Corporation of the City of Quinte West

Youngs Cove Wastewater Treatment Plant

2022 Annual Performance Report

A Natural Attraction

Executive Summary

The Youngs Cove Wastewater Treatment Plant is currently privately owned by Prince Edward Estates Trustee, and operated by the City of Quinte West. The assumption of the facility by the Municipality will occur upon completion and acceptance of the Works. The facility currently does not have an MOE Registration number or a Classification, as the system is privately owned. The Wastewater Treatment Plant (WWTP) has been assigned Amended Environmental Compliance Approval (ECA) number 1065-C6VQ45 issued on January 21, 2022. The residential digesters (Clearford Clarifiers), associated Sanitary Laterals and Collection Mains, and the main Sewage Pumping Station (SPS) are assigned ECA number 6351-ARBM5Y, issued on September 22, 2017. The WWTP facility is described as a Membrane Bioreactor treatment type facility. The Works consist of a main Sewage Pumping Station located at 49 Wellers Way designed to collect wastewater flow from the entire Development Area (DA). A headworks screening building, equipped with two parallel 0.5 mm wedge wire rotary brush screens, gravity discharge to two (2) interconnected in-ground Equalization Tanks complete with three (3) feed pumps discharging to an in-ground aeration tank. The in-ground aeration tank is equipped with two (2) submersible pumps discharging to the MBR tanks. Each MBR tank is populated with one membrane module consistent with Phase 1A description in the ECA, capable of treating up to 105 cu.m/day. Each MBR tank is equipped with two (2) permeate extraction pumps, and a waste activated sludge pump. Effluent disinfection is accomplished through UV Disinfection with two (2) parallel UV units dedicated to each MBR tank, and one common spare. Phosphorus removal is achieved by dosing Aluminum Sulfate. Alkalinity adjustment is achieved through dosing sodium hydroxide. An in-ground Digester captures waste activated sludge. Sludge disposed of in this tank, is hauled by a certified waste hauler to the Trenton WWCS for further processing at the WWTP.

The annual reporting requirements as per the ECA, have been listed below:

a) *A summary and interpretation of all Influent and Imported Sewage monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;*

b) *A summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works;*

c) *A summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year;*

d) *A summary of all operating issues encountered and corrective actions taken;*

e) *A summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;*

f) *A summary of any effluent quality assurance or control measures undertaken;*

g) *A summary of the calibration and maintenance carried out on all Influent, and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;*

h) *A summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for proactive actions if any are required under the following situations:*

    i. When any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of Final Effluent quality;

    ii. When the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity;

i) A tabulation of the volume of sludge generated, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;

j) A summary of any complaints received and any steps taken to address the complaints;

k) A summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and sills within the meaning of Part X of EPA and abnormal discharge events;

l) A summary of all Notices of Modifications to Sewage Works completed under Paragraph 1.d. Of Condition 10, including a report on status of implementation of all modifications.

m) A summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted; and

n) Any changes or updates to the schedule for the completion of construction and commissioning operation of major process(es)/equipment groups in the Proposed Works.

Summary and Interpretation of Monitoring Data

Final Effluent parameter monitoring - with Limits									
Month	**[CBOD5]** *(mg/L)*	**[TSS]** *(mg/L)*	**[TP]** *(mg/L)*	**[TAN]** *(mg/L)*	**GMD E.Coli** *(cfu/100mL)*	**Acute Lethality RBT** *(% Mortality)*	**Acute Lethality DM** *(% Mortality)*	**pH - MIN**	**pH - MAX**
	Limit: 5.0 mg/L; Objective: 2.0 mg/L	*Limit: 5.0 mg/L; Objective: 2.0 mg/L*	*Limit: 0.1 mg/L; Objective: 0.04 mg/L*	*See TAN section for limits*	*Limit: 200 cfu/100mL; Object.: 100 cfu/100mL*	Non-lethal	Non-lethal	*Limit: 6.0*	*Limit: 9.5*
January	2.3	1.5	0.03	0.70	2.0	10	0	6.40	6.87
February	2.0	1.0	0.05	0.10	2.0			6.58	7.16
March	2.4	1.8	0.03	1.26	1.7			6.62	7.02
April	2.0	1.5	0.05	0.15	2.0	0	30	6.50	6.94
May	3.2	1.2	0.08	0.12	2.0			6.49	6.81
June	3.3	1.5	0.03	0.13	2.0			6.48	6.86
July	2.0	1.0	0.05	0.10	2.0	0	3.3	6.59	6.88
August	2.0	1.8	0.06	0.14	2.0			6.56	6.91
September	2.0	1.0	0.08	0.10	2.0			6.56	6.91
October	2.0	1.0	0.04	0.18	1.7	0	0	6.57	6.88
November	2.0	1.6	0.03	0.10	2.5			6.60	6.93
December	2.3	1.3	0.03	0.13	2.0			6.61	6.91

Final Effluent parameter monitoring - without Limits			
	Unionized Ammonia (mg/L)	**Dissolved Oxygen** (mg/L)	**Temperature** (deg.C)
January	0.002	10.00	17.28
February	0.001	10.16	17.11
March	0.003	10.16	15.59
April	0.001	8.92	16.10
May	0.001	8.80	19.25
June	0.001	7.72	20.05
July	0.001	7.24	22.89
August	0.001	7.08	24.17
September	0.001	7.54	23.61
October	0.001	7.67	21.09
November	0.001	7.64	19.66
December	0.001	7.79	18.78

Monthly Average Effluent Waste Loadings				
Month	**CBOD5** *(kg/d)*	**Total Suspended Solids** *(kg/d)*	**Total Phosphorus** *(kg/d)*	**Total Ammonia Nitrogen** *(kg/d)*
	Limit: 1.05 kg/d	*Limit: 1.05 kg/d*	*Limit: 0.021 kg/d*	*Limit: 0.42 kg/d (May 10 - November 30), 1.05 kg/d (December 1 - April 30)*
January	0.13	0.09	0.002	0.040
February	0.10	0.05	0.002	0.005
March	0.12	0.09	0.002	0.063
April	0.09	0.07	0.002	0.007
May	0.16	0.06	0.004	0.006
June	0.19	0.09	0.002	0.007
July	0.09	0.05	0.002	0.005
August	0.09	0.09	0.003	0.007
September	0.09	0.04	0.003	0.004
October	0.09	0.04	0.002	0.008
November	0.09	0.07	0.001	0.005
December	0.11	0.06	0.002	0.006

Raw Sewage Monthly Average Concentrations

	Monthly Average BOD5 Concentration *(mg/L)*	**Monthly Average Total Suspended Solids Concentration** *(mg/L)*	**Monthly Average Total Phosphorus Concentration** *(mg/L)*	**Monthly Average Total Kjeldahl Nitrogen Concentration** *(mg/L)*	**Total Ammonia Nitrogen** *(mg/L)*	**Alkalinity**[1] *(mg/L)*
January	142.3	39.3	4.1	40.6	38.8	
February	183.0	27.8	4.2	38.3	37.1	260
March	157.8	106.6	4.4	44.6	39.5	240
April	250.0	61.5	6.3	57.8	52.7	
May	243.4	54.2	6.5	59.7	54.4	180
June	289.5	66.0	7.1	61.9	55.7	
July	289.0	61.8	7.8	66.1	59.2	200
August	278.4	78.0	7.2	72.1	64.6	180
September	241.0	70.0	8.2	65.8	63.3	
October	196.3	50.3	7.4	67.9	60.3	
November	187.2	104.0	5.8	56.0	50.8	
December	184.8	50.8	5.8	57.3	52.7	

[1] Raw Sewage was not tested for Alkalinity in the months of January, April, June, September, October, November, and December

	Facility Influent Flow Monitoring			Facility Effluent Flow Monitoring		
Month	**Average Daily Influent Flow** *(cu.m/day)* *Rated Capacity: 105 cu.m/day*	**Month Max Daily Influent Flow** *(cu.m/day)* *Peak Rated Capacity: 105 cu.m/day*	**Total Influent Flow** *(cu.m/month)*	**Average Daily Effluent Flow** *(cu.m/day)*	**Month Max Daily Effluent Flow** *(cu.m/day)*	**Total Effluent Flow** *(cu.m/ month)*
January	59	86	1842	57	68	1773
February	69	115[2]	1941	49	57	1359
March	62	94	1927	50	61	1556
April	44	54	1333	45	52	1364
May	52	65	1599	51	65	1587
June	54	69	1633	59	80	1756
July	48	77	1474	47	55	1457
August	46	58	1411	47	54	1469
September	43	57	1299	45	52	1337
October	44	58	1355	45	56	1380
November	46	63	1394	46	59	1387
December	53	85	1638	49	77	1512
	Annual Avg = 52 cu.m./day	**Annual Max = 115 cu.m./day**	**Total Influent = 18,846 cu.m.**	**Annual Avg = 49 cu.m./day**	**Annual Max = 80 cu.m./day**	**Total Effluent = 17,937 cu.m.**

[2] On February 17, 2022 the max flow exceeded the plant peak rated capacity, however the monthly average remained well below plant Rated Capacity. The increase in flow can be attributed to the increased amount of precipitation on February 16 and 17, as well as the crushed lateral found in March of 2022.

Summary of Bypass, Spill, or Abnormal Discharge Event(s)

There were no Bypasses, Spills, or Abnormal Discharge Events that occurred during the reporting period.

