

# Fenelon Falls Water Pollution Control Plant

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Works # 110001612

## Annual Wastewater Performance Report

Prepared For: The City of Kawartha Lakes

Reporting Period of January 1<sup>st</sup> – December 31<sup>st</sup>, 2020

Issued: March 16, 2021

Revision: 0

Operating Authorities:



## **2020 Performance Report for the Fenelon Falls Water Pollution Control Plant**

In 2020, the Fenelon Falls Water Pollution Control Plant (WPCP) operated Amended Environmental Compliance Approval (ECA) No. 9572-A5GKMJ issued January 12<sup>th</sup>, 2016 until it was revoked and replaced by Amended Environmental Compliance Approval (ECA) No. 2419-BKSLEX issued on July 26<sup>th</sup>, 2020. Condition 11 (4) in ECA No. 2419-BKSLEX satisfies the requirements of Condition 10 (6) of ECA No. 9572-A5GKMJ.

The Environmental Compliance Approval (ECA) No. 2419-BKSLEX, for the Fenelon Falls WOCO, Condition 11.4. states, *"The Owner shall prepare performance reports on a calendar year basis and submit to the District Manager by March 31 of the calendar year following the period being reported upon. The reports shall contain, but shall not be limited to, the following information pertaining to the reporting period:*

- a) *a summary and interpretation of all Influent 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 all operating issues encountered and corrective actions taken;*
- d) *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;*
- e) *a summary of any effluent quality assurance or control measures undertaken;*
- f) *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;*
- g) *a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active 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;*

- h) 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;*
- i) a summary of any complaints received and any steps taken to address the complaints;*
- j) a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;*
- k) a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification.*
- l) 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.*

The above information is incorporated in the following report format and submitted to the MECP Water Supervisor and District Manager of the Peterborough District Office of the Ministry of the Environment, Conservation and Parks as per the requirements of the C of A (ECA) No. 9572-A5GKMJ and ECA No. 2419-BKSLEX.

During the period of 2020, the Ontario Clean Water Agency (OCWA) operated the Fenelon Falls WPCP, Francis Street Pumping Station (SPS), Colborne Street SPS and Ellice Street SPS on behalf of the Corporation of the City of Kawartha Lakes. OCWA's goals have remained consistent during this period and remain consistent with the following priorities:

- provide quality assurance, safety and environmental compliance of facility operations;
- assist our clients in achieving compliance;
- provide advice on up-to-date technology in Operations and Maintenance service delivery.

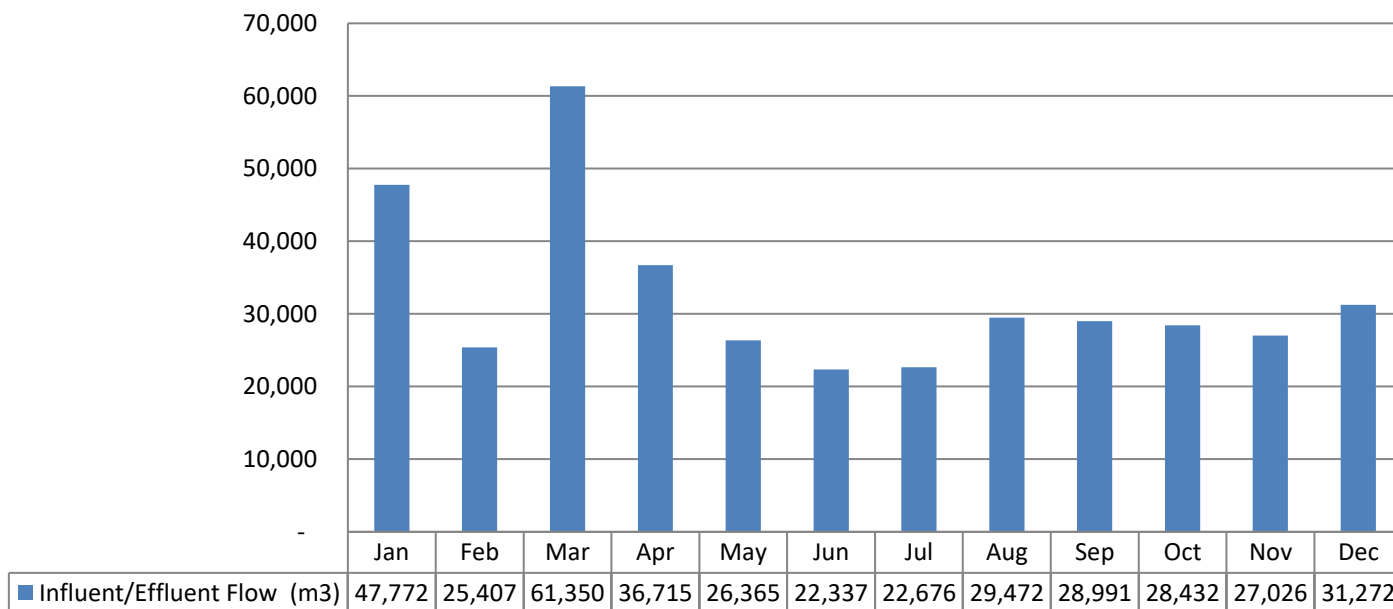
This report will show that the Ontario Clean Water Agency has made every attempt to achieve its goals through its operational performance. This performance was enhanced through the use of an electronic process data collection database, an electronic maintenance and work order database, an electronic operational excellence database, a training program focused on providing the right skills to staff - also captured and tracked by the use of an electronic database and a multi-skilled, flexible workforce.

**a) Environmental Compliance Approval (ECA) No. 2419-BKSLEX requires a summary and interpretation of all Influent monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;**

