



Smooth Rock Falls Sewage Treatment Plant Sewage Collection System

Annual Performance Report

Prepared by Ontario Clean Water Agency, Northeastern Ontario Hub
January 1 to December 31, 2024

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ANNUAL SEWAGE PERFORMANCE REPORT

Sewage System Name	Smooth Rock Falls Sewage Treatment Plant
Sewage System Address	294 Fifth Street, Smooth Rock Falls, Ontario
Sewage System Owner	Corporation of the Town of Smooth Rock Falls
Sewage System Number	110002130
Environmental Compliance Approval No	8745-68TKCW, issued December 18, 2009
Sewage Collection System (CLI-ECA)	217-W601, issued November 10, 2022
Reporting Period	January 1 to December 31, 2024

FACILITY DESCRIPTION

Capacity of Works	3,274 m ³ /day
Service Area	Town of Smooth Rock Falls
Service Population	1,200
Effluent Receiver	Un-named creek that flows to the Mattagami River
Major Process	Dual Celled Extended Aeration System

The Smooth Rock Falls sewage treatment plant, located in the Township of Kendrey, has a rated capacity of 3,274 m³ per day, and a peak flow of 6,000 m³ per day.

The Smooth Rock Falls sewage treatment system consists of a gravity fed collection system (no lift stations) and a twin-cell extended aeration mechanical sewage, which discharges to an unnamed creek, which leads to the Mattagami River.

The plant has a bypass valve mechanism, inlet primary bar screen, three (3) dry well pumps, an open channel secondary bar screen, and a flow splitter box that equally divides the sewage flow to the two parallel treatment trains. Both treatment trains consist of aeration, clarification, disinfection, return activated-sludge air lift systems, waste activated-sludge air lift transfer systems and cell 1 – single stage and cell 2 has a two stage aerobic sludge digester.

Two dechlorination systems are located at the effluent outfall, each equipped with sodium bisulphate feed metering pumps and a separate chemical feed line. These systems are equipped with Oxygen Reduction Potential (ORP) sensors.

A loading system is in place to allow the removal of sludge, which is disposed of at approved waste disposal sites and is transported to that site by means of a certified haulage truck.

The system is equipped with a 150 kilowatt diesel engine generator and a 570 liter fuel storage tank which provides emergency power during power failures.

Flow meters are in place to measure effluent and bypass flows. Bypasses that occur are chlorinated, tested, monitored and reported to the Spills Action Center (SAC) and Environment Canada as well as a courtesy call to the Ministry of Health.

1.0 MONITORING DATA
1.1 Monitoring Program as Outlined in the Certificate of Approval

cBOD₅ = Five-day carbonaceous biochemical oxygen demand measured in an unfiltered sample
 DOP = Dissolved Ortho-Phosphorus
 (NH₃⁻ + NH₄) N = Nitrogen as Ammonium and Ammonia
 TKN = Total Kjeldahl Nitrogen
 TP = Total Phosphorus
 TRC = Total Residual Chlorine
 TSS = Total Suspended Solids
 < = Value contains results that were less than detectable

Raw Sewage (Influent)

Parameter	Type of Sample	Minimum Frequency
Alkalinity	composite	monthly
cBOD ₅	composite	monthly
TKN	composite	monthly
Total Phosphorous	composite	monthly
Total Suspended Solids	composite	monthly

Note: here a composite sample is defined as 3 grab samples taken at least 2 hours apart over an 8 hour period.

Final Effluent

Parameter	Type of Sample	Minimum Frequency
Alkalinity	24 hour composite	weekly
cBOD ₅	24 hour composite	weekly
Dissolved Ortho-Phosphorous	24 hour composite	weekly
Total Ammonia Nitrogen	24 hour composite	weekly
Total Phosphorous	24 hour composite	weekly
Total Suspended Solids	24 hour composite	weekly
<i>E. coli</i>	grab	weekly
pH	grab	weekly
Temperature	grab	weekly
Un-ionized (free) Ammonia	calculation	weekly
Total Residual Chlorine	grab	daily

1.2 Data

The following tables summarize the monitoring and sampling analyses conducted at the facility in 2024.