Summary of Operating Problems throughout Monitoring Period

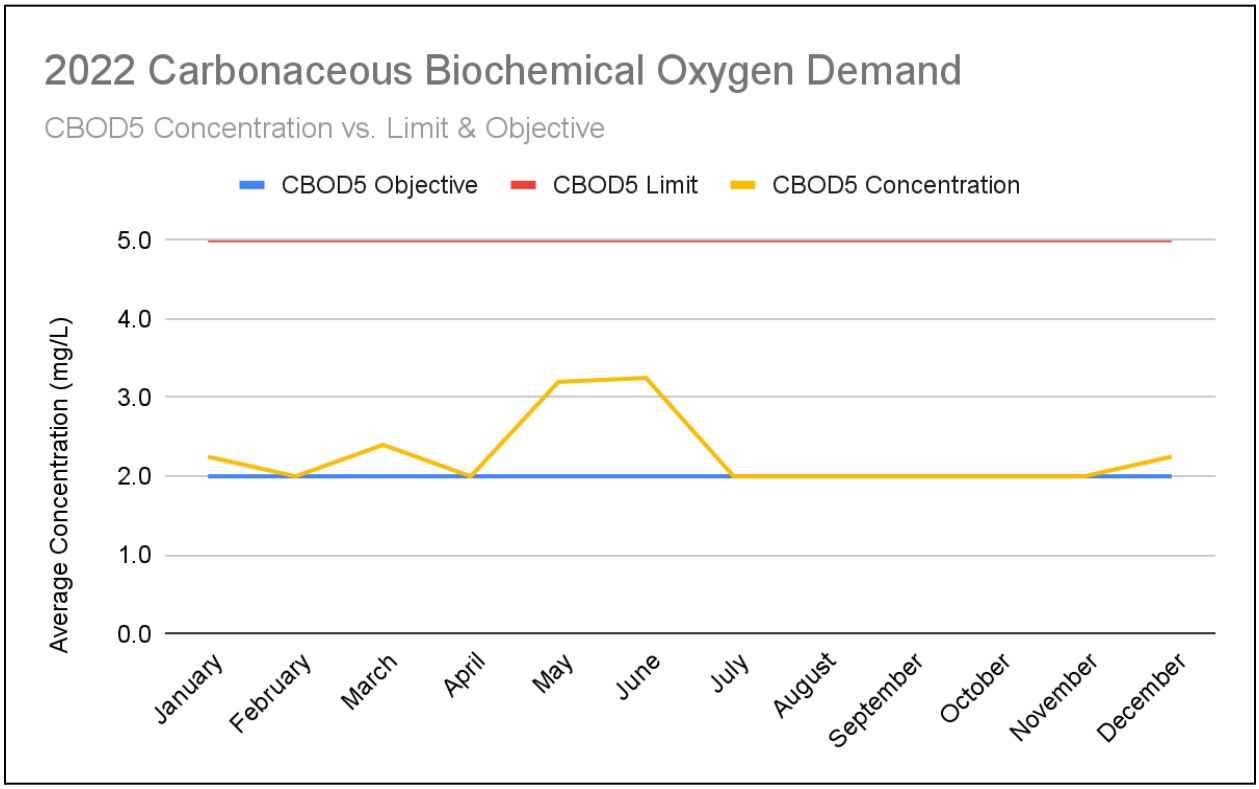
During the Reporting Period, the following operating problems occurred as listed below:

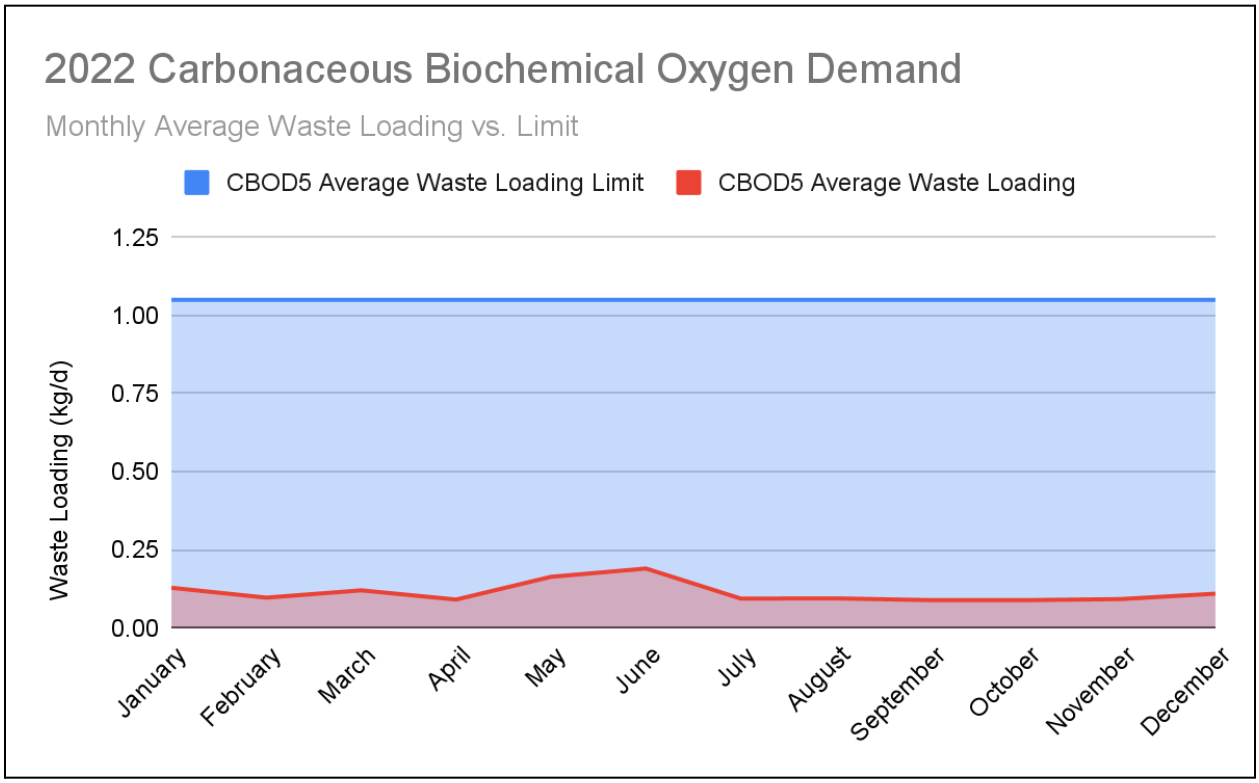
- Raw influent flows jumped significantly in September of 2021 and remained high into 2022. Due to the alkalinity and clarity of the influent it was suspected that significant infiltration was occurring. The developer, with help from their consultants, performed several investigations with no results until March 2022 when a crushed sewer lateral connection was found. This is assumed to be the source of the majority of excess influent flow to the facility from September 2021 to March 2022. This infiltration did cause membrane fouling issues by scaling and plugging membrane pores requiring more frequent cleaning and chemical clean in place backwashes.
- The influent fine screens were observed to blind frequently due to the small pore size and the composition of the wastewater. Physical cleaning of the screens was necessary one to two times per month.

Analysis of Final Effluent Monitoring Dataset

Carbonaceous Biochemical Oxygen Demand (CBOD5) / Biochemical Oxygen Demand (BOD5)

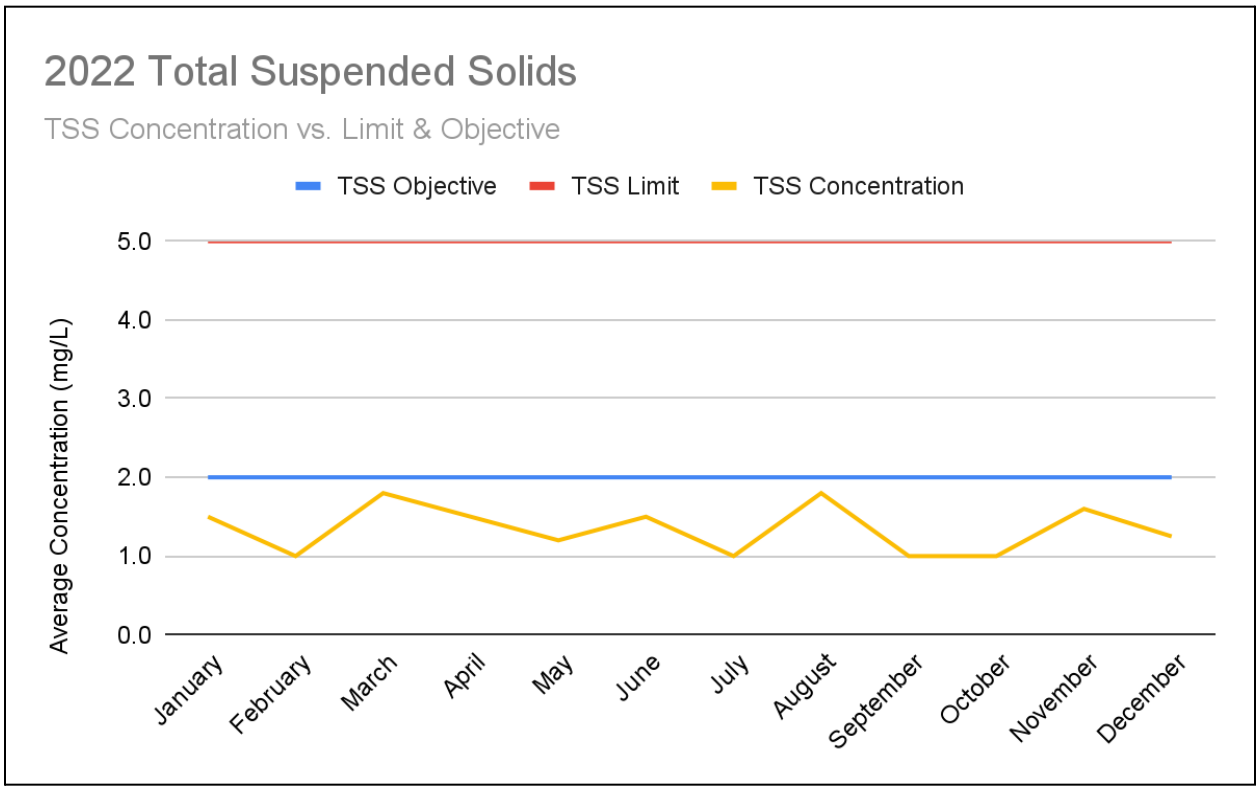
The following two Figures depict facility CBOD5 performance throughout the reporting period. The facility generally operates efficiently and maintains monthly average Effluent concentrations and waste loadings below the Effluent Objectives and Limits. The Method Detection Limit (MDL) for CBOD5 is 2.0 mg/L, which reflects in the results. The Annual Average Concentration of CBOD5 was 2.3 mg/L.

