot# or manufacturer of the chemical.

These Quality Control samples are defined as follows:

Standards/ Lab QC: A solution prepared by the use of a primary standard or purchased pre-made from a supplier who certifies its concentration. The analyst performing the applicable tests for which that standard will be used usually prepares standards. Standard preparation is documented in the Standard Logbook.

Certified Reference Material: A sample that contains the analytes of interest in concentrations that are known from a previous in-house analysis or provided by an outside source. In-house reference material preparation is documented in the Standard Logbook.

Analyte Spike: A sample prepared by adding a measured amount of a reference standard to reagent water or sample.

Reagent Blank: A sample containing laboratory high quality water which is analyzed as though it were a sample.

The quality control results for each run are monitored and verified by the analyst against the established control limits, which have been determined for the tests and/or specific parameters analyzed. The Laboratory Manager reviews quality control results on a regular basis. The values outside the established limits are automatically flagged by LTMS to warn

the analysts of the outlier results. The Laboratory Manager will review all flagged data. The analyst in consultation with the Laboratory Manager reviews raw data and the steps followed in the test procedure and take the appropriate action(s) to identify and resolve the situation.

If any quality control sample results fall outside the control limits, the acceptance or rejection of the results is at the discretion of the analyst in consultation with the Laboratory Manager. The Laboratory Manager has the final authority to accept or reject results.

If necessary, the analysis will be repeated, if sufficient sample remains. The Laboratory Manager will review the repeated test results.

7.1 Proficiency Testing and Inter-/Intra-laboratory Studies

An important part of our Quality Assurance program is the participation in proficiency testing and inter- and intra-laboratory studies. The Laboratory Manager ensures that the lab participates in external proficiency testing.

These include proficiency samples for CALA and other PT sample suppliers.

If a proficiency test study provides results that cause doubt concerning test method performance, the Laboratory Manager may initiate a Quality Audit. Based on the audit findings, corrective action is initiated.

The results of this audit and any actions taken shall be documented and maintained on file by the Laboratory Manager.

7.2 Control Charts and Control Limits

7.2.1 Control Charts

Control charts are used, as appropriate, to monitor and evaluate the quality of the QC data generated. Such charts relate on-going test method performance to either statistically defined (±3 STD) or protocol defined control limits. The values that are outside these limits are automatically or manually flagged to notify the analyst of the deviation. The supervisor or senior analyst designated to the co-ordination/supervision of the respective test is responsible to ensure the continual monitoring of the method's performance. Prescribed control charting practices are contained in the method SOP. All control charts are maintained by the LIMS.

7.2.2 Control Limits

Control limits, or other specified limits, when exceeded, are automatically or manually flagged. The analyst responsible for the test or reviewing the data is then expected to intervene and document the reason for the non-conformity or outlier result. This is realized through the LIMS or recorded in the appropriate logbook. Action limits may be assigned by the Laboratory Manager for results that impact the customer or regulatory limits.

Reporting Section 11(4) (g): Calibration and Maintenance on Influent, Imported Sewage and Effluent Monitoring Equipment

Influent/effluent monitoring consists of using automatic samplers and in-line pH/temp meters. In-line pH/temp meters are calibrated using the services of the external contractor Lacey Inst. These are checked or calibrated as per Table 13. In addition, effluent monitoring equipment consists of using various flow meters used to record flow volumes from which final effluent flow is calculated, that are calibrated annually by external contractor Franklin Empire. A summary of these calibration activities is shown in Table 12.

Table 12 Calibration Summary of Monitoring Equipment

Activity	Date (2024)	Completed By
Calibrate hand-held temp/pH meter & check autosampler volumes	daily	WWOB Staff
Clean and disinfect raw and final autosampler sample jugs	weekly	WWOB Staff
Clean and disinfect raw and final autosampler sample tubing	monthly	WWOB Staff
Calibrate in-line final temp/pH meter AIT_2156	monthly	Contractor
Calibrate Biosolids flow meter FIT_1969	Aug 6	Contractor
Calibrate Raw Sewage flow meters FIT0812_01/02/03/04/05/06	July 31	Contractor
Calibrate HPEW flow meter FIT_2157	Jan 23	Contractor
Calibrate WAS flow meter FIT_6145_01/02/03	Aug 6	Contractor
Calibrate TWAS flow meter FIT 6162_01	Aug 6	Contractor
Calibrate Filter Backwash flow meter FIT_1491	Aug 1	Contractor
Calibrate Grit tank flow meters FIT_2420_01/02/03/04	July 30	Contractor
Calibrate Septage tank flow meter FIT_1293	Jan 23	Contractor

Imported sewage was tested and quantified manually, not automatically.