1.2.1 Flow

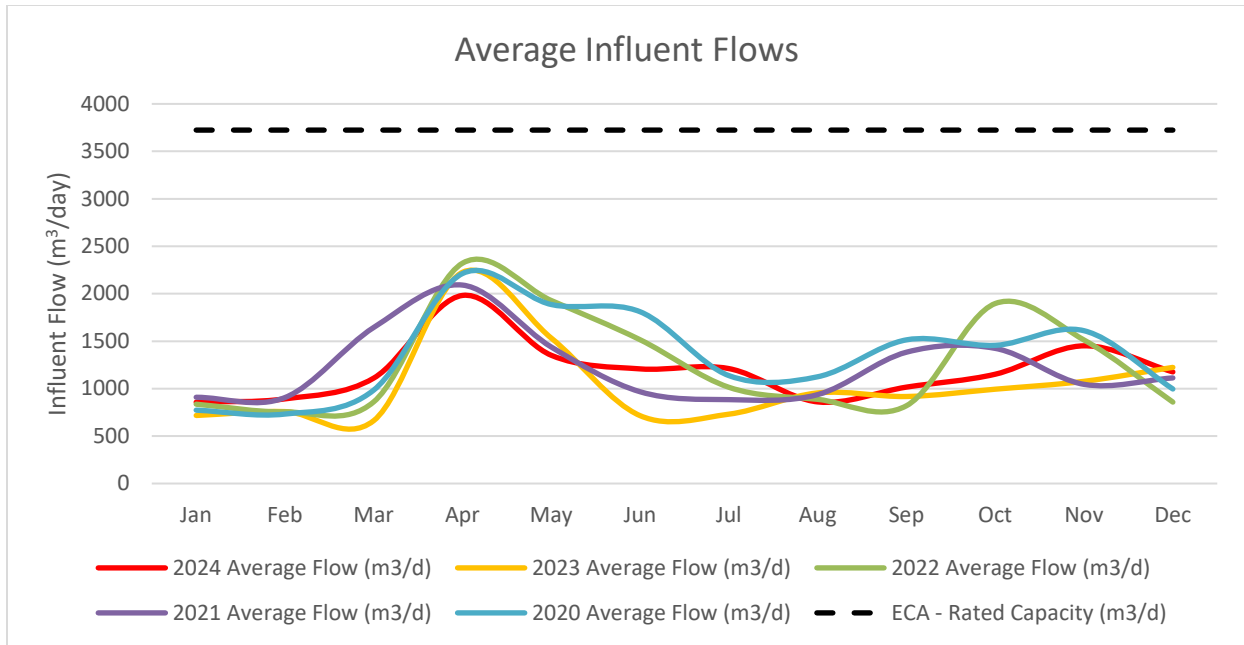
Month	Maximum Flow (m ³ /day)	Average Flow (m ³ /day)	Total Volume (m ³)
January	1,061	857	26,561
February	1,373	892	25,866
March	2,490	1,111	34,449
April	3,632	1,982	59,475
May	2,708	1,351	41,867
June	2,334	1,208	36,242
July	3,859	1,211	37,546
August	1,357	860	26,655
September	1,871	1,016	30,473
October	2,550	1,152	35,720
November	2,324	1,451	43,535
December	2,195	1,176	36,450
Annual Statistics	3,859	1,188	434,839

1.2.2 Summary of Influent Flow

Annual	Flow (m ³ /day)	Rated Capacity (m ³ /day)	% Capacity	Exceedance
Average	1,188	3,274	36.3	No
Peak	3,859	6,000	64.3	No