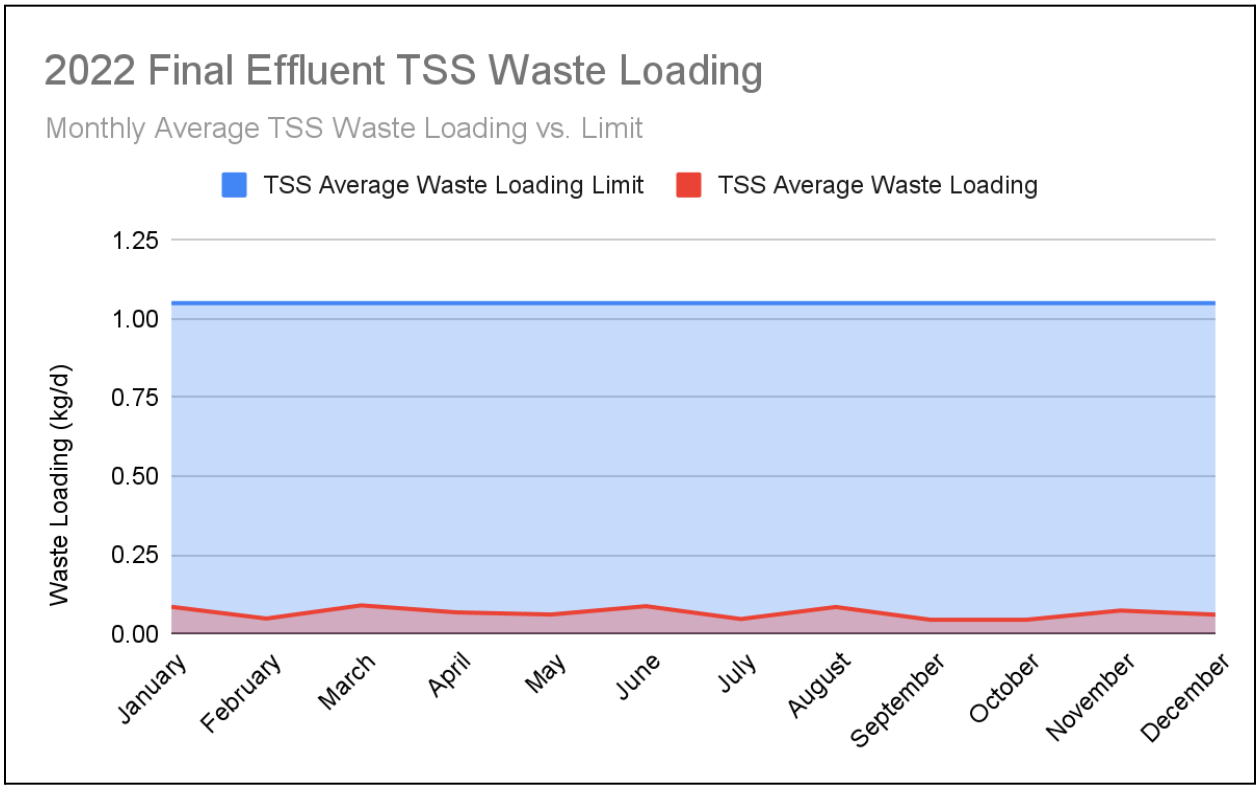

2022 Carbonaceous Biochemical Oxygen Demand
CBOD5 Concentration vs. Limit & Objective
CBOD5 Objective
CBOD5 Limit
CBOD5 Concentration
Average Concentration (mg/L)
5.0
4.0
3.0
2.0
1.0
0.0
January
February
March
April
May
June
July
August
September
October
November
December


2022 Carbonaceous Biochemical Oxygen Demand
Monthly Average Waste Loading vs. Limit
CBOD5 Average Waste Loading Limit
CBOD5 Average Waste Loading
Waste Loading (kg/d)
1.25
1.00
0.75
0.50
0.25
0.00
January
February
March
April
May
June
July
August
September
October
November
December

Total Suspended Solids (TSS)

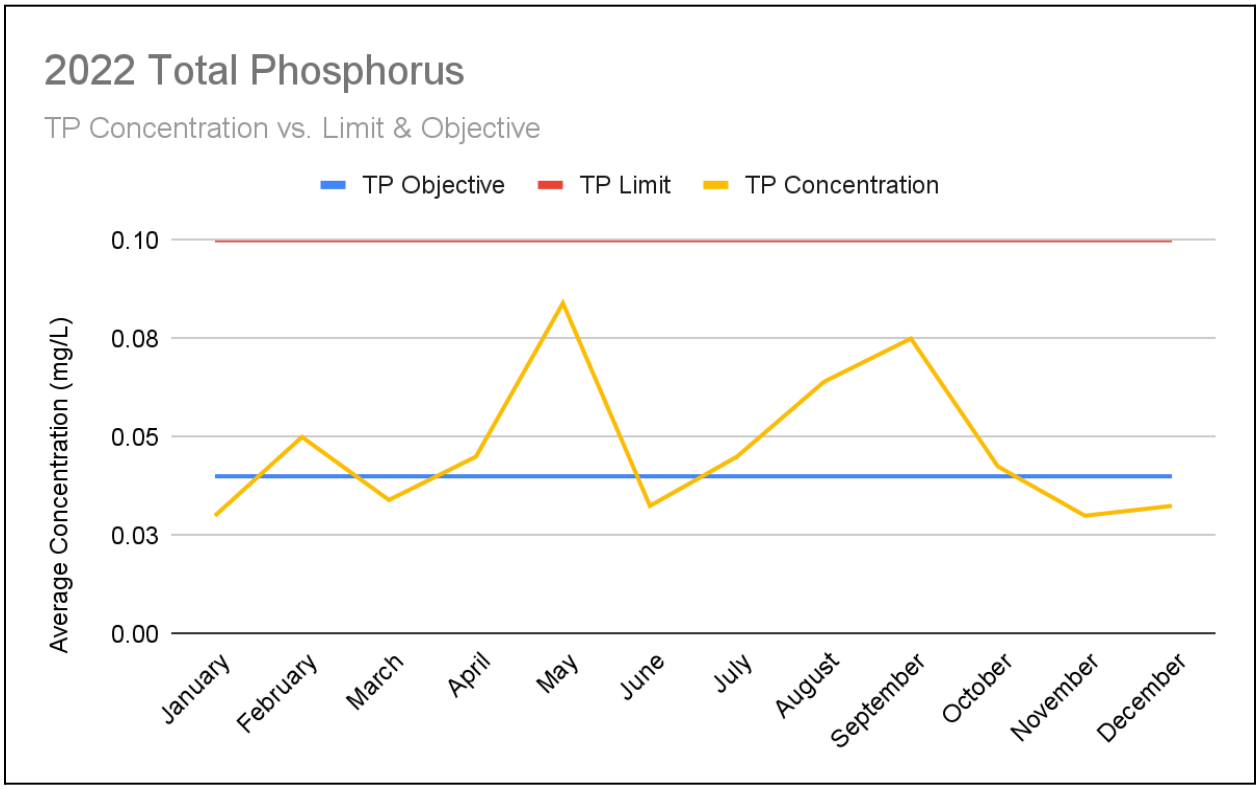
As depicted in the chart below, the facility was able to maintain compliance with the Effluent Limits and Objectives established by the ECA for TSS. The next chart in this section depicts the Monthly Average Waste Loading. As flows are quite low, there is a negligible monthly average waste loading calculated for each month of the monitoring period.

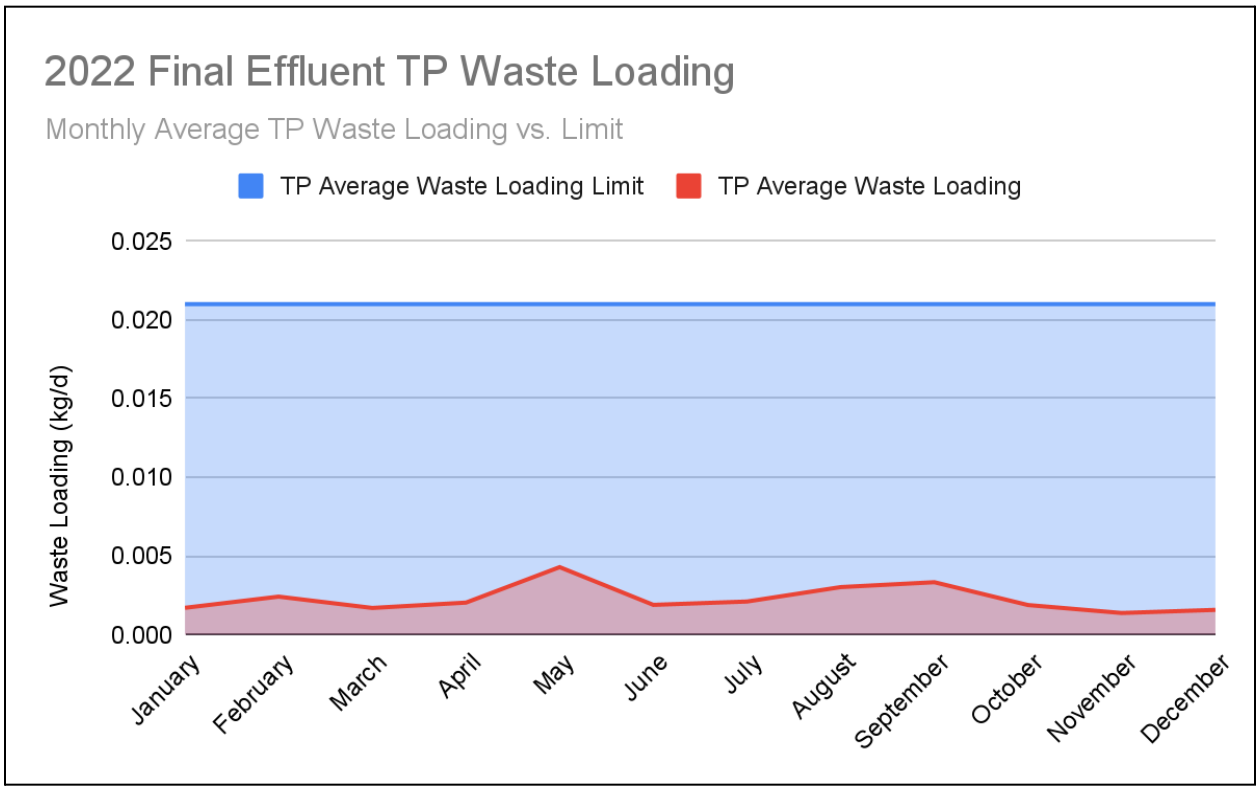




Total Phosphorus (TP)