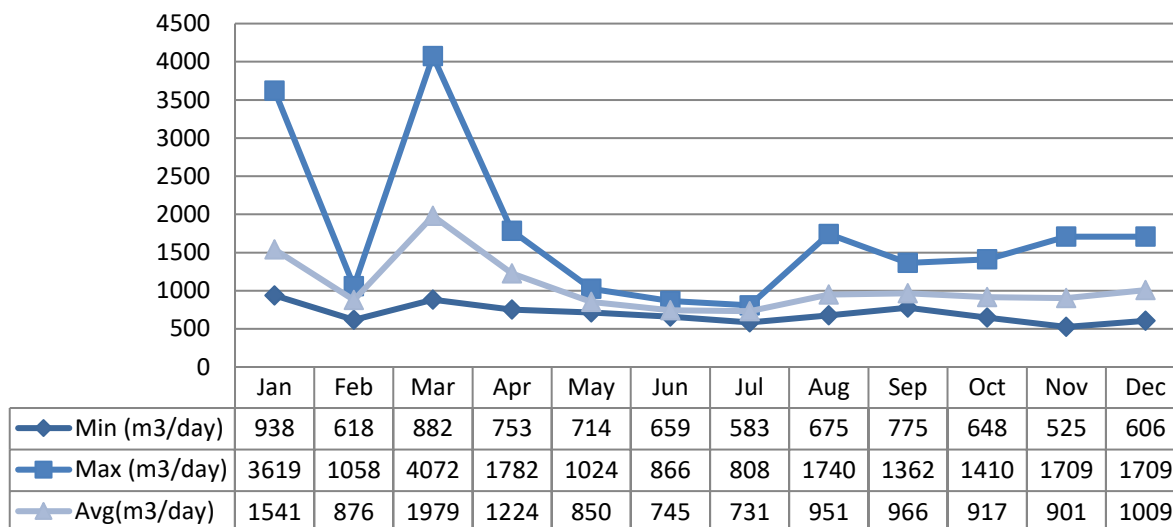
The Fenelon Falls WPCP has a Rated Capacity of 1,800m<sup>3</sup>/day. Flows are continuously measured through the plant effluent flow meter located upstream of the sand filters. The influent and effluent streams are considered not significantly different in flow rates and quantities so the effluent flow measurements are also used for influent flow measurements. ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX require that everything practicable be undertaken to operate the STP so that the annual average daily influent is within the Rated Capacity. The 2020 annual average daily influent flow was 1,059.6 m<sup>3</sup>/day or 59% of the Rated Capacity.

The total influent/effluent flow in 2020 was 387,815m<sup>3</sup>.

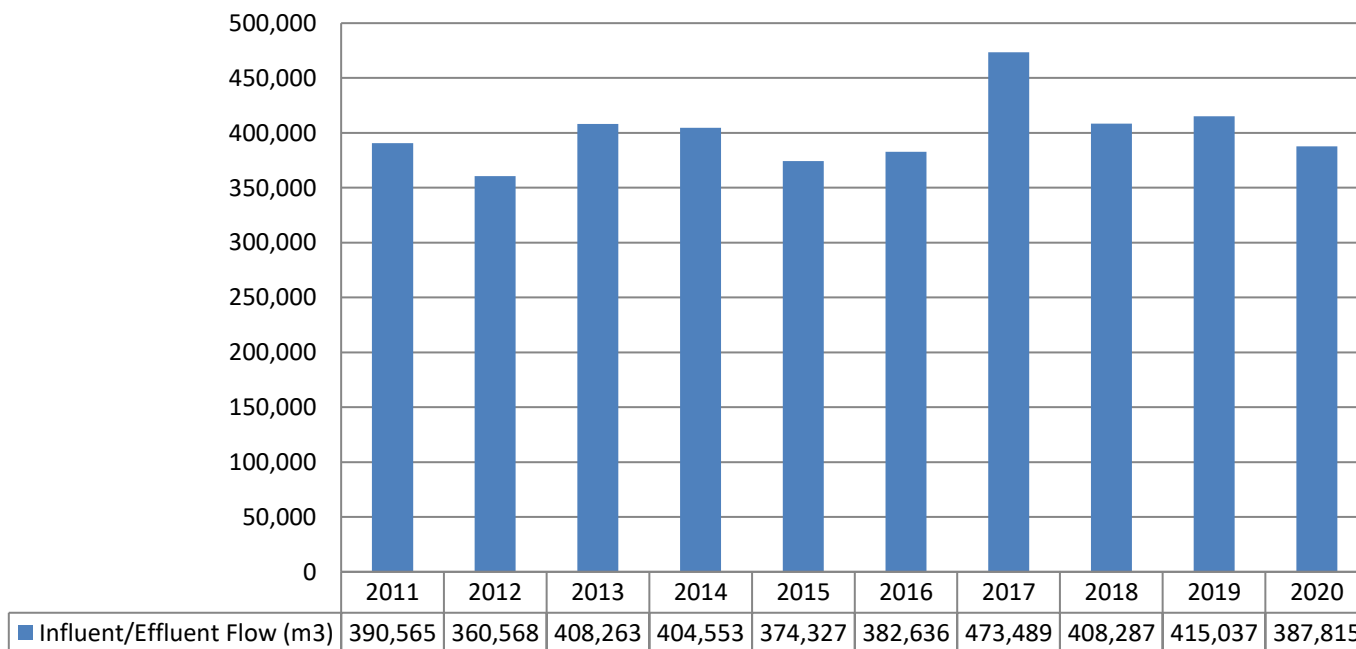
**Graph 1: 2020 Influent/Effluent Flow Monthly Totals (m<sup>3</sup>/days)**