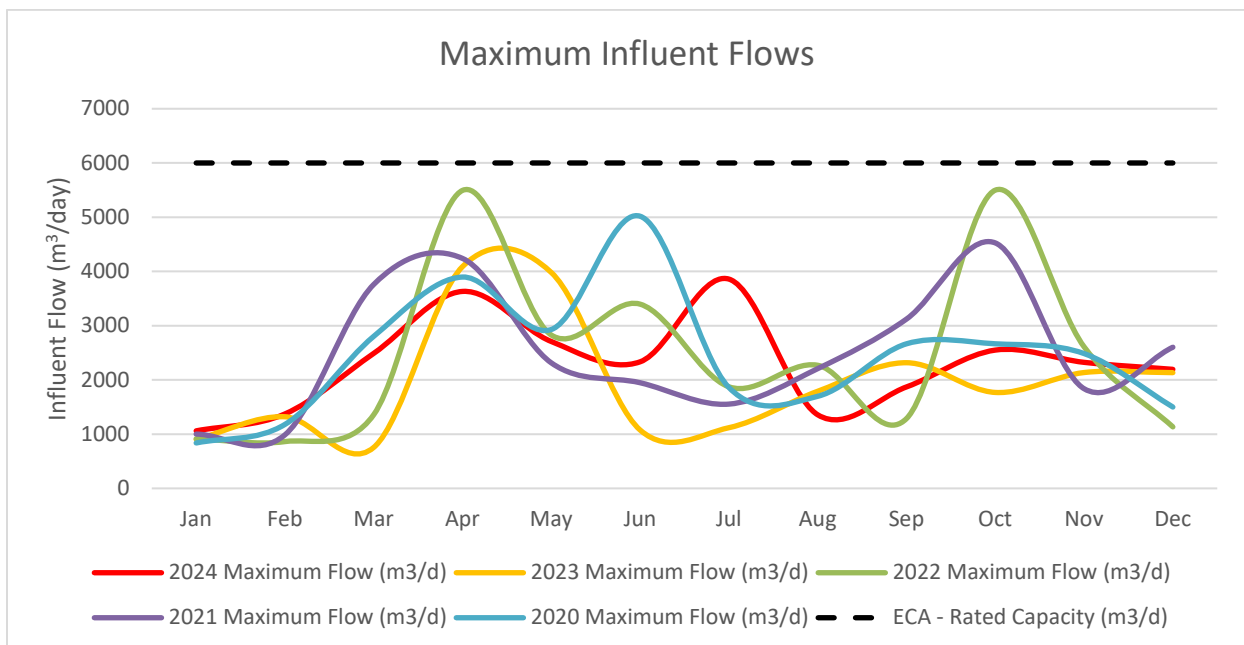
1.2.3 Historical Average Influent Flow

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2024	857	892	1111	1982	1351	1208	1211	860	1016	1152	1451	1176
2023	717	758	663	2226	1532	715	731	955	917	994	1077	1224
2022	836	755	861	2322	1928	1515	1014	887	820	1897	1512	858
2021	909	906	1645	2091	1438	967	884	937	1384	1424	1045	1113
2020	773	732	985	2213	1886	1810	1137	1125	1514	1456	1610	996



1.2.4 Historical Maximum Influent Flow

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2024	1061	1373	2490	3632	2708	2334	3859	1357	1871	2550	2324	2195
2023	904	1321	756	4090	3980	1076	1119	1791	2317	1769	2136	2134
2022	915	863	1360	5495	2827	3397	1873	2270	1287	5499	2611	1134
2021	1001	988	3761	4240	2314	1948	1554	2208	3122	4526	1838	2603
2020	837	1180	2804	3897	2930	5018	1860	1698	2666	2666	2486	1500



1.2.5 Raw Sewage (Influent)

Parameter (mg//L)	Annual Average	Annual Maximum
Alkalinity	207	299
cBOD ₅	44.8	60
TKN	13.6	22.5
Total Phosphorous	1.52	2.48
Total Suspended Solids	95.9	170

Refer to Appendix A: Monthly Process Data – Influent for a summary of monthly results