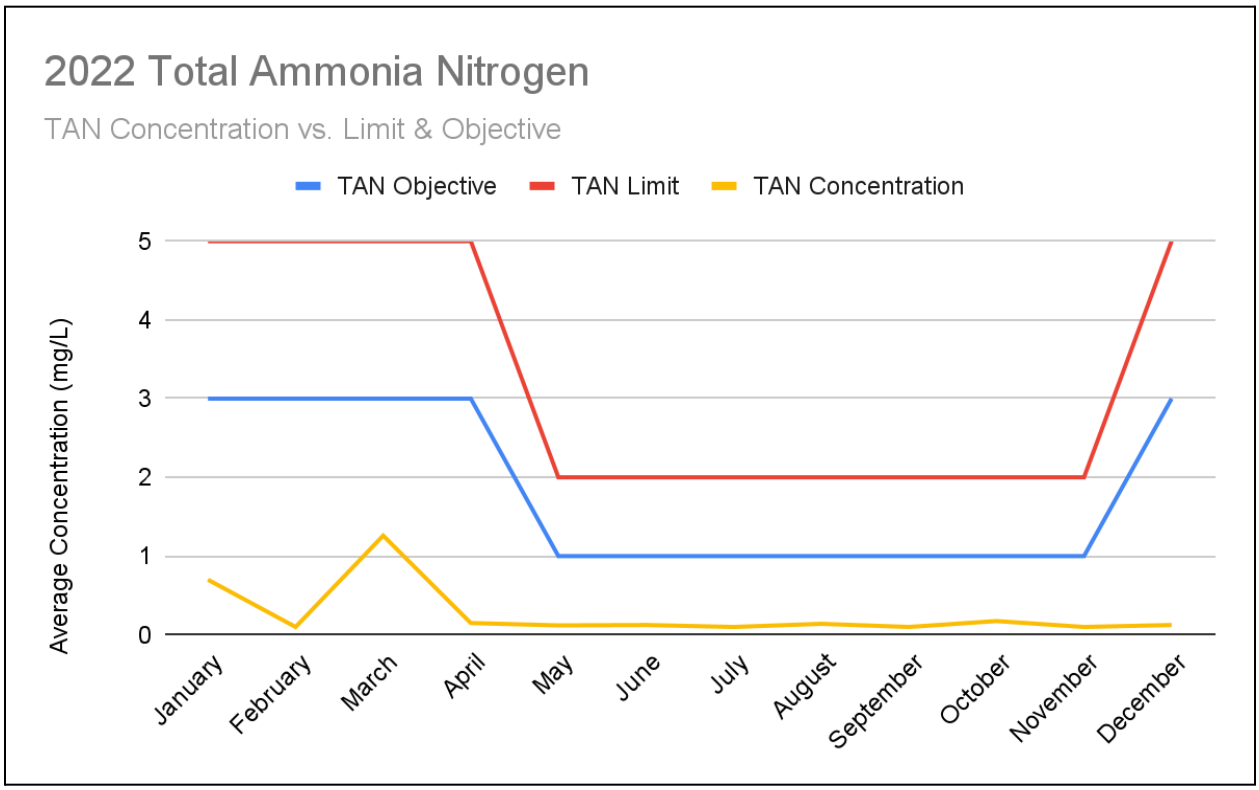
The following two figures depict monthly average TP concentrations and loadings in relation to their respective Effluent Limits and Objectives. Apparent in the following chart is that the facility was not able to operate below the Effluent Objective throughout various months of the year. Averages over the plant's objective can be attributed to several chemical storage and pump supply and discharge piping changes related to facility phase in. This work necessitated conservation of chemicals and the use of different alum manufacturers. This coupled with variations in seasonal temperatures and swings in alkalinity due to infiltration made controlling phosphorus removal more difficult. As depicted in the second chart, the monthly average waste loading is consistently measured below the Effluent Limit as monthly average daily flows are still quite low at this facility.

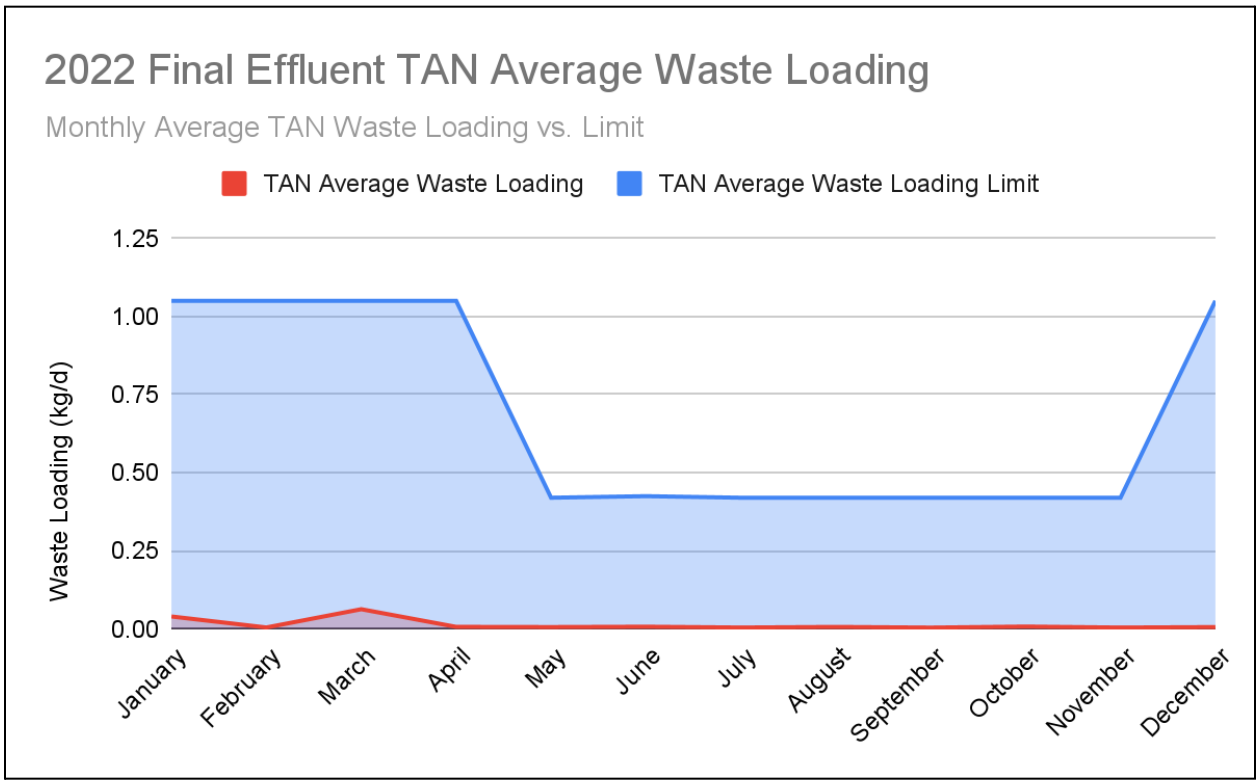

2022 Total Phosphorus
TP Concentration vs. Limit & Objective
TP Objective
TP Limit
TP Concentration
Average Concentration (mg/L)
0.10
0.08
0.05
0.03
0.00
January
February
March
April
May
June
July
August
September
October
November
December


2022 Final Effluent TP Waste Loading
Monthly Average TP Waste Loading vs. Limit
TP Average Waste Loading Limit
TP Average Waste Loading
Waste Loading (kg/d)
0.025
0.020
0.015
0.010
0.005
0.000
January
February
March
April
May
June
July
August
September
October
November
December

Total Ammonia Nitrogen (TAN) - Ammonia (NH_3) / Ammonium (NH_4^+)