**Graph 2: Influent/Effluent Daily Minimum, Maximum and Average Flows**



**Graph 3: Historical Influent/Effluent Flows from 2011 to 2020**

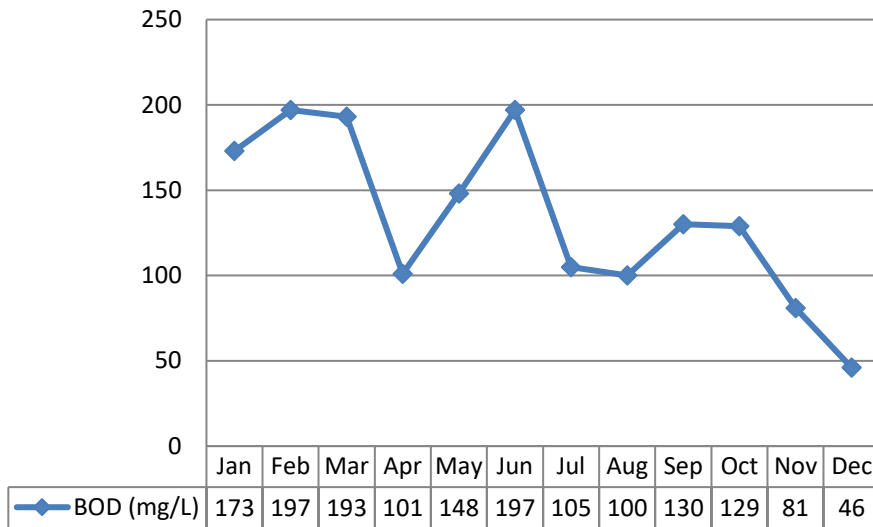


**Influent Monitoring - Sewage Characteristics**

**Biochemical Oxygen Demand (BOD5)**

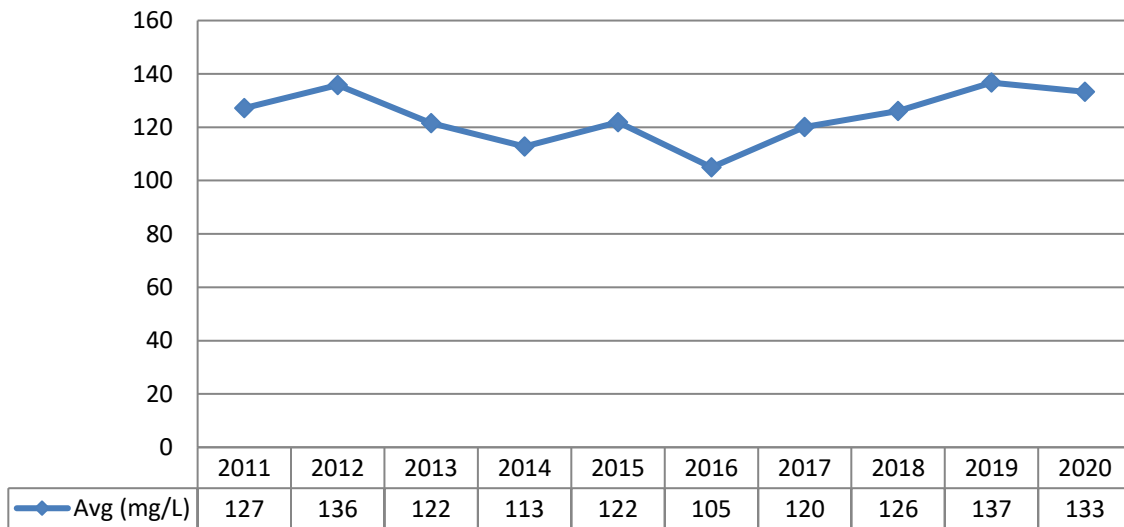
ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX require at least one composite sample be collected and analyzed monthly for Biochemical Oxygen Demand (BOD5). The Biochemical Oxygen Demand (BOD5) monthly average results ranged from 46 mg/L to 197 mg/L.

**Graph 4: 2020 Monthly BOD5 Influent Concentration Comparisons**



**Biochemical Oxygen Demand Historical Trends**

**Graph 5: Historical Influent Biochemical Oxygen Demand Concentration Comparisons**

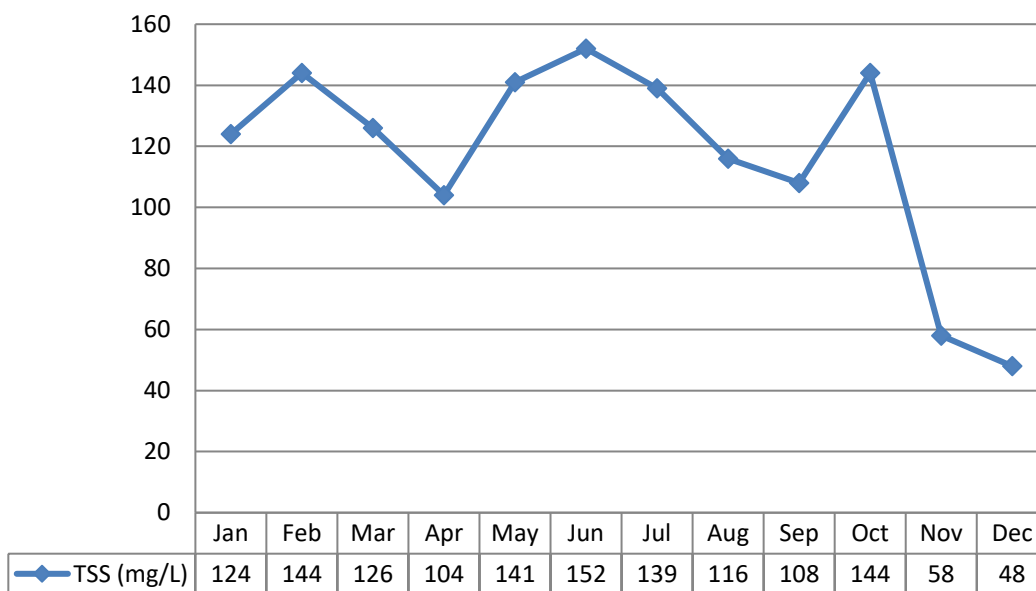


The Biochemical Oxygen Demand (BOD5) annual average has been relatively consistent for the past ten years.

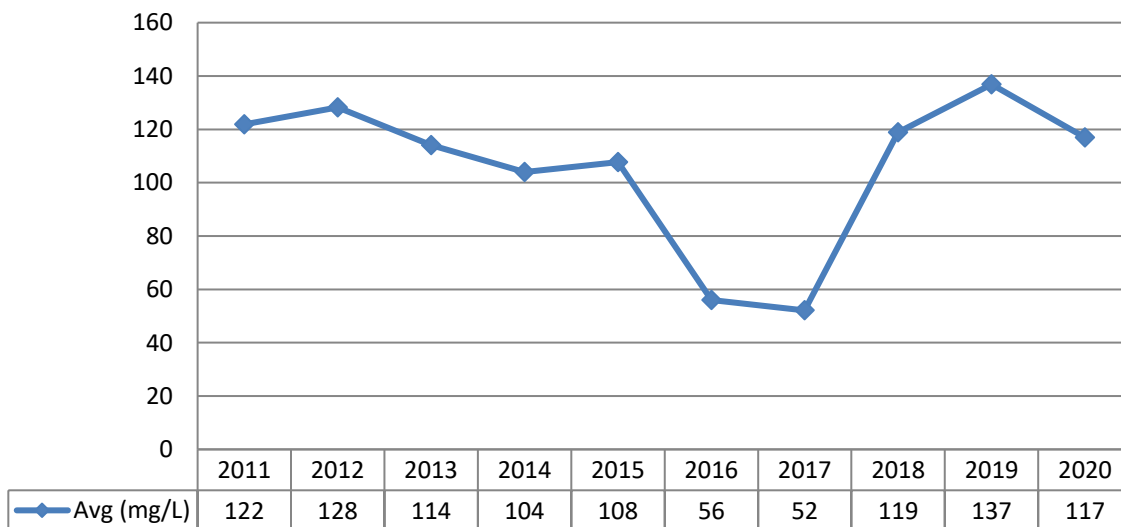
### Total Suspended Solids

ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX require at least one composite sample be collected and analyzed monthly for Total Suspended Solids. The monthly results ranged from 48mg/L to 144mg/L.