Calibration certificates and/or proof of calibration are available upon request.

Reporting Section 11(4) (h): Efforts Made in Meeting Effluent Objectives

The WwTF normally meets and surpasses all design objectives, and the average annual daily flow has not yet reached 80% of design flow (approx. 60.8 MLD). Although not required as a condition of the ECA, the City of Barrie made the following efforts to maintain a high level of service:

1. A dedicated process optimization engineer and analyst is kept on permanent staff.

2. The primary clarification process was optimized to produce a thicker primary sludge and reduce hydraulic loading rates on digesters. Another raw sludge pump will be added to provide operational flexibility and added redundancy (Notice of Modification of Sewage Works #2021-002 dated March 17, 2022)

3. Annual voluntary participation in the Canadian Infrastructure Benchmarking Initiative (CIBI) formerly the National Water and Wastewater Benchmarking Initiative (NWWBI) continued in 2024.

4. The Wastewater Operations Branch undertook an ongoing Hazard Identification and Risk Assessment study to predict and anticipate threats to maintaining wastewater operations.

5. Installed additional Variable Frequency Drives (VFD) to more reliably achieve the required Return Activated Sludge rate.

6. Utilize a refined procedure to allow Treatment Operators to optimize F:M ratio and calculation of solids in the secondary process to achieve full nitrification in the secondary process with the least amount of mass.

Reporting Section 11(4) (i): Biosolids Volumes and Disposal Locations

Biosolids generated at the WwTF were transported to the Oro-Medonte Biosolids Storage Facility (BSF) or directly to appropriate agricultural land in accordance with the Nutrient Management Act. Supernatant from the BSF was returned on empty trucks to the WwTF for treatment. WESSUC Inc., the City's Biosolids contractor, conducted all biosolids land application activities and transported biosolids and supernatant between the WwTF, BSF and Non-Agricultural Source Material (NASM) application sites. Biosolids laboratory analysis and land application was completed in accordance with the Nutrient Management Act and O. Reg. 267/03.

Table 13 summarizes the volumes of biosolids, and supernatant produced, hauled and volumes of biosolids land applied by month. The WwTF produced a total of 124,474.45 m^3 of biosolids of which 47,721.72 m^3 were applied directly to land from the WwTF and 76,752.73 m^3 were sent to storage at the BSF. From the BSF, 62,871.14 m^3 of biosolids were applied to land while 24,496.13 m^3 of supernatant was returned to the WwTF. The amount of biosolids produced increased by approximately 9% from the previous year. WWOB staff believe this is a result of the increased amount of flow and solids received from hauled septage, as well as mechanical issues within the primary clarification process producing a thinner sludge.

Table 13 2024 Biosolids Haulage Volume Summary

Month (2024)	Plant to Field (m^3)	Plant to Storage (m^3)	Storage to Field (m^3)	Total from Plant (m^3)	Total to Field (m^3)	Supernatant Returned to WwTF (m^3)
January	0.00	10,864.02	0.00	10,864.02	0.00	0.00
February	0.00	9,665.48	0.00	9,665.48	0.00	0.00
March	0.00	9,308.61	0.00	9,308.61	0.00	3,738.00
April	4,811.77	5,745.62	8,481.61	10,557.39	13,293.38	3,116.00
May	8,858.60	3,429.36	17,363.31	12,287.96	26,221.91	7,634.68
June	2,177.00	6,988.70	0.00	9,165.70	2,177.00	1,955.95
July	5,925.55	5,822.70	6,119.50	11,748.25	12,045.05	5,070.00
August	10,635.16	222.84	23,130.72	10,858.00	33,765.88	222.50
September	8,095.54	2,049.50	43.00	10,145.04	8,138.54	0.00
October	6,148.40	3,827.00	6113.00	9,975.40	12,261.40	0.00
November	1,069.70	8,913.70	1620.00	9,983.40	2,689.70	845.50
December	0.00	9,915.20	0.00	9,915.20	0.00	1,913.50
Total	**47,721.72**	**76,752.73**	**62,871.14**	**124,474.45**	**110,592.86**	**24,496.13**