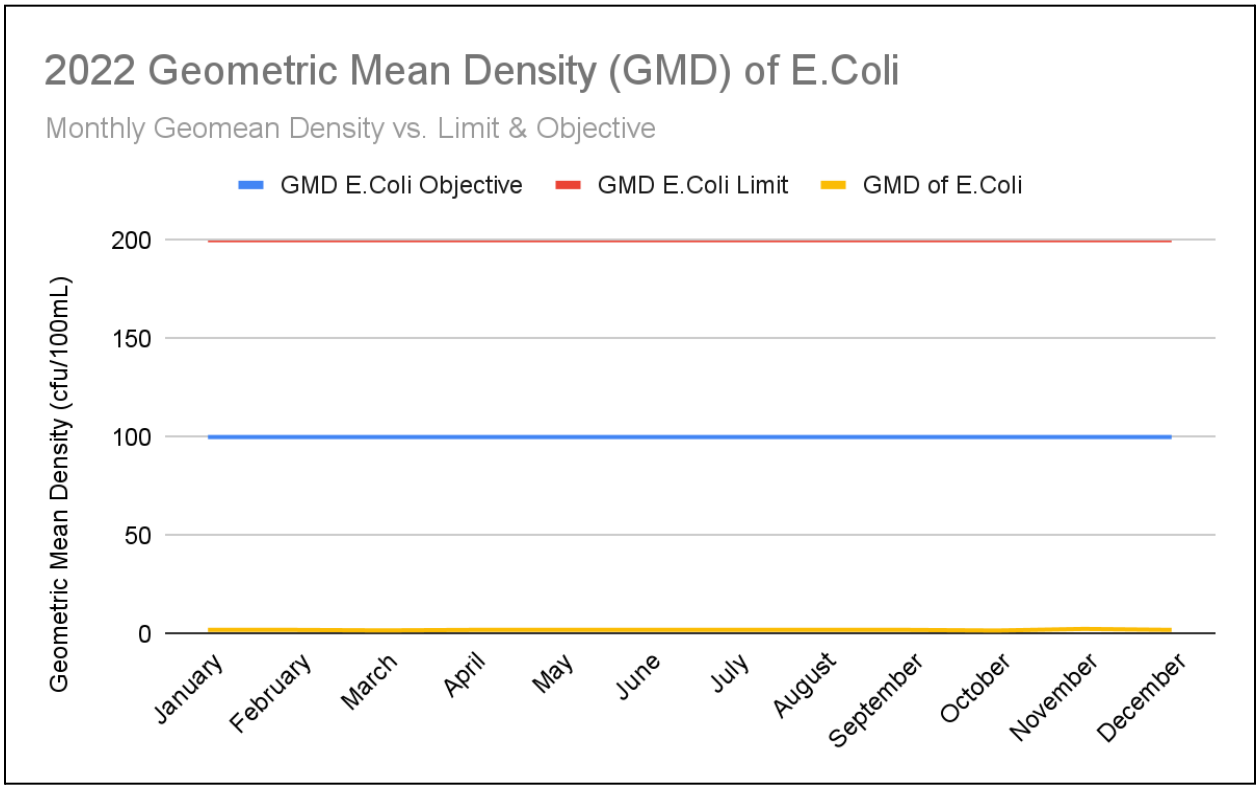
The following charts outline the monthly average TAN concentrations and respective waste loadings throughout the monitoring period. Apparent in both charts is that the facility operates very well in the nitrification process early on in the operation of the facility, even with the high strength raw sewage TKN concentrations. The raw sewage characteristics will be discussed further in the raw sewage section of this report.





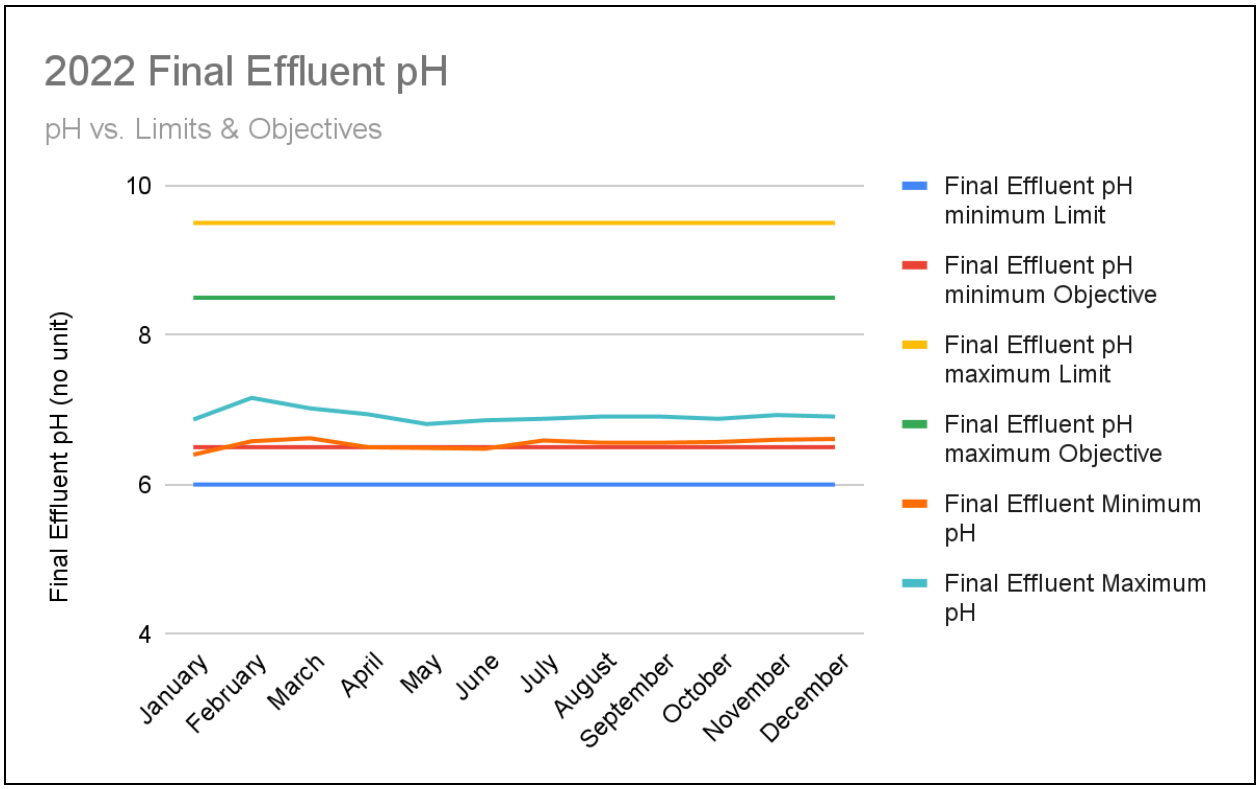
Geometric Mean Density of E. Coli

The UV disinfection system is sized for full build-out at 13.5 m^3/hr capacity consisting of two duty and one common standby UV system per membrane tank. It is apparent from the chart below that the UV system is functioning as designed to provide full disinfection. Further, it is important to note that the membranes themselves act as a natural barrier as the membrane pore size is smaller than E.Coli bacteria, therefore these organisms can not pass through the membrane.



Final Effluent pH

Approximately 228 samples were collected of the Final Effluent throughout the reporting period, and pH measurement taken. As illustrated in the following chart, the Final Effluent pH was consistently measured between the allowable Limits identified in Schedule B and C of the ECA. Effluent pH measurements are performed by the Operators generally on a daily basis, normally Monday to Friday. It is important to note that pH measurements used to determine compliance with the ECA have no quality assurance/ quality control (QA/QC) measures in place, other than routine calibration procedures of the pH probe.

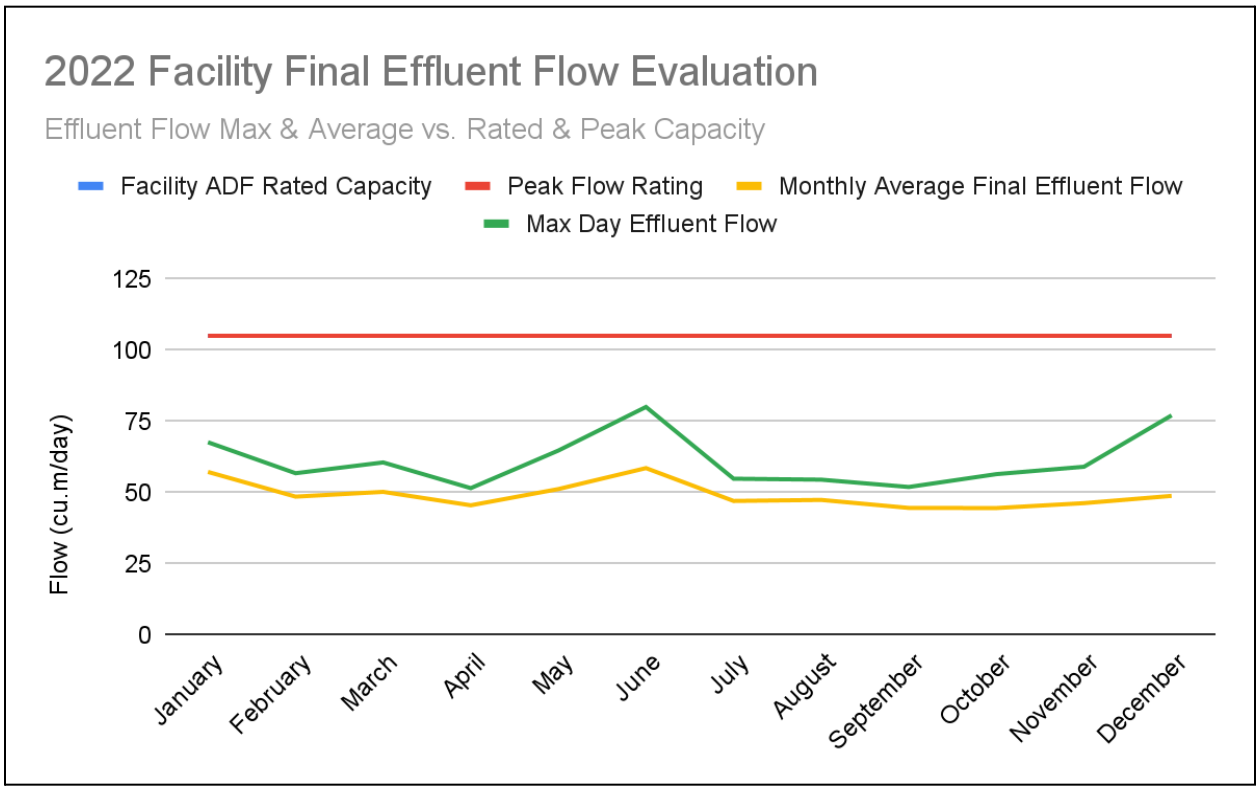


Acute Lethality to Rainbow Trout and Daphnia Magna

The City contracts all Acute Lethality testing to *Aquatox Testing and Consulting Inc*. The quarterly results from the samples collected in January yielded 0% mortality in Daphnia Magna (DM) at 100% Effluent Concentration and 10% mortality in Rainbow Trout (RBT) at 100% Effluent Concentration. In April the quarterly results from the samples collected in April yielded 30% mortality in DM, and 0% mortality in RBT. In July, results yielded 3.3% mortality in DM and 0% mortality in RBT. Lastly, in October results yielded 0% mortality in both DM and RBT.