**Graph 6: 2020 Monthly Total Suspended Solids Influent Concentration Comparisons**



**Graph 7: Historical Influent Total Suspended Solids Concentration Comparisons**



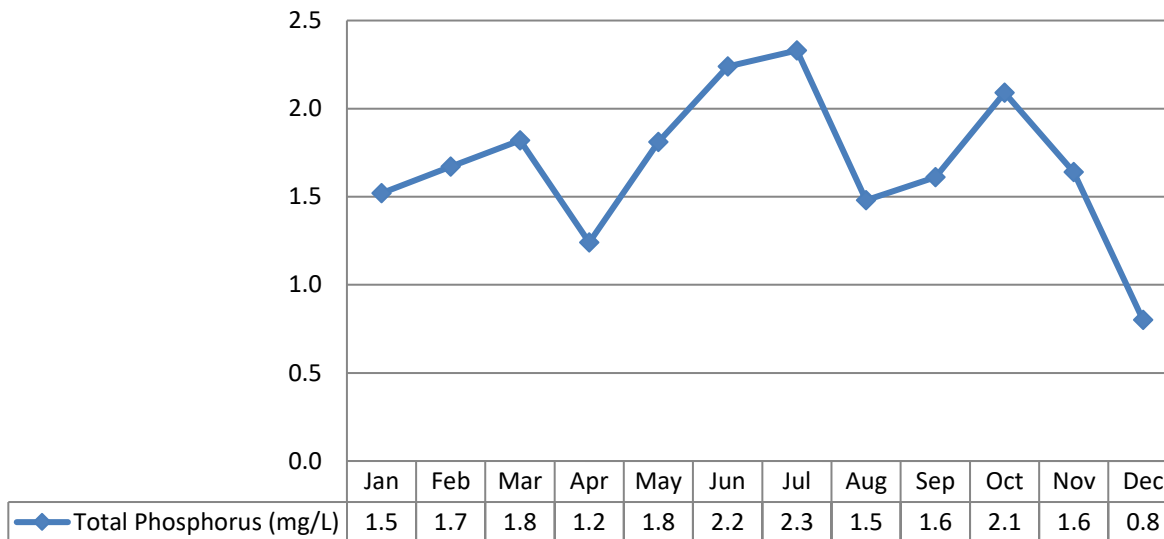
### Total Suspended Solids Historical Review

The Total Suspended Solids annual average has been between 52 mg/L and 137 mg/L showing a slight decrease in 2016 -2017, but otherwise the averages have been relatively consistent.

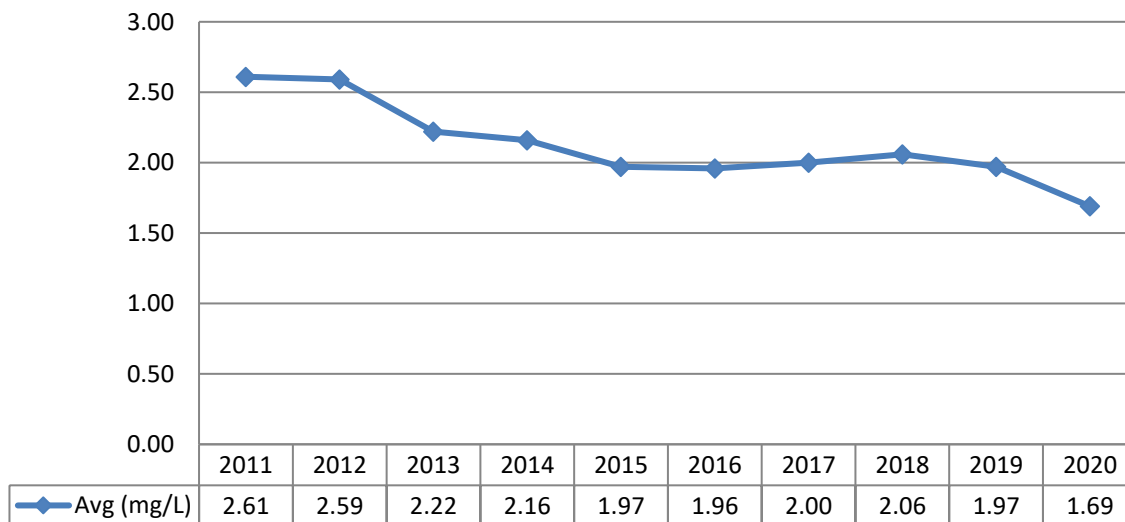
### Total Phosphorus

ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX require at least one composite sample be collected and analyzed monthly for Total Phosphorus. The monthly results ranged from 48mg/L to 144mg/L.

**Graph 8: 2020 Monthly Total Phosphorus Influent Concentration Comparisons**



**Graph 9: Historical Influent Total Phosphorus Concentration Comparisons**





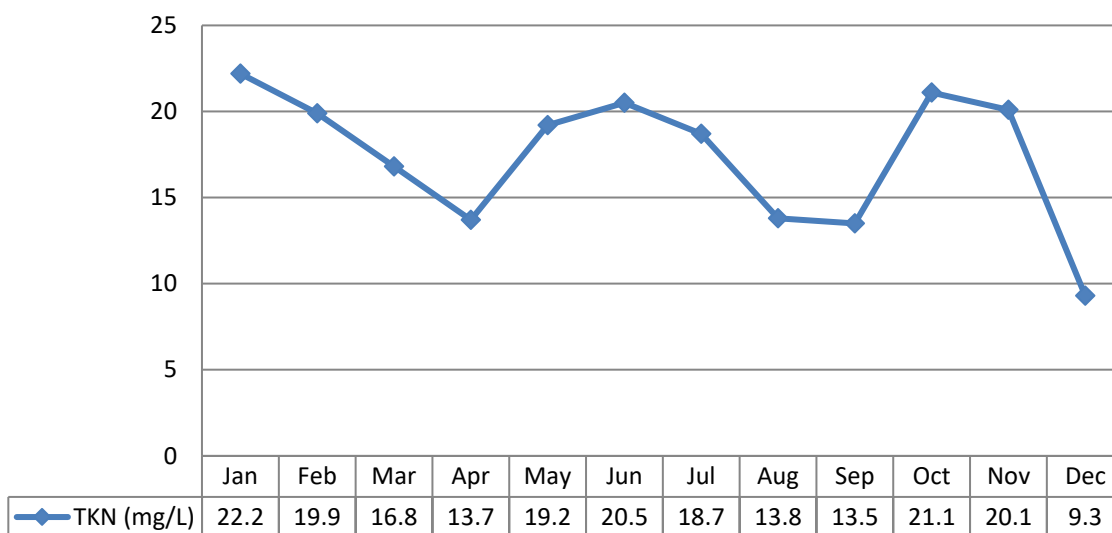
### Total Phosphorus Historical Trends

The Total Phosphorus annual average in the raw has trended downward since 2011 decreasing from 2.61mg/L to 1.69mg/L 1.69 – 2.61mg/L.