1.2.6 Effluent

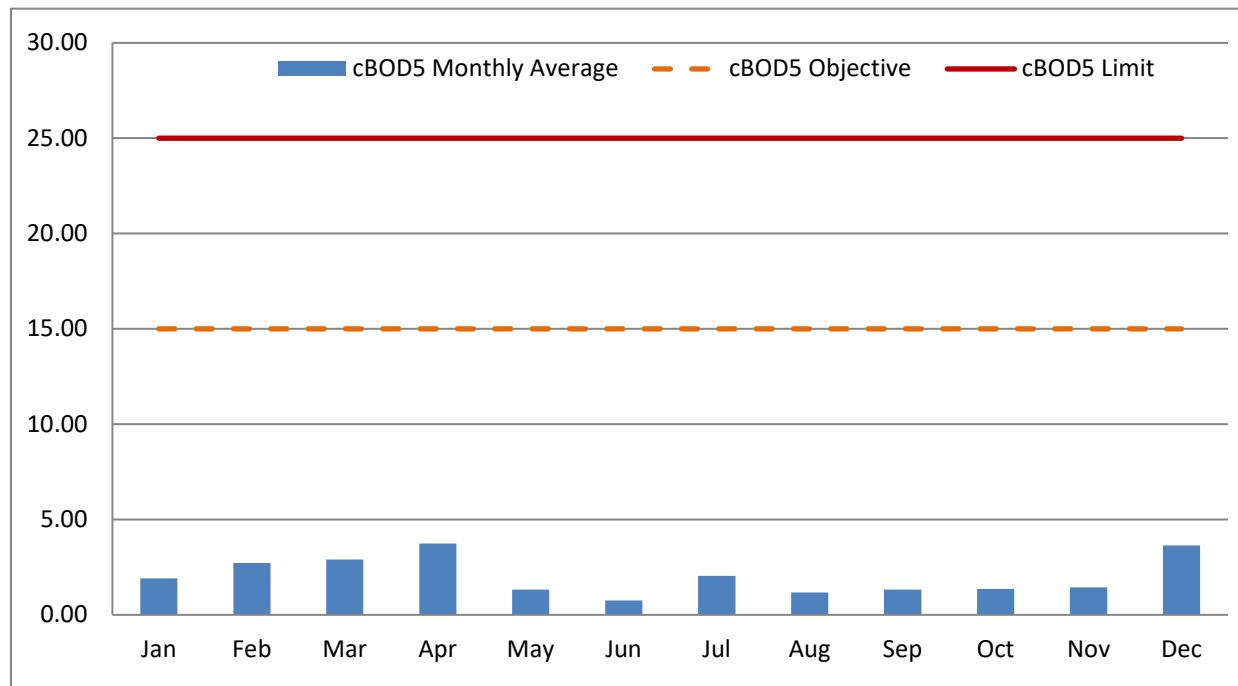


Figure 1: The 2024 monthly averages for cBOD₅ plotted with the objective and reportable limits specified in the ECA