Final Effluent Flows

As the Development area continues to expand, and more homes are occupied, Phase 1B and 2A upgrades will be required. These upgrades began in 2022 and will be commissioned fully by Spring of 2023.



Raw Sewage Characterization

The Young's Cove Wastewater Collection System (WWCS) consists of the following components:

- Each residential lot has a proprietary Clearford Clarifier with minimum 48hr retention and an approximate 4.1 cubic meter capacity, to provide sufficient volume for sludge storage and digestion;
- Small bore technology sanitary sewer system, gravity feeding the Sewage Pumping Station located at 49 Wellers Way; and
- Sewage Pumping Station equipped with two submersible sewage pumps (duty/standby) each rated at 9.23 L/s at 11.01m TDH.

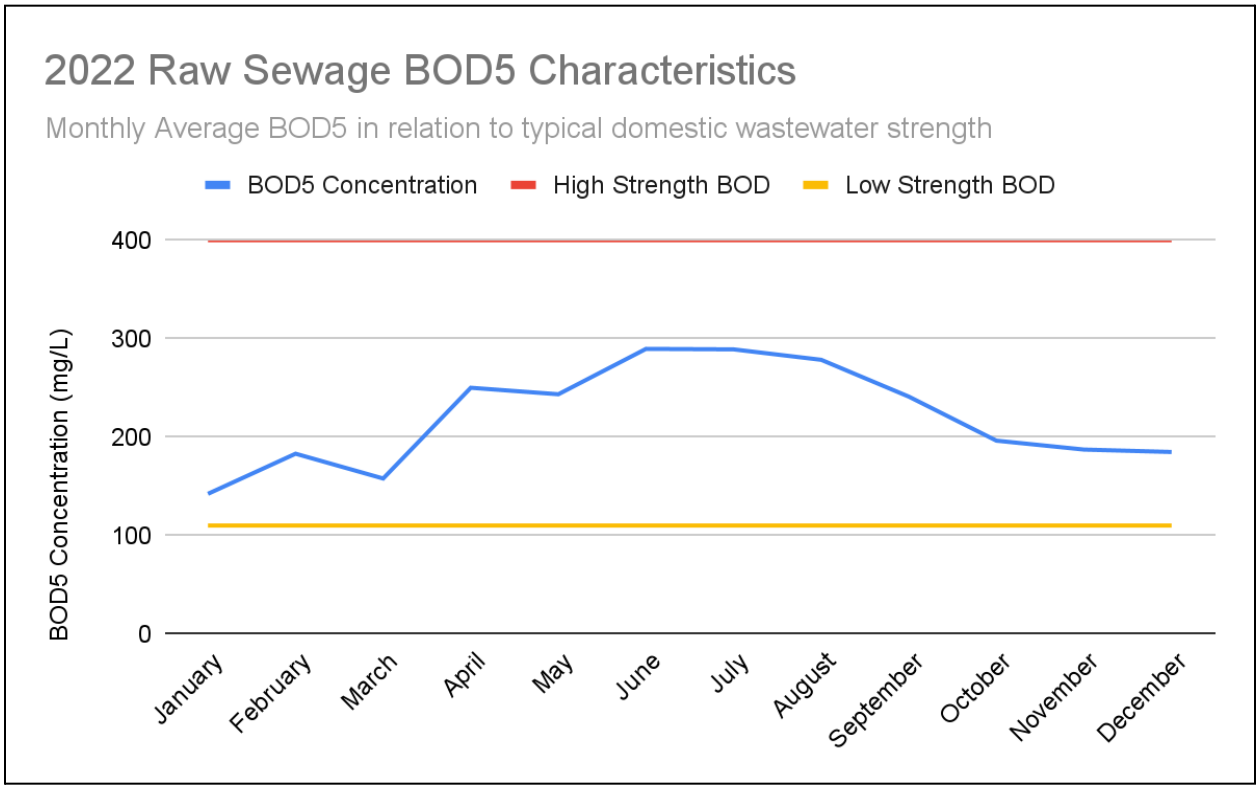
Raw Sewage characteristics for the facility differ from other typical domestic wastewater sources. The *Clearford Clarifiers* in place at each property are designed to remove solids at the source, and perform primary and partial secondary treatment before liquid effluent is discharged to the sanitary mains.

Further, according to *Clearford Water Systems*, the Digesters should be capable of reducing TSS and BOD by 75% respectively.

Outlined in the charts below are monthly average concentrations measured in raw sewage over the last year, along with associated trendlines. Also plotted on the charts are the typical 'high' and 'low' strengths for the associated contaminants in raw wastewater, as measured in a sample of untreated domestic wastewater. These figures were cited from an online publication that refers to the Metcalf and Eddy Inc. *Wastewater Engineering and Treatment Reuse*. (Metcalf and Eddy Inc. 20).

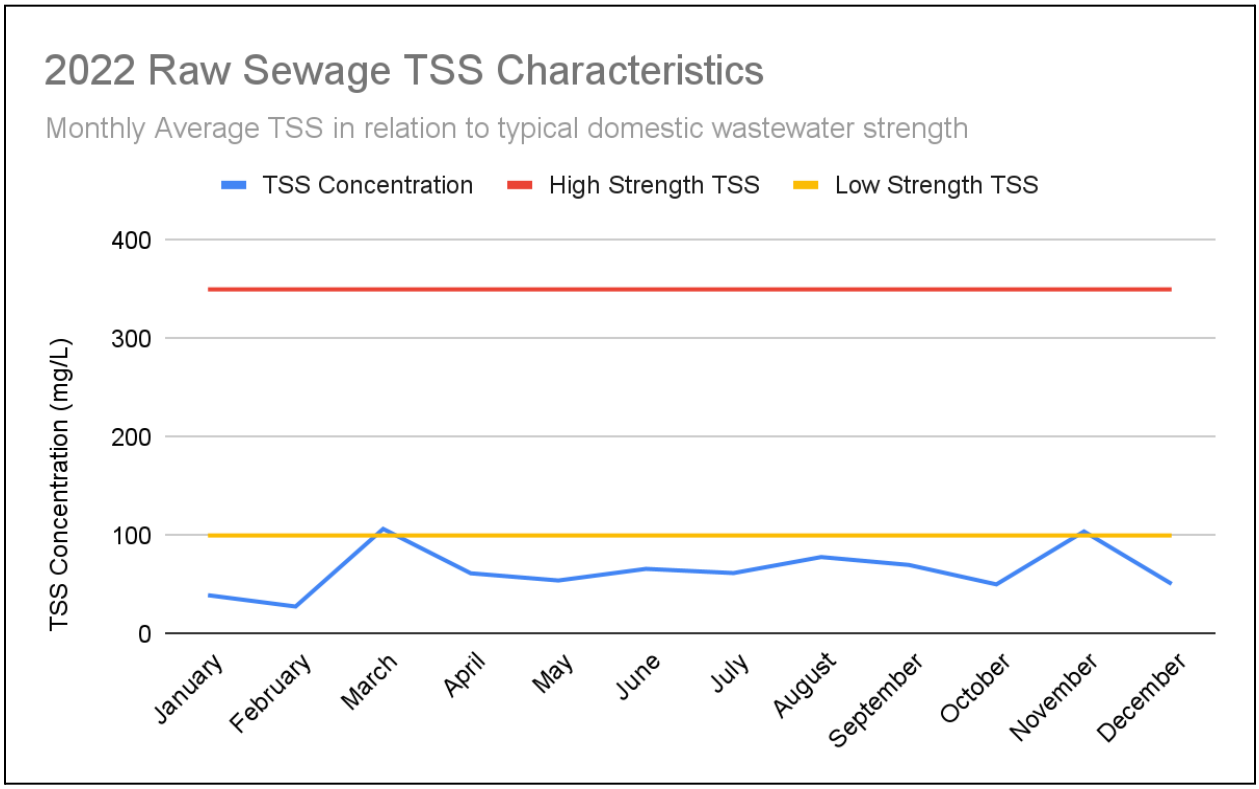
Raw Sewage Biological Oxygen Demand (BOD5)

Apparent in the chart below are the somewhat stable levels of raw sewage concentrations throughout the course of the year, with a decline in January to March. This is attributed to the break in underground infrastructure as outlined in the Summary of Operating Problems throughout Monitoring Period section, which caused a dilution to the wastewater strength.