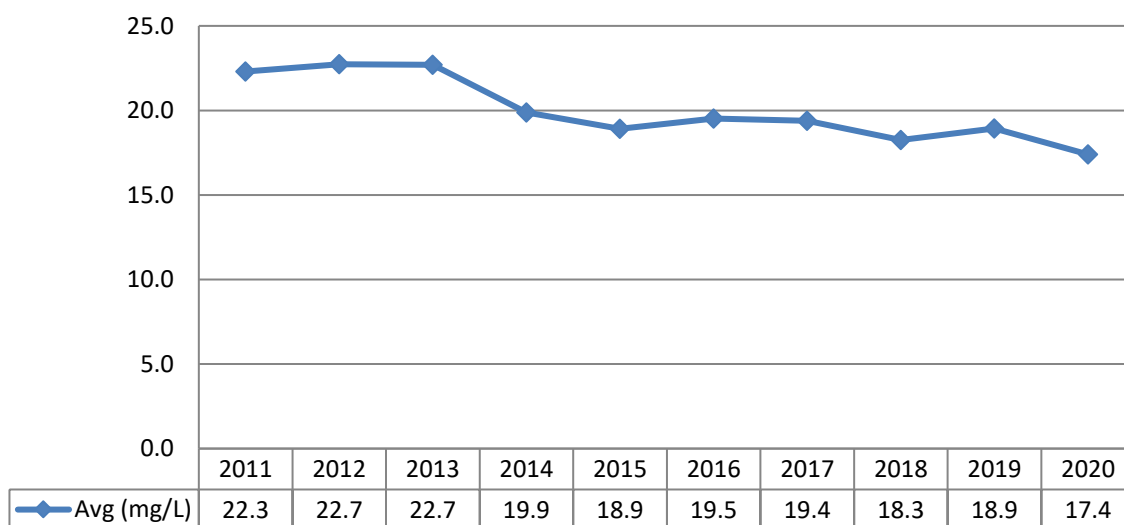
### Total Kjeldahl Nitrogen (TKN)

ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX require at least one composite sample be collected and analyzed monthly for Total Kjeldahl Nitrogen. The monthly Total Kjeldahl Nitrogen results ranged from 9.3 mg/L to 22.2 mg/L.

**Graph 10: 2020 Monthly Total Kjeldahl Nitrogen Influent Concentration Comparisons**



**Graph 11: Historical Influent Total Kjeldahl Nitrogen Concentration Comparisons**



### Total Kjeldahl Nitrogen Historical Review

The Total Kjeldahl Nitrogen annual average has remained fairly consistent but has shown a decreasing trend from above 20 mg/L to a low of 17.4 mg/L in 2020.

Refer to Appendix I for Performance Assessment Report which summarizes Influent (raw) BOD5, TSS, TP, and TKN Results.

***b. Environmental Compliance Approval (ECA) No. 2419-BKSLEX requires 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.***

The Final Effluent Monitoring Data for 2020 is summarized below and compared to ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX. The limits have remained the same for the site under both legal instruments; however, ECA No. 2419-BKLSLEX clarified that the Total Ammonia Nitrogen Limits and Objectives be applied monthly.

Flows are continuous measured through the plant effluent flow. The influent and effluent streams are considered not significantly different in flow rates and quantities so the effluent flow measurements are also used for influent flow measurements.

The total influent/effluent flow in 2020 was 387,815m<sup>3</sup>. The effluent flow summary and interpretation are included in a. above with the influent flow summary and interpretation.

### **Carbonaceous Biochemical Oxygen Demand (CBOD5) and Total Suspended Solids (TSS)**

ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX have annual average concentration limits of 25 mg/L for CBOD5 and TSS. The annual average results for 2020 were calculated as required for each approval and are presented in the following table.

<b>Table 1: CBOD5 and Suspended Solids 2020 Effluent Concentration Results Comparison to Limit</b>			
<b>Effluent Parameter</b>	<b>Annual Average Limit (mg/L)</b>	<b>Annual Average (mg/L)</b>	<b>Compliant Y/N</b>
<b>CBOD5</b>	25	<2.5	Y
<b>Total Suspended Solids</b>	25	<3.1	Y

ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX have annual average concentration objective of 15 mg/L for CBOD5 and TSS. The annual average results for 2020 were calculated as required for each approval and are presented in the following table.

<b>Table 2: CBOD5 and Suspended Solids 2020 Effluent Concentration Results Comparison to Objectives</b>			
<b>Effluent Parameter</b>	<b>Annual Average Objective (mg/L)</b>	<b>Annual Average (mg/L)</b>	<b>Objective Met Y/N</b>
<b>CBOD5</b>	15	<2.5	Y
<b>Total Suspended Solids</b>	15	<3.1	Y

ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX have annual average daily effluent loading limits of 45.0 kg/day for CBOD5 and TSS. The annual average daily loading results for 2020 were calculated as required for each approval and are presented in the following table.

<b>Table 3: CBOD5 and Suspended Solids 2020 Effluent Loading Results Comparison to Limits</b>			
<b>Effluent Parameter</b>	<b>Annual Average Daily Loading Limit (mg/L)</b>	<b>Annual Average Daily Loading (mg/L)</b>	<b>Compliant Y/N</b>
<b>CBOD5</b>	45	<2.7	Y
<b>Total Suspended Solids</b>	45	<3.4	Y

### **Total Phosphorus (TP)**

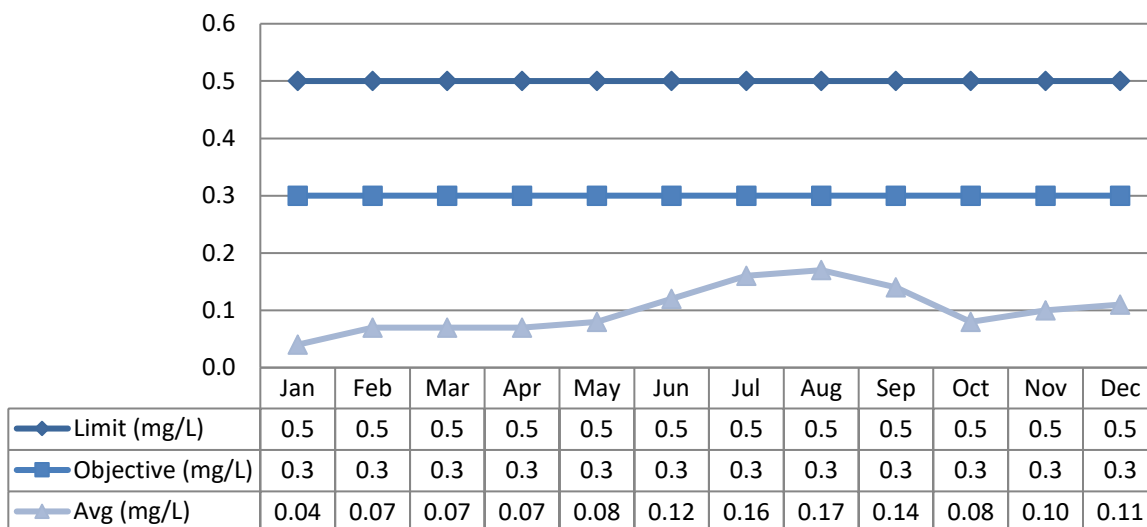
ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX have a monthly average concentration limit of 0.5 mg/L for Total Phosphorus. The monthly average results for 2020 were calculated as required for each approval and are presented in the following table.