The biosolids land application summary and identifies associated NASM Plan application sites, biosolids sources, total volume of biosolids applied and application dates is attached in Appendix “A” of this report.

Reporting Section 11(4) (j): Complaint Summary and Resolution

The WwTF did not receive any complaints.

Reporting Section 11(4) (k): Bypass/Overflow/Abnormal Events

There was one spill event on November 8, 2024 a spill containing approximately 38.5 m^3 (approximately 3.8 m^3 reached the natural environment) of stabilized biosolids occurred when a biosolids loading station was activated without a receiving truck being present at the WwTF. The spill was reported to SAC (Event Number 1-D8JHDR) on November 11, 2024. A spill report that outlined the details of the event, site remediation completed, and preventative measures taken to avoid a recurrence, along with a Corrective Action Report used to document the event and develop next steps related to prevention of recurrence were reported to the MECP. A copy of the spill report and Corrective Action Report created by the Wastewater Operations Branch is attached in Appendix “B ” of this report.

Reporting Section 11(4) (l): Status of Notices of Modification

Notice of Modification of Sewage Works # 24-05-21 Notice of Modification to Sewage Works (formerly WW1067) – Biosolids Dewatering Pilot Project dated May 21, 2024 was issued for a pilot project involving

a biosolids dewatering centrifuge mobile trailer, generator, and associated piping and equipment. The pilot was conducted for a 3-week period beginning June 3, and concluded on June 21, 2024.

Notice of Modification of Sewage Works #2021-002 dated October 13, 2021, and signed by G. Jorden was issued to install and operate a 6th raw sludge pump to the existing gallery of 5 pumps. The new pump is identical in size and capacity as the existing 5 pumps (13L/s at 12 m TDH) and was added for redundancy purposes. The 6th pump allows 2 pumps to be dedicated to each of 3 primary clarifiers. As of December 31, 2024, construction was ongoing.

In 2015, under a Notice of Modification #2 to MECP the main alum addition point was moved from pre-aeration to post-aeration resulting in much better nutrient removal. In 2021, the installation of new alum pumps commenced that enabled each secondary clarifier to have its own dedicated alum metering pump for better flow control. A Notice of Modification of Sewage Works #2021-001 dated November 15, 2021 and signed by B. Araniyasundaran P. Eng., PMP, Director of Infrastructure, City of Barrie. The project reached substantial completion on May 20, 2022

Reporting Section 11(4) (m): Summary of Efforts Re: Procedure F-5-1

Procedure F-5-1 Determination of Treatment Requirements For Municipal and Private Sewage Treatment works sets requirements for treatment of municipal and private sewage discharge in surface waters. This involves meeting certain effluent criteria stipulated in the procedure, preventing upsets and breakdowns and avoiding overflows and bypasses. The WwTF meets and consistently exceeds the Advanced Treatment standards set by Procedure F-5-1 (BOD=10 mg/L, TSS = 5 mg/L and TP=0.3 mg/L) as demonstrated in Table 4.

This section summarizes various strategies the City of Barrie currently uses to avoid overflows, bypasses, upsets and breakdowns:

- Routine bi-weekly cleaning of all sand filters using sodium hypochlorite.
- Routine weekly cleaning of WwTF raw wet well and pump station wet wells.
- Routine daily inspections of all WwTF critical equipment.
- Routine quarterly cleaning of pump station wet wells and float alarms.
- Balancing flows and sludge levels between tanks daily.
- Using good engineering practice to design and operate the WwTF equipment and treatment processes.
- Using the wet well and sewer system to equalize flows and prevent bypasses and overflows.
- Using ultrasonic level detectors in tanks to automatically control pump rates.
- 24/7 automated tank level monitoring with redundant level detection systems.
- Using SCADA systems and controls on all critical wastewater infrastructure.
- Expansion of SCADA access stations throughout the WwTF and at some Sewage Pumping Stations to allow Operations staff to respond to alarms and potential issues more efficiently.
- Maintaining redundant backup generators at WwTF in case of power failure.
- Weekly testing of WwTF standby generators, transfer switches and switchgear.
- Annual cleaning and inspection of high voltage equipment, transformers etc.
- Using a remote dialing system connected to SCADA to alarm a standby operator on call 24/7.
- Using electronic security measures at pump stations and entry doors at WwTF.
- Permanent staffing of an in-house Optimization Section one senior optimization engineer and one analyst.
- Maintaining a computerized work management system which tracks and prioritizes maintenance and repairs.
- Maintaining and enforcing a sewer use by-law.

- Providing ample funding for repairs and upgrades.
- Twinning all force mains at pump stations for redundancy.
- Maintaining a separated sewer system.
- Undertaking infiltration and inflow studies.
- Maintaining sufficient staffing and providing adequate training.
- Sampling at multiple process locations in the WwTF to have a good understanding of plant process and pinpoint potential problems.
- Maintaining an in-house laboratory and two lab technicians for redundancy and responsiveness.
- Ongoing study to evaluate new wastewater equalization facilities.
- Supplying all operators with cell phones to facilitate communications.
- Conducting routine condition assessments of infrastructure.
- Minimizing solids carryover in secondary effluent to maintain optimum operating efficiency.

Maximizing nitrification in secondary process, it is difficult to attach a discrete cost to each bullet above due to overlap, the generality of some costs and the frequency that the costs are incurred. Most items fall within the annual operating budget of the WwTF which remains at approximately $16 million per year. Some items fall within capital works projects while others comprise capital engineering or planning projects.

Reporting Section 11(4) (n): Changes or Updates to Schedules for Proposed Works

There were no uncompleted Proposed Works for 2024.

Appendix "A": Biosolids Volumes and Disposal Locations

2024 Biosolids Land Application Report						
Month	**Site**	**NASM#**	**Biosolids from WwTF (m3)**	**Biosolids from BSF (m3)**	**Site Total (m3)**	**Dates Spread**
April	S11082	24925	1605.08	2193.50	**3798.58**	April 8,9,10
	S11087	24934	712.18	1223.49	**1935.67**	April 15,16
	S11034	24886	1024.59	2045.92	**3070.51**	April 17,22,23
	S11069	24529	935.37	1164.40	**2099.77**	April 23,24,25
	S2031	24856	89.10	268.05	**357.15**	April 24,26
	S11081	24897	445.45	1586.25	**2031.70**	April 26,27
Monthly Total (m3)			**4811.77**	**8481.61**		
May	S11081	24897	489.92	708.61	**1198.53**	May 02
	S12040	24478		1365.96	**1365.96**	May 02
	S12030	61377		1994.96	**1994.96**	May 3,4
	S12125	61336	1024.40	1502.98	**2527.38**	May 3,4,6
	S11071	24530		2065.24	**2065.24**	May 6,7
	S12046	24970	1247.35	1748.04	**2995.39**	May 7,8
	S11057	61174	1292.09	1231.64	**2523.73**	May 9,10
	S12005	24951		4251.63	**4251.63**	May 11,13,15
	S5026	24472	534.32		**534.32**	May 13
	S6009	24592	1068.66		**1068.66**	May 14,15
	S12016	25175	1380.27	2494.25	**3874.52**	May 16,17,22
	S12112	61167	1291.29		**1291.29**	May 24,30
	S12120	61282	530.30		**530.30**	May 30,31
Monthly Total (m3)			**8858.60**	**17363.31**		
June	S12120	61282	619.04		**619.04**	June 3,6
	S12119	61283	756.88		**756.88**	June 4,5,7
	S11080	24923	534.41		**534.41**	June 07
	S6001	61496	133.77		**133.77**	June 21
	S11054	24151	133.60		**133.60**	June 28
Monthly Total (m3)			**2177.70**	**0.00**		
July	S6001	61496	178.83	263.00	**441.83**	July 2,3
	S11054	24151	221.97	364.50	**586.47**	July 02
	S5049	61394	311.91		**311.91**	July 04
	S12044	61510	311.63	657.00	**968.63**	July 08
	S12075	61519	846.24	878.00	**1724.24**	July 15,18,19
	S5008	25065	534.47		**534.47**	July 22