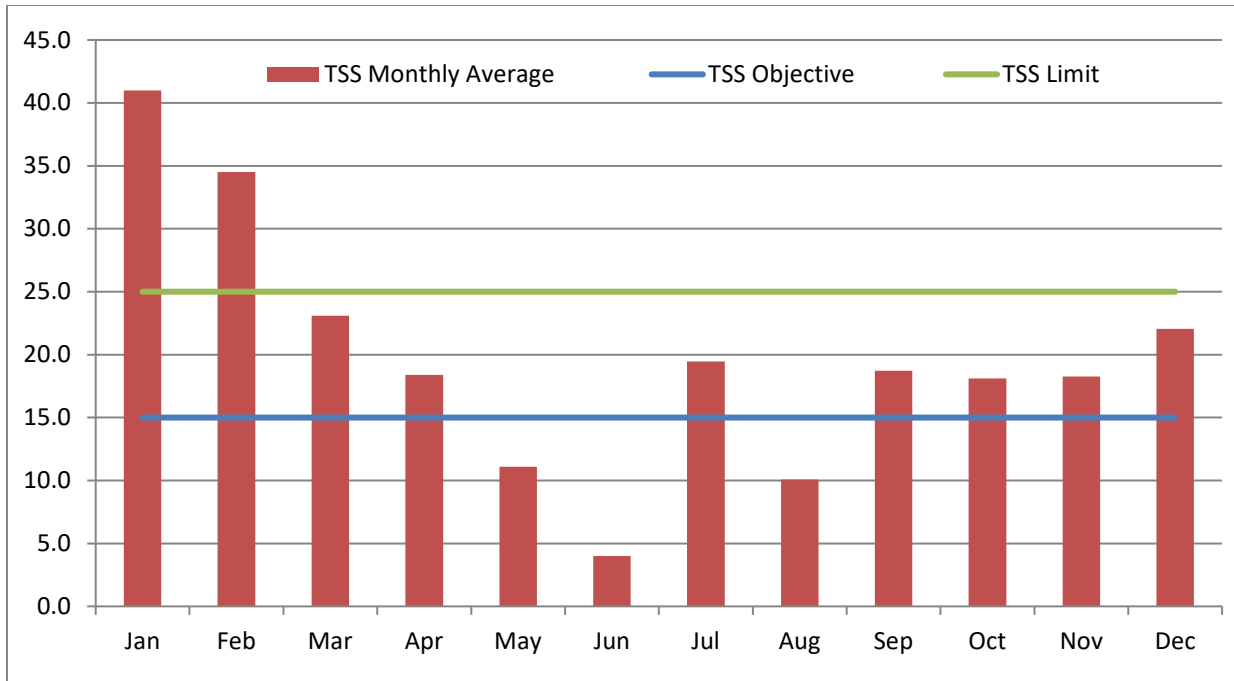


Figure 2: The 2024 monthly averages for TSS plotted with the objective and reportable limits specified in the ECA

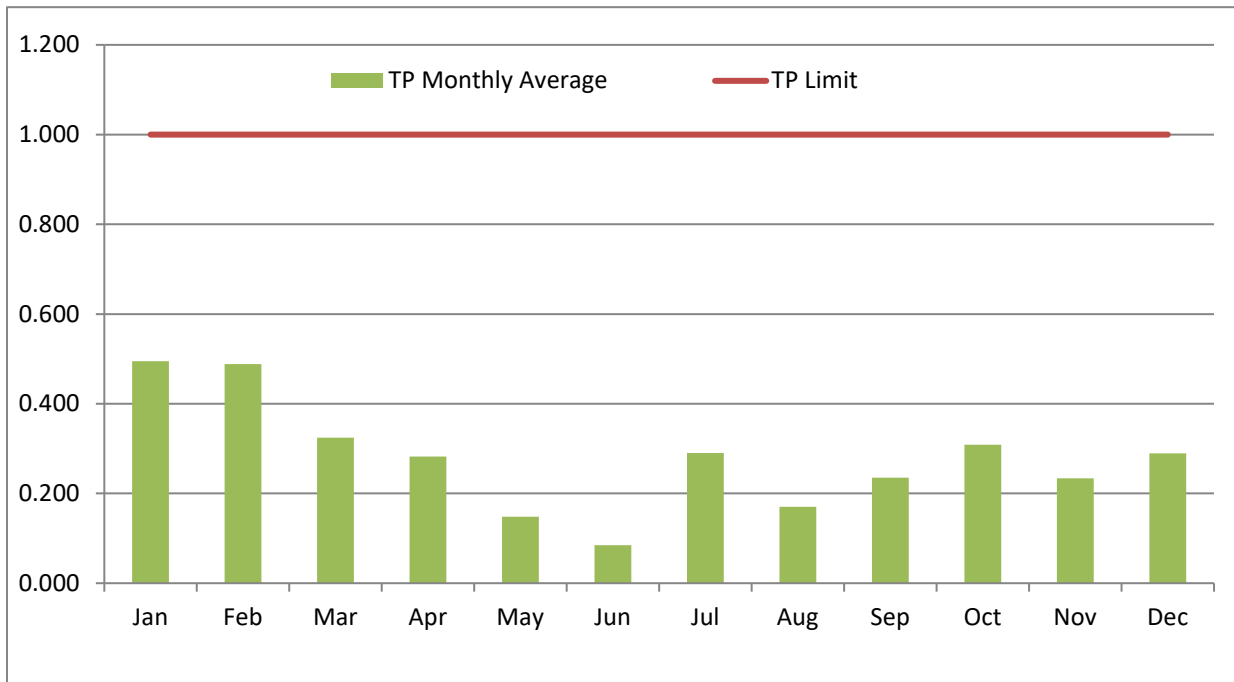


Figure 3: The 2024 monthly averages for Total Phosphorous (TP) plotted with the reportable limit specified in the ECA