<b>Table 4: Total Phosphorus 2020 Monthly Average Concentrations Comparison to Limit</b>			
<b>Month</b>	<b>Monthly Average Limit (mg/L)</b>	<b>Effluent Monthly Average (mg/L)</b>	<b>Compliant Y/N</b>
January	0.5	0.04	Y
February	0.5	0.07	Y
March	0.5	0.07	Y
April	0.5	0.07	Y
May	0.5	0.08	Y
June	0.5	0.12	Y
July	0.5	0.16	Y
August	0.5	0.17	Y
September	0.5	0.14	Y
October	0.5	0.08	Y
November	0.5	0.10	Y
December	0.5	0.11	Y

ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX have a monthly average concentration objective of 0.3 mg/L for Total Phosphorus. The monthly average results for 2020 were calculated as required for each approval and are presented in the following table.

<b>Table 5: Total Phosphorus 2020 Monthly Average Concentrations Comparison to Objective</b>			
<b>Month</b>	<b>Monthly Average Objective (mg/L)</b>	<b>Effluent Monthly Average (mg/L)</b>	<b>Objective Met Y/N</b>
January	0.3	0.04	Y
February	0.3	0.07	Y
March	0.3	0.07	Y
April	0.3	0.07	Y
May	0.3	0.08	Y
June	0.3	0.12	Y
July	0.3	0.16	Y
August	0.3	0.17	Y
September	0.3	0.14	Y
October	0.3	0.08	Y
November	0.3	0.10	Y
December	0.3	0.11	Y

**Graph 13: 2020 Monthly Final Effluent Total Phosphorus Concentration Comparisons**



ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX have a monthly average daily loading limit of 0.9 kg/d for Total Phosphorus. The monthly average results for 2020 were calculated as required for each approval and are presented in the following table.

Month	Monthly Average Daily Loading Limit (kg/d)	Effluent Monthly Average Daily Loading (kg/d)	Compliant Y/N
January	0.9	0.06	Y
February	0.9	0.06	Y
March	0.9	0.14	Y
April	0.9	0.08	Y
May	0.9	0.07	Y
June	0.9	0.09	Y
July	0.9	0.11	Y
August	0.9	0.16	Y
September	0.9	0.13	Y
October	0.9	0.07	Y
November	0.9	0.09	Y
December	0.9	0.11	Y

### **Total Ammonia Nitrogen (TAN)**

Total Ammonia Nitrogen (TAN) concentration limits are calculated monthly based on seasonal periods within the annual year for both ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX. The following table compares all results to the limits for seasonal concentrations. All effluent results were below the concentration limits for TAN.

<b>Table 7: Total Ammonia Nitrogen 2020 Monthly Average Concentration Comparison to Limits</b>			
<b>Month</b>	<b>Monthly Average Concentration Limit (mg/L)</b>	<b>Effluent Monthly Average (mg/L)</b>	<b>Compliant Y/N</b>
<b>January</b>	7.0	0.15	Y
<b>February</b>	7.0	0.10	Y
<b>March</b>	7.0	0.20	Y
<b>April</b>	3.5	0.10	Y
<b>May</b>	3.5	0.10	Y
<b>June</b>	3.5	0.10	Y
<b>July</b>	3.5	0.10	Y
<b>August</b>	3.5	0.10	Y
<b>September</b>	3.5	0.10	Y
<b>October</b>	3.5	0.35	Y
<b>November</b>	7.0	0.10	Y
<b>December</b>	7.0	2.36	Y

Total Ammonia Nitrogen (TAN) concentration objectives are calculated monthly based on seasonal periods within the annual year for both ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX. The following table compares all results to the objectives for seasonal concentrations. All effluent results were below the concentration objectives for TAN.

<b>Table 8: Total Ammonia Nitrogen 2020 Monthly Average Concentration Comparison to Objectives</b>			
<b>Month</b>	<b>Monthly Average Concentration Objective (mg/L)</b>	<b>Effluent Monthly Average (mg/L)</b>	<b>Objective Met Y/N</b>
<b>January</b>	5.0	0.15	Y
<b>February</b>	5.0	0.10	Y
<b>March</b>	5.0	0.20	Y
<b>April</b>	2.5	0.10	Y

<b>Table 8: Total Ammonia Nitrogen 2020 Monthly Average Concentration Comparison to Objectives</b>			
<b>Month</b>	<b>Monthly Average Concentration Objective (mg/L)</b>	<b>Effluent Monthly Average (mg/L)</b>	<b>Objective Met Y/N</b>
<b>May</b>	2.5	0.10	Y
<b>June</b>	2.5	0.10	Y
<b>July</b>	2.5	0.10	Y
<b>August</b>	2.5	0.10	Y
<b>September</b>	2.5	0.10	Y
<b>October</b>	2.5	0.35	Y
<b>November</b>	5.0	0.10	Y
<b>December</b>	5.0	2.36	Y

Total Ammonia Nitrogen (TAN) monthly average daily loading limits are calculated based on seasonal periods within the annual year for both ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX. The following table compares all results to the limits for monthly average daily loading results. All effluent results were below the monthly average daily loading limits for TAN.

<b>Table 9: Total Ammonia Nitrogen 2020 Monthly Average Daily Loading Results Comparison to Limits</b>			
<b>Month</b>	<b>Monthly Average Daily Loading Limit (kg/d)</b>	<b>Effluent Monthly Average Daily Loading (kg/d)</b>	<b>Compliant Y/N</b>
<b>January</b>	12.6	0.23	Y
<b>February</b>	12.6	0.09	Y
<b>March</b>	12.6	0.40	Y
<b>April</b>	6.3	0.12	Y
<b>May</b>	6.3	0.09	Y
<b>June</b>	6.3	0.07	Y
<b>July</b>	6.3	0.07	Y
<b>August</b>	6.3	0.10	Y
<b>September</b>	6.3	0.10	Y
<b>October</b>	6.3	0.32	Y
<b>November</b>	12.6	0.09	Y
<b>December</b>	12.6	2.38	Y





**pH**

ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX have a pH compliance limit within the range of 6.5 to 9.0, inclusive, for every single sample result. Every pH reading in 2020 was within the compliance limits set by both approvals. A summary of effluent pH measurements recorded in 2020 is provided in Appendix I.

<b>Limit 6.0 – 9.5</b>	<b>ECA No. 9572-A5GKMJ inclusive, at all times</b>	<b>ECA No. 2419-BKSLEX Every Single Sample Result</b>
	<b>Compliant Y/N</b>	<b>Compliant Y/N</b>
Results range: 6.51 – 7.69	Y	Y

ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX have a pH objective within the range of 6.0 to 9.5, inclusive, for every single sample result. Every pH reading taken in 2020 met the objective.