	S4024	60501	935.69		**935.69**	July 23,24
	S4019	25020	712.82	354.50	**1067.32**	July 24,25,26
	S11085	24835	1425.61	1932.00	**3357.61**	July 26,27,29,30
	S11057	61174	713.38	1403.50	**2116.88**	July 30,31
Monthly Total (m3)			**6192.55**	**5852.50**		
August	S11057	61174	89.05	438.50	**527.55**	August 01
	S11075	24084	713.97	1996.00	**2709.97**	August 1,2
	S12053	24084		267.82	**267.82**	August 02
	S12053	24893	757.06	2468.40	**3225.46**	August 3,5,6
	S3016	24771	935.07	125.50	**1060.57**	August 6,7,8
	S12077	61681	3891.77	11416.00	**15307.77**	August 9,10,12,13,14,15,16,17,19
	S3023	24629	267.20	351.50	**618.70**	August 12,13,14
	S2026	61681	1959.52	1235.50	**3195.02**	August 15,16,22,27,28,29,30
	S12038	24839	197.95	2091.00	**2288.95**	August 20,21
	S12055	24323	1199.98	2174.50	**3374.48**	August 21,22,23
	S17008	60679	623.59	308.50	**932.09**	August 26,27
	S19056	25144		257.50	**257.50**	August 28
Monthly Total (m3)			**10635.16**	**23130.72**		
September	S4001	60629	2315.54		**2315.54**	September 3,4,5,6
	S19060	25044	178.00		**178.00**	September 9,13
	S5007	24732	4118.40		**4118.40**	September 10,11,12,13,16,17,18,20
	S19058	25145	727.10		**727.10**	September 19,20
	S3017	24132	756.50	43.00	**799.50**	September 27,30
Monthly Total (m3)			**8095.54**	**43.00**		
October	S12032	24320	578.50	309.20	**887.70**	October 01
	S12032	24322	622.10	795.00	**1417.10**	October 3,4
	S4026	25185	445.00	351.50	**796.50**	October 7,8
	S4036	61809	1464.10		**1464.10**	October 9,10,11,15
	S3018	24132	756.50		**756.50**	October 15,17
	S11092	24794	1513.00	2822.50	**4335.50**	October 21,22,23,24,25
	S11008	60843	769.20	1834.80	**2604.00**	October 25,26,28,29,31
Monthly Total (m3)			**6148.40**	**6113.00**		
November	S4010	24473	712.20		**712.20**	November 1,4
	S12054	24323	357.50	1620.00	**1977.50**	November 28,29,30
Monthly Total (m3)			**1069.70**	**1620.00**		

Appendix "B": Overflows/Bypasses/Abnormal Events

City of Barrie
Wastewater Operations Branch Spill Report

Form Completed by: Daniel Parent
Date Completed: November 14, 2024

Date SAC Notifed: November 11, 2024
SAC Event Number: 1-D8JHDR

Type of Pollutant: Stabilized Biosolids
Volume Spilled: 38.5m3 released, approx 3.8m3 reached natural environment.
Date of Spill: November 8, 2024

Cause of Spill: Biosolids loading station activated without a truck under it to receive biosolids.
The last biosolids hauler truck was onsite at 3:04pm and the station shut down at that time due to a low level in the holding tank.
The hauler did not understand why the loading stopped and hit the start button many times.
When the station did not restart, the hauler drove away but did not retract the loading arm from the truck, resulting in the arm bending to almost a 45% angle as the truck drove away.
Either the start button or the relay from the start button had become stuck when the driver was repeatedly pushing it, and when the level in the tank reached normal operating level again at 6:49pm, the station activated again sending the biosolids to the roadway.

Because the loading arm had been bent, it was not sending the biosolids straight down where there is some containment and a drain in the roadway. Instead, the biosolids were shot over the containment and drain.