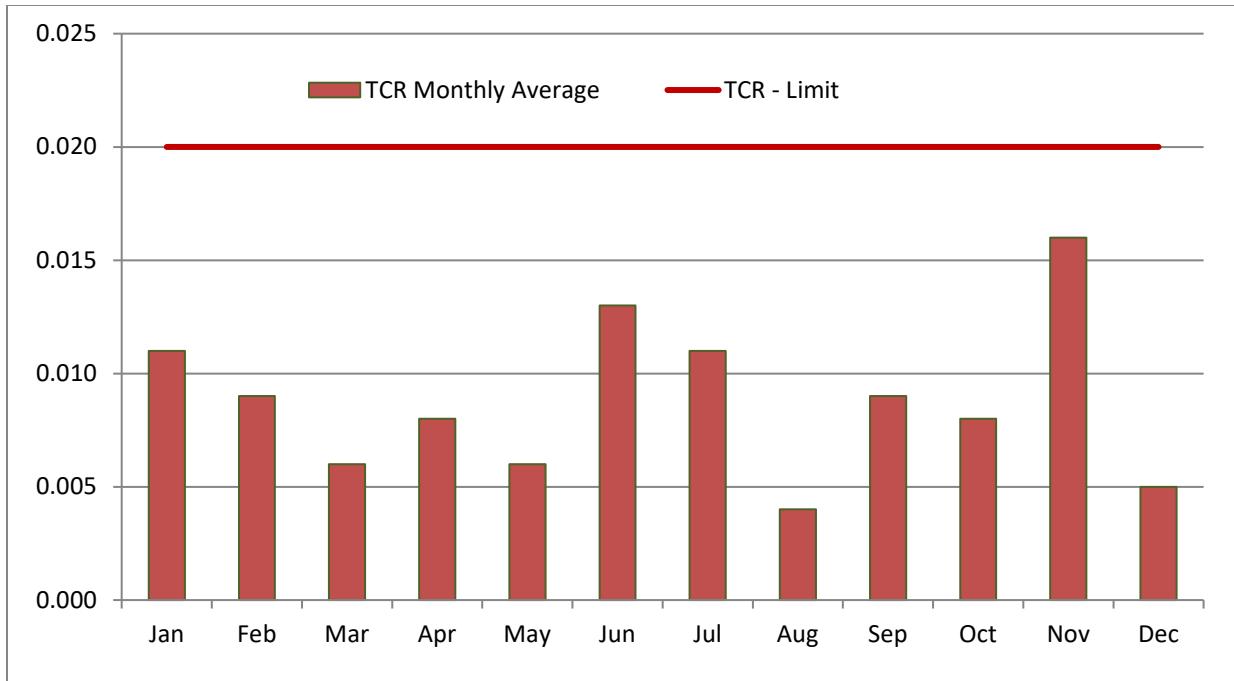


Figure 4: The 2024 monthly averages for Total Chlorine Residual (TCR) plotted with the reportable limit specified in the ECA