<b>Table 13: pH 2020 Results Comparison to Objective</b>		
<b>Objective 6.5 – 9.0 inclusive, every single sample</b>	<b>ECA No. 9572-A5GKMJ inclusive, at all times Objective Met Y/N</b>	<b>ECA No. 2419-BKSLEX Every Single Sample Result Objective Met Y/N</b>
Results range: 6.51 – 7.69	Y	Y

### **Un-ionized Ammonia**

The concentration of un-ionized ammonia is calculated using the TAN concentration, field pH and field temperature using the methodology stipulated in “Ontario’s Provincial Water Quality Objectives” dated July 1994, as amended. Un-ionized ammonia calculated results are provided in Appendix I.

The results in the preceding tables show the limits for concentrations and loadings of the effluent CBOD5, Total Suspended Solids, Total Phosphorus and Total Ammonia Nitrogen were in compliance with both ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX in 2020 and met all objectives. E. Coli results met the limits and objectives of both ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX in 2020. Additionally, all results for pH met the limits and objectives set out in both ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX in 2020.

Refer to Appendix I for Performance Assessment Report and Summaries of Effluent CBOD5, TSS, TP, TAN, TKN, E. Coli, and pH Results. Also included in Appendix I are the un-ionized ammonia calculations for 2020.

#### ***c. a summary of all operating issues encountered and corrective actions taken;***

The following table describes all operating problems encountered during the reporting period and the corrective actions taken.

<b>Table 14: Summary of Operating Issues</b>		
<b>Date</b>	<b>Challenges</b>	<b>Corrective Actions</b>
<b>Jan 11 – 12</b>	Warm temperatures and a heavy rain event of approximately 70mm of rain plus snow melt caused high flows which overwhelmed Colborne Street SPS. Estimated 1,659m <sup>3</sup> of sewage to Fenelon River over a 21 hour period.	High level alarms tested at all SPSs on Jan 9, 2020 in preparation for the forecasted heavy rains and warm temperatures. Additional staff available to assist on call operator.

<b>Table 14: Summary of Operating Issues</b>		
<b>Date</b>	<b>Challenges</b>	<b>Corrective Actions</b>
		<p>Licensed sewage haulers used to haul sewage from SPSs to treatment plant.</p> <p>Ellice SPS wet weather flow detention tank utilized, but when full had to initiate Colborne Street SPS overflow. Samples collected as per ECA No. 9572-A5GKMJ.</p> <p>Flows, process monitored throughout event.</p> <p>Notifications made to MOH, SAC, and downgradient water users through CKL social media site.</p>
<b>Jan 11 - 15</b>	<p>Warm temperatures and a heavy rain event of approximately 70mm of rain plus snow melt caused high flows which impacted the sand filters and caused a partial sand filter bypass.</p>	<p>Further to actions taken above, sewage was directed through all processes within the plant with the exception of approximately 6,220m<sup>3</sup> of effluent that did not pass through the sand filters.</p> <p>Flows, process monitored throughout event.</p> <p>Samples collected during the event as per ECA No. 9572-A5GKMJ.</p> <p>Notifications made to MOH, SAC, and downgradient water users through CKL social media.</p>
<b>Mar 10 - 12</b>	<p>Snowmelt and rainfall caused high flows which impacted the sand filters and caused a partial sand filter bypass.</p>	<p>Flows, process monitored throughout event.</p> <p>Licensed sewage hauler used to haul sewage from Francis Street SPS to treatment plant.</p> <p>Samples collected during the event as per ECA No. 9572-A5GKMJ.</p> <p>Notifications made to MOH, SAC</p>

***d. 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;***

OCWA uses a Work Maintenance System (WMS) to schedule normal maintenance activities and track repairs. WMS is a maintenance tracking system that can generate work orders as well as give summaries of completed and scheduled work. During the

year, the operating authority at the facility generates scheduled work orders on a weekly, monthly and annual basis. The service work is recorded in the work order history. This ensures routine and preventive maintenance is carried out and assets are maintained to manufacturer's and/or industry standards. Emergency and capital repair maintenance is completed and added to the system.

Refer to Appendix II for work order and maintenance summary.

***e. a summary of any effluent quality assurance or control measures undertaken;***

Effluent quality assurance is maintained in several ways. Laboratory samples are sent to accredited laboratory (SGS Lakefield) for analysis of all effluent parameters. Sampling calendars issued to the operator denote frequency of sampling and these calendars are submitted to the Process Compliance Technician at the end of each month. Raw and effluent samples are collected as per ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX and the results are reviewed on a regular basis to ensure compliance with the site's objectives and limits.

Effluent control measures include in-house sampling and testing for operational parameters such as pH, temperature, phosphorus, dissolved oxygen, 30 minute settling and Mixed Liquor Suspended Solids (MLSS). In-house testing provides real time results which are then evaluated to determine if process changes are necessary to enhance operational performance. All in-house sampling and analysis are performed by certified operations staff utilizing approved methods and protocols for sampling, analysis and recording as specified in the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", the Ministry's publication, "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the publication, "Standard Methods for the Examination of Water and Wastewater".

Work orders are scheduled through our asset maintenance management system to ensure preventative and corrective maintenance is completed and recorded by operations staff. A summary is attached as Appendix II. Flow meters are calibrated annually and the 2020 calibration report is provided in Appendix III.

OCWA conducts internal audits of facilities and develops Action Plans to ensure deficiencies are identified and corrected. OCWA has developed comprehensive manuals detailing operations, maintenance, instrumentation and emergency

procedures. To ensure facilities are operated in compliance with applicable legal requirements, facility staff has access to a network of compliance and support professionals at the hub, region and corporate level.

Continuous phosphorus removal is achieved with the dosing of aluminum sulphate. A summary of its use and dosing rates for 2020 is provided in the following table.

<b>Month</b>	<b>Aluminum Sulphate (kg)</b>	<b>Aluminum Sulphate Average Dosage (mg/L)</b>
<b>January</b>	1761.68	42.74
<b>February</b>	1631.4	65.09
<b>March</b>	1757.9	33.58
<b>April</b>	1700.3	48.38
<b>May</b>	1751.3	65.53
<b>June</b>	1669.6	75.05
<b>July</b>	1726.7	76.55
<b>August</b>	1730.8	63.02
<b>September</b>	1665.9	59.07
<b>October</b>	1693.6	62.35
<b>November</b>	1603.33	63.39
<b>December</b>	1807.2	55.41

**f. 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;**

Refer to Appendix III for 2020 calibration reports.