The loading pump ran without a truck for 21 minutes and released 38.5m3 of treated biosolids.

Spill Discovered by: Site Security and reported to Operations Staff

Clean-up and Recovery Measures: The majority of the spill was captured on the roadway and was hosed into the sanitary sewer within the WwTF.

Staff estimate that approximately 10% of the spill, or 3.8m3, reached the natural environment via the lawn around the digesters and cogen facility.
No biosolids reached the storm sewers.
Staff utilized hoses and a vac truck to clean the biosolids that reached the grass.

Preventative Measures to be Taken: Repair loading arm.
Replace start button and relay.
Add timer to start button to alarm Operations staff if the button is engaged for over 5 seconds.
Add controls to limit both the volume of biosolids that can be loaded at once, and the time that the pump will run.
Remind the hauler of proper operating procedures.

Schedule of Implementation: All preventative measures have been completed as of November 14, 2024.

Corrective Action Report

Report No.: 2024-02		
Date Issued: November 14, 2024	Issued By: Greg Jorden	
Improvement Classification: Corrective Action ☒ Preventive Action☐ Best Management Practice ☐		
Area of Problem or concern:		
Biosolids Loading Station #2 – Loading station activated without a truck to receive biosoilds and had been damaged by a driver pulling away without retracting the loading arm.		
If required, Immediate actions taken to correct: - N/A		
Root Cause Analysis:	Meeting Date: November 11, 2024	
Team members:		
Greg Jorden	Daniel Parent	Allen Baker
Record of Information:		
- On November 8th, 2024 at approximately 7pm, WwTF security found fully treated biosolids running down the main plant roadway and notified Operations Staff. - Staff confirmed that biosolids loading station #2 was active without a truck onsite, resulting in biosolids spilling on roadway. - At 7:10pm the station was shut down and the spill stopped. - The last biosolids hauler truck was onsite at 3:04pm and the station shut down at that time due to a low level in the holding tank. - The hauler did not understand why the loading stopped and hit the start button many times. - When the station did not restart, the hauler drove away but did not retract the loading arm from the truck, resulting in the arm bending to almost a 45% angle as the truck drove away. - Either the start button or the relay from the start button had become stuck when the driver was repeatedly pushing it, and when the level in the tank reached normal operating level again at 6:49pm, the station activated again sending the biosoilds to the roadway. - Because the loading arm had been bent, it was not sending the biosoilds straight down where there is some containment and a drain in the roadway. Instead, the biosoilds were shot over the containment and drain. - The loading pump ran without a truck for 21 minutes and released 38.5m3 of treated biosolids. - The majority of the spill was captured on the roadway and was hosed into the sanitary sewer within the WwTF. - Staff estimate that approximately 10% of the spill, or 3.8m3, reached the natural environment via the lawn around the digesters and cogen facility. - No biosolids reached the storm sewers. - Staff utilized hoses and a vac truck to clean the biosolids that reached the grass. - Spill was reported to SAC on November 11, 2024 as event #1-D8JHDR.		
Action Proposed:		
- Repair loading arm. - Replace start button and relay. - Add timer to start button to alarm Operations staff if the button is engaged for over 5 seconds. - Add controls to limit both the volume of biosoilds that can be loaded at once, and the time that the pump will run. - Remind the hauler of proper operating procedures.		
Action to Taken:	**Who?**	**When Completed?**

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Corrective Action Report

Repair loading arm.	Maintenance	November 11, 2024
Replace start button and relay.	Maintenance	November 11, 2024
Add timer to start button to alarm Operations staff if the button is engaged for over 5 seconds.	Operational Technology	November 11, 2024
Add controls to limit both the volume of biosoilds that can be loaded at once, and the time that the pump will run.	Operational Technology	November 14, 2024
Remind the hauler of proper operating procedures.	Daniel Parent	November 11, 2024

Effectiveness Assessment:	Meeting Date: November 14, 2024
Assessment Notes:	
All recommended actions are complete. Effective ☒ Partially Effective ☐ Ineffective☐	
Closed Date: November 14, 2024	Wastewater Manager Signature: G. Jorden

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