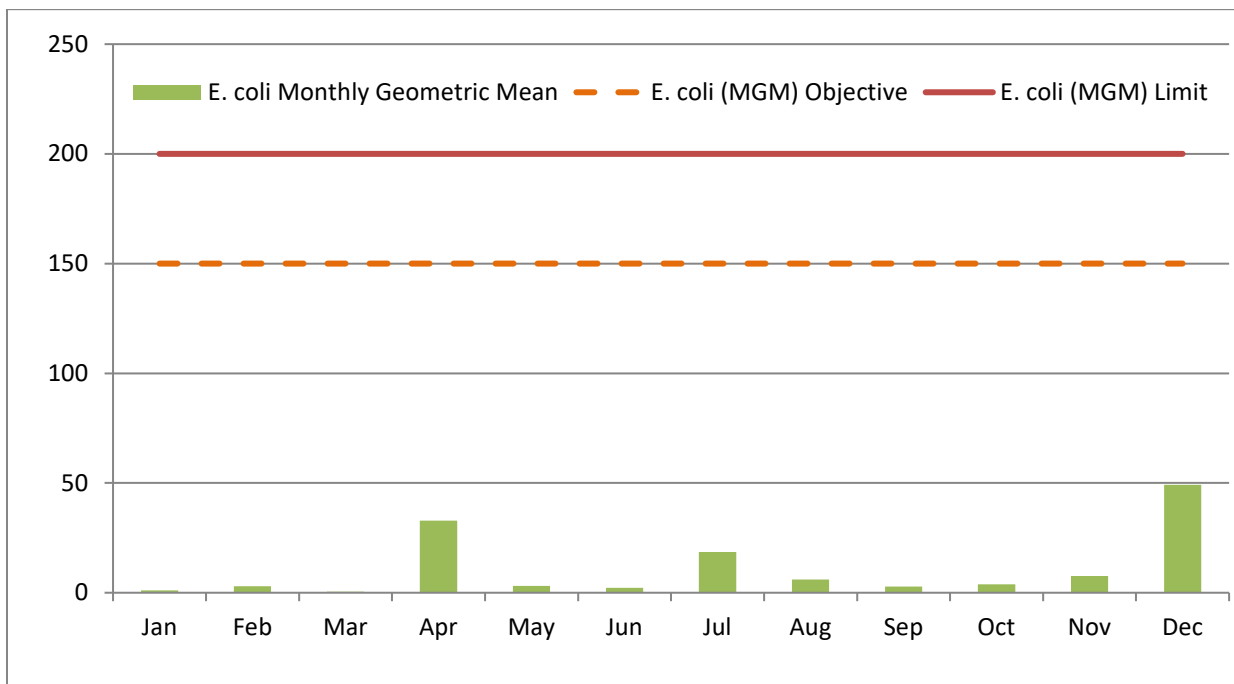


Figure 5: The 2024 monthly geometric mean for *E. coli* plotted with the objective and reportable limits specified in the ECA

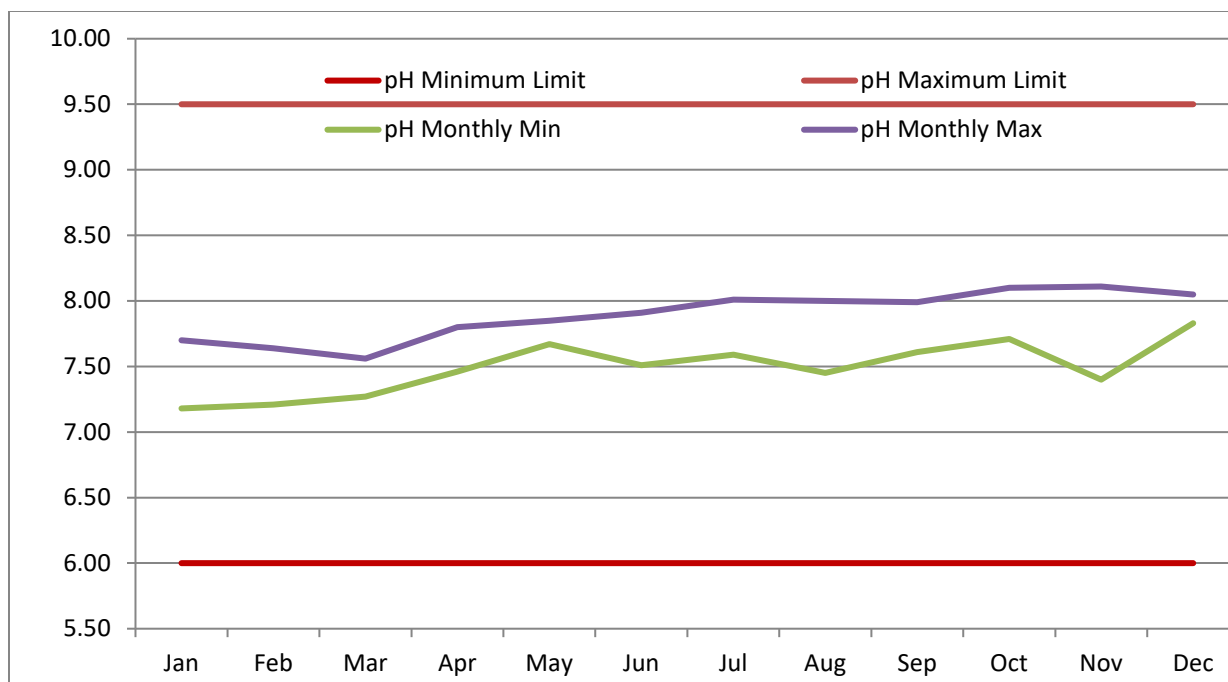


Figure 6: The 2024 monthly minimum and maximum pH values plotted with the reportable limits specified in the ECA