**g. a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active 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;**

Continuous efforts were made to meet the Effluent Objectives in 2020:

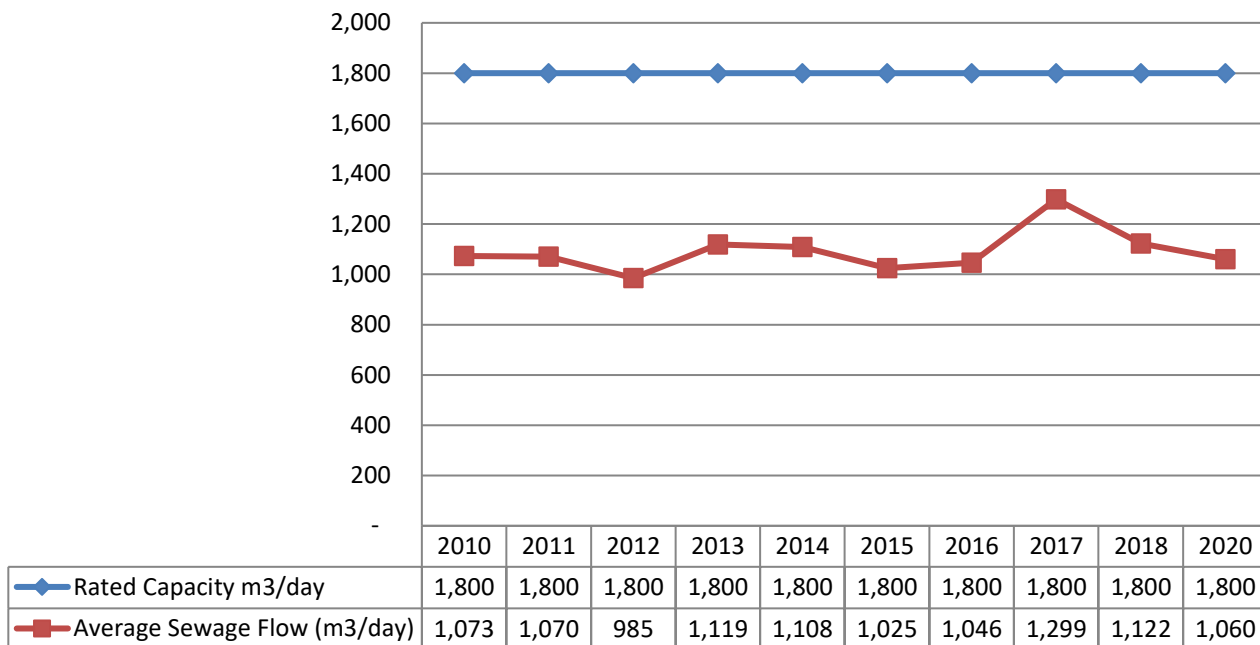
1. Development of the sampling plan which meets or exceeds the minimum sample requirements as required in the ECA;
2. Visual Inspection of the entire process while performing rounds including visual inspection of effluent to ensure it did not contain oil or other substance in amounts sufficient to create a visible film or sheen on the surface of the receiving waters, and which was essentially free of any floating material;
3. Influent monitoring;
4. Ensuring that chemicals are being dosed as required;
5. Calibration of lab equipment;
6. Annual calibration of flow meters;
7. Oxidation ditch increased DO monitoring;
8. Ensure UV is providing disinfection, both banks on regardless of flow rates;
9. Performing preventative maintenance activities in accordance with work order schedules;
10. Performing in-house lab tests;
11. Monitoring treatment processes by performing regular laboratory analysis and reviewing of lab results;
12. Biosolids monitoring

Effluent design objectives were met 100% of the time. The two partial sand filter bypasses that occurred in January and March were sampled as required by ECA No. 9572-A5GKMJ which was the legal instrument in place at the time of the bypasses. Details of the bypasses and sampling results are included under Condition j.

The ECA states the plant has a Rated Capacity of 1,800m<sup>3</sup>/day. The Rated Capacity means the Average Daily Flow for which the plant is approved to treat. The Average Daily Flow is determined by the cumulative total sewage flow into the plant during a calendar year, which is then divided by the number of days during which sewage flowed into the plant. The annual average daily influent flow for 2020 is 1,059.6 m<sup>3</sup>/day or 59% of the Rated Capacity.

The following graph shows the plant has been operating within the Rated Capacity for the past ten years.

**Graph 12: Average Sewage Flow and Rated Capacity Comparisons**



**h. 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;**

Attached is Appendix IV: Sludge/Biosolids Summary that contains quantities of organics, inorganics, e-coli and volumes of Biosolids/sludge generated for the reporting period - which was a total of 2,737.75m<sup>3</sup>. This is a slight increase from 2019 when 2,503.04m<sup>3</sup> of biosolids were hauled. The anticipated volume for the next reporting period is not expected to be appreciably different from this reporting period.

Biosolids from the Fenelon Falls WPCP were hauled, stored and land applied by Shepherds Environmental in 2020 and will be again in 2021. The Biosolids are hauled to fields with a valid NASM Plan (NASM Plan 23771, 23424, 23763) or to A710160 Shepherds Environmental Storage.

**i. a summary of any complaints received and any steps taken to address the complaints**

Table 16: Complaints Received Summary for 2020		
Date	Issue	Actions Taken

January 17	Sewer backup	City checked system and no backup found – may have been caused by the resident no having a sump pump in home.
February 17	Sewer backup	City advised resident to contact a plumber.
October 22	Toilet exploded	City had contractor who was flushing the sewer lines contact the resident.

**j. a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;**

The following table summarizes all Bypasses, Overflows and other situations outside of Normal Operating Conditions and spills and abnormal discharge events that occurred in 2020. The Operations Event Forms and sampling results for these events are provided in Appendix V. All were reported to MOH, MECP and the City.

<b>Table 17: 2020 Summary of Events as per Condition 11.4.j.</b>					
<b>Date 2020</b>	<b>Type of Event</b>	<b>Total Volume (m3)</b>	<b>Disinfect (Y/N)</b>	<b>Samples Collected (Y/N)</b>	<b>Reason</b>
Jan 11 - 12	Colborne St SPS Overflow	1,629	N	Y	Extreme wet weather event – 70mm rainfall
Jan 11 - 15	Partial Tertiary Filter Bypass	6,220	Y	Y	Extreme wet weather event – 70mm rainfall
Mar 10 - 12	Partial Tertiary Filter Bypass	1,708	Y	Y	Wet weather event

ECA No. 9572-A5GKMJ and ECA No. 2419-BKSLEX require submission of quarterly summary reports of any Bypass Events and Overflows Events. Copies of these reports are provided in Appendix V

**k. summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification.**



No Notice of Modifications was submitted in 2020 to the Water Supervisor or District Manager as a result of Schedule B, Section 1.

**I. 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.**

2020 efforts included a partial collection system flushing maintenance program, installation of rain stoppers in nine manholes and the creation of a subsidy program for homeowners that choose to install backwater valves.

The estimated budget forecast for 2021 is:

Collection System Flushing - \$ 12, 941 (full flush)

Manhole repairs - \$ 35,715

Unplanned repairs - \$ 2,094