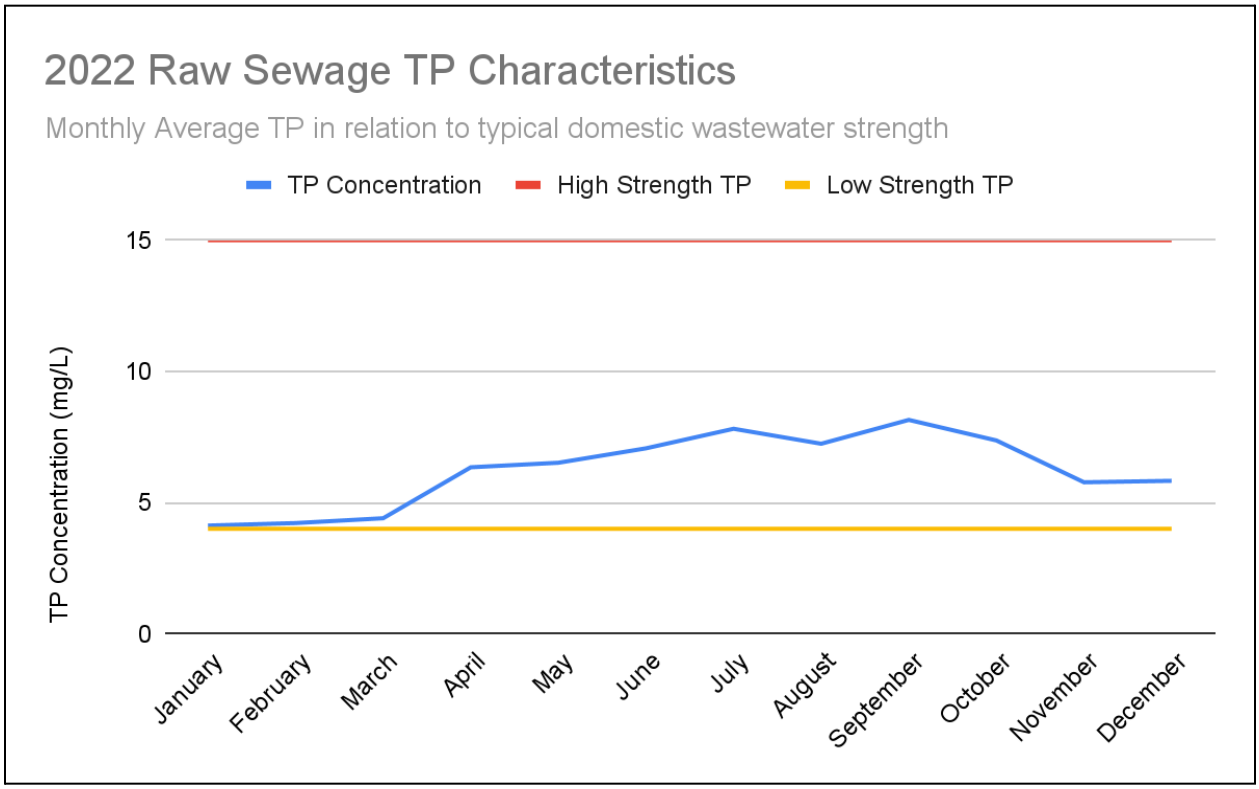
Raw Sewage Total Suspended Solids (TSS)

In review of the chart below, raw sewage concentrations of TSS are considered quite low, and relatively stable. Solids removal from *ClearDigest* tanks on each residential property has begun to take place this year, it the systems third year of the operation. This process involved the City engaging a certified waste hauler to pump out residential tanks, and haul material to the Trenton WWTP for further processing.



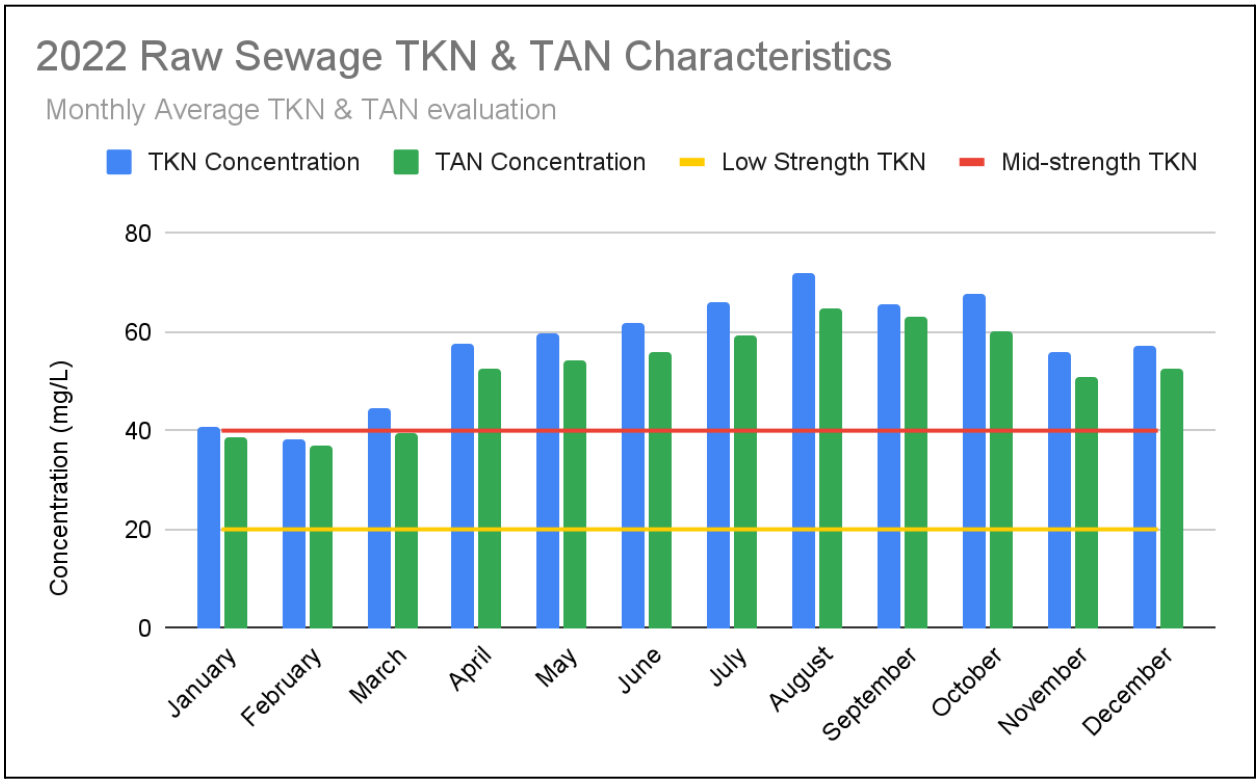
Raw Sewage Total Phosphorus (TP)

Total Phosphorus concentrations in raw sewage measured relatively stable between 4 and 8 mg/L for the bulk of the monitoring period. According to Metcalf and Eddy this indicates a relatively low to mid strength concentration of Phosphorus in a domestic wastewater supply.



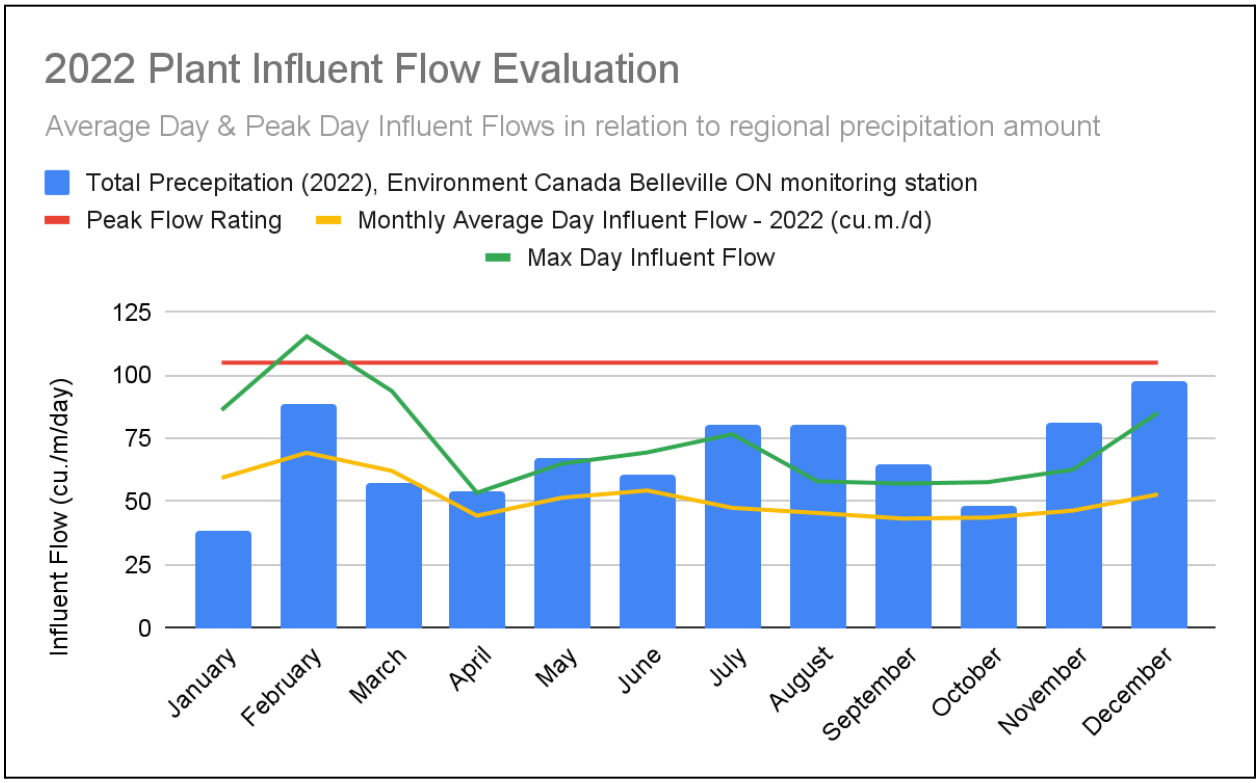
Raw Sewage Total Kjeldahl Nitrogen (TKN) / Total Ammonia Nitrogen (TAN)

Total Kjeldahl Nitrogen (TKN) is the sum of organic nitrogen, and Total Ammonia Nitrogen (TAN) - Total Ammonia Nitrogen is the sum of Ammonia and Ammonium. According to Metcalf and Eddy, the TKN is considered to be in the range of high strength concentration. Over the course of the monitoring period, TAN has accounted for an average 91% of the raw sewage TKN. This may indicate that the residential digesters are converting organic nitrogen to ammonium. The Young's Cove WWTP is designed to facilitate nitrification, and is proving effective in its ability by meeting the Effluent Objectives consistently.



Facility Influent Flow Evaluation

The facility operated at approximately 50% of its Rated Capacity during the reporting period. Facility upgrades are ongoing to increase the facility rated capacity to full build-out capacity of 420 cu.m/day. Outlined in the chart below are Influent flows measured throughout the monitoring period, in relation to seasonal precipitation amounts.



Summary of Maintenance performed throughout Reporting Period

The City supports an active Preventative Maintenance (PM) program to ensure the facility is maintained in a fit state of repair. Outside of Preventative Maintenance, the following Reactive Maintenance activities were completed by staff:

- Clean-in-Place chemical backwashing of membrane modules conducted in order to reduce membrane pressure
- Influent screen modifications to mitigate fouling issues
- Replacement of two failed aeration feed forward pumps

Biosolids Management Summary

The onsite storage tank has a storage capacity of 77.4 cu. m. This tank was emptied periodically throughout the Reporting Period and disposed of in the Trenton Wastewater Collection System for further treatment at the Trenton Wastewater Treatment Plant. Approximately 385 cu.m was hauled from the facility in 2022. It is anticipated that this number will decrease slightly in 2023. All material is hauled by a certified waste hauler on an as-needed basis.

Summary of Effluent Quality Assurance and Control Measures

The City collects samples from the Raw Sewage stream, Aeration Tanks, Membrane Tank and Final Effluent on a routine basis throughout the week. The City satisfies its regulatory compliance requirements by submitting a set of samples to an accredited laboratory, SGS Canada Inc. on a weekly basis, normally on Tuesday's throughout the Reporting Period. These sample results are manually entered into a spreadsheet and evaluated for compliance with the ECA. In addition to these samples, Operators perform in-house analysis for Total Suspended Solids, pH, temperature, alkalinity, dissolved reactive phosphorus, and Final Effluent Dissolved Oxygen. Sample results are entered into a spreadsheet for facility evaluation and process optimization. On an annual basis, the spectrophotometer is calibrated by a third party. Operators calibrate other instrumentation, such as the bench top pH meter, regularly.

Monitoring Schedule

The facility sampled in accordance with the ECA every Tuesday. In 2023, the facility will collect samples in accordance with the ECA, every Wednesday each week.

Flow Monitoring Equipment Calibration and Maintenance

Works Orders are generated on an annual basis to calibrate the facility Influent and Effluent Flow Meters. This calibration is completed by a third party contractor. The following figures are copies of the Calibration Certificates for the Sewage Pumping Station flow meters.

Tower Electronics Canada Inc.
Instrument Calibration Certificate

Customer:
The City of Quinte West
7 Creswell Drive
PO Box 490
Trenton, ON K8V 5R6

Calibration by:
Dan Matchett

Standards:
Endress and Hauser Field Check S/N:0000551303 Cal Due April 2023

Instrument Type
Magnetic Flow Meter

Meter Information

Date of Test:	2022-08-16
Location:	Youngs Cove SPS
Meter Under Test	
Client Tag:	FIT701
Manufacturer:	Endress & Hauser
Model:	Pro10
Serial Number:	P1066316000
Totalizer As Found:	20020.9m3
Totalizer As Left:	20022.3m3
Allowable Error%:	15
Programming Parameters:	
DN Size:	80
Cal Factor:	1.2373
Zero:	0
Calibration Due:	Aug-23

Method of verification
EnH Field Check Verification/Calibration

Units: LPS
Zero: 0.00
Span: 5.00
Totalizer: M3

Flow Test

Sim Setting	Sim Flow LPS	Meter Display	Current Output	Disp Error%	mA Error %
0.000	0.000	0.000	3.989	0.000	0.275
1.250	1.250	1.252	7.995	0.040	0.062
2.500	2.500	2.502	11.996	0.040	0.033
3.750	3.750	3.710	15.826	0.800	1.088
5.000	5.000	5.010	19.959	0.200	0.205
			Average Error%	0.22	0.33
			Result:	PASS	PASS

Totalizer Test

Sim Flow Rate	5.000	LPS
Start Totalizer	20022.000	M3
End Totalizer	20022.300	M3
Volume Simulated	0.300	M3
Time(Seconds)	59.950	
Calculated Totalizer(MUT)	0.300	
Error%	0.083	
Result:	PASS	

Comments:
Unit passes verification.

Tower Electronics Canada Inc.
2687 Hwy 40
K0K 3M0
Wooler On
Canada

Email: Dan@Tecanada.ca
Website: www.tecanada.ca

Calibrations Service Sales
Temporary and Permanent Meter Installations
Instrumentation For Flow Level Pressure.

Tower Electronics Canada Inc.
Instrument Calibration Certificate

Customer:
The City of Quinte West
7 Creswell Drive
PO Box 490
Trenton, ON K8V 5R6

Calibration by:
Dan Matchett

Standards:
Endress and Hauser Field Check S/N:0000551303 Cal Due April 2023

Instrument Type
Magnetic Flow Meter

Meter Information

Date of Test:	2022-08-16
Location:	Youngs Cove SPS
Meter Under Test	Raw
Client Tag:	QW00007359
Manufacturer:	Endress & Hauser
Model:	Pro10
Serial Number:	NC00A016000
Totalizer As Found:	38775.9m3
Totalizer As Left:	38779.0m3
Allowable Error%:	15
Programming Parameters:	
DN Size:	100
Cal Factor:	1.6261
Zero:	0
Calibration Due:	Aug-23

Method of verification
EnH Field Check Verification/Calibration

Units: LPS
Zero: 0.00
Span: 20.00
Totalizer: M3

Flow Test

Sim Setting	Sim Flow LPS	Meter Display	Current Output	Disp Error%	mA Error %
0.000	0.000	0.000	3.995	0.000	0.125
5.000	5.000	5.040	8.015	0.200	0.188
10.000	10.000	10.035	11.979	0.175	0.175
15.000	15.000	15.001	15.986	0.005	0.087
20.000	20.000	20.026	19.938	0.130	0.310
			Average Error%	0.10	0.18
			Result:	PASS	PASS

Totalizer Test

Sim Flow Rate	20.000	LPS
Start Totalizer	38777.600	M3
End Totalizer	38779.000	M3
Volume Simulated	1.400	M3
Time(Seconds)	69.960	
Calculated Totalizer(MUT)	1.399	
Error%	0.057	
Result:	PASS	

Comments:
Unit passes verification.

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Instrumentation For Flow Level Pressure.

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Instrument Calibration Certificate

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The City of Quinte West
7 Creswell Drive
PO Box 490
Trenton, ON K8V 5R6

Calibration by:
Dan Matchett

Standards:
Endress and Hauser Field Check S/N:0000551303 Cal Due April 2023

Instrument Type
Magnetic Flow Meter

Meter Information

Date of Test:	2022-08-16
Location:	Youngs Cove SPS
Meter Under Test	Sludge Tank Flow
Client Tag:	FIT901
Manufacturer:	Endress & Hauser
Model:	Pro10
Serial Number:	NC009F16000
Totalizer As Found:	809.546m3
Totalizer As Left:	810.375m3
Allowable Error%:	15
Programming Parameters:	
DN Size:	50
Cal Factor:	1.3673
Zero:	0
Calibration Due:	Aug-23

Method of verification
EnH Field Check Verification/Calibration

Units: LPS
Zero: 0.00
Span: 5.00
Totalizer: M3

Flow Test

Sim Setting	Sim Flow LPS	Meter Display	Current Output	Disp Error%	mA Error %
0.000	0.000	0.000	4.000	0.000	0.000
1.250	1.250	1.246	7.981	0.080	0.238
2.500	2.500	2.491	11.984	0.180	0.133
3.750	3.750	3.745	15.962	0.100	0.238
5.000	5.000	4.993	19.959	0.140	0.205
			Average Error%	0.10	0.16
			Result:	PASS	PASS

Totalizer Test

Sim Flow Rate	5.000	LPS
Start Totalizer	810.000	M3
End Totalizer	810.300	M3
Volume Simulated	0.300	M3
Time(Seconds)	60.560	
Calculated Totalizer(MUT)	0.303	
Error%	-0.925	
Result:	PASS	

Comments:
Unit passes verification.

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Instrumentation For Flow Level Pressure.

Tower Electronics Canada Inc.
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Trenton, ON K8V 5R6

Calibration by:
Dan Matchett

Standards:
Endress and Hauser Field Check S/N:0000551303 Cal Due April 2023

Instrument Type
Magnetic Flow Meter

Meter Information

Date of Test:	2022-08-16
Location:	Youngs Cove SPS
Meter Under Test	
Client Tag:	FIT702
Manufacturer:	Endress & Hauser
Model:	Pro10
Serial Number:	NC002616000
Totalizer As Found:	13906.4m3
Totalizer As Left:	13907.4m3
Allowable Error%:	15
Programming Parameters:	
DN Size:	80
Cal Factor:	1.2379
Zero:	0
Calibration Due:	Aug-23

Method of verification
EnH Field Check Verification/Calibration

Units: LPS
Zero: 0.00
Span: 5.00
Totalizer: M3

Flow Test

Sim Setting	Sim Flow LPS	Meter Display	Current Output	Disp Error%	mA Error %
0.000	0.000	0.000	3.998	0.000	0.050
1.250	1.250	1.251	7.967	0.014	0.413
2.500	2.500	2.514	12.010	0.280	0.083
3.750	3.750	3.760	15.942	0.200	0.362
5.000	5.000	4.984	19.976	0.320	0.120
			Average Error%	0.16	0.21
			Result:	PASS	PASS

Totalizer Test

Sim Flow Rate	5.000	LPS
Start Totalizer	13907.100	M3
End Totalizer	13907.400	M3
Volume Simulated	0.300	M3
Time(Seconds)	59.970	
Calculated Totalizer(MUT)	0.300	
Error%	0.050	
Result:	PASS	

Comments:
Unit passes verification.

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Notice of Modifications

There were no 'Notice of Modifications' forms submitted to the Ministry during this Reporting Period.

Summary of complaints received throughout the reporting period

There were no complaints received by City staff regarding the Young's Cove WWTP throughout the reporting period.