Parameter (mg/L)	Range of Result
Alkalinity	74 – 264
Temperature (°C)	5.7 – 20.4
Total Ammonia Nitrogen	<0.01 – 5.64
Un-ionized Ammonia	0.00 – 0.06
Dissolved Ortho-Phosphorous	<0.005 – 0.03

Refer to Appendix B: Monthly Process Data – Influent for a summary of monthly results

1.2.7 Effluent – Monthly Average Loadings

Parameter (kg/day)	Highest Monthly Average	Compliance Limit
cBOD ₅	7.4	82 (monthly average)
Total Suspended Solids	36.5	82 (monthly average)
Total Phosphorous	0.56	3.3 (monthly average)

Refer to Appendix C: Loading Calculations for a monthly summary

1.3 Sewage Treatment Program Success and Adequacy

The Performance Summary details results and efficiency of the wastewater treatment plant performance demonstrating pollutant removal rates from raw sewage concentrations through to final effluent for cBOD₅, suspended solids and total phosphorus.

1.3.1 Performance Summary

Parameter	Influent	Effluent	% Removal
Total Phosphorous	1.42	0.28	80.3
cBOD ₅	44.8	2.03	95.5
Total Suspended Solids	95.9	19.9	79.2

Note: calculations are based on annual average values

2.0 INTERPRETATION OF MONITORING AND ANALYTICAL DATA

The Smooth Rock Falls Sewage Treatment Plant operated well within its required capacity and produced quality treated wastewater that met most of the limits specified in Condition 7 of the facility's Environmental Compliance Approval (ECA), with the exceptions of total suspended solids during January and February.

Table 1.2.1 *Influent Flow Data* summarizes the flow data for 2024. The average and maximum daily flows are presented for each month. Compliance is achieved when the average for the year does not exceed 3,274 m³/day. The average daily flow for 2024 was 1,188 m³/day, which represents 36.3% of the design capacity. The maximum annual daily flow occurred in July with a peak flow of 3,859 m³/day, which 64.3% of the peak capacity.

The effluent quality is based on the carbonaceous biochemical oxygen demand, total suspended solids, total phosphorus and pH levels. The highest monthly averages or ranges for all parameters are listed in table 1.2.6 *Effluent*.

The carbonaceous biochemical oxygen demand (cBOD₅) is a five-day test which represents the oxygen demand from organic compounds and the oxidation of inorganic compounds such as ferrous iron and sulphide. High cBOD₅ in effluent indicates that a large quantity of oxygen was needed to break down the organic and inorganic matter in the effluent indicating inadequate treatment. In 2024, the average cBOD₅ complied with the allowable limit of 25 mg/L and 82 kg/day. The objective of 15 mg/L was not exceeded.

Total suspended solids (TSS) in effluent are composed of settleable solids and nonsettleable solids depending on the size, shape and weight of the solid particles. Settable solids are large sized particles that tend to settle more rapidly in a given period of time. In 2024, the average TSS exceeded the monthly limit of 25 mg/L in January (41.0 mg/L), and February (34.5 mg/L).

However, the loading limit was below of 82 kg/day at all times. The objective of 15 mg/L was exceeded on the following dates:

- January 9 (64.0 mg/L); January 16 (41.3 mg/L); January 23 (46.0 mg/L) ;
January 30 (40.7 mg/L)
- February 6 (24.7 mg/L); February 13 (32.7 mg/L); February 20 (45.3 mg/L);
February 27 (35.3 mg/L)
- March 5 (40.0 mg/L); March 12 (28.7 mg/L)
- April 2 (18.0 mg/L); April 9 (21.3 mg/L); April 16 (23.3 mg/L)
- May 7 (21.0 mg/L)
- July 9 (21.0 mg/L); July 16 (26.5 mg/L); July 23 (19.5 mg/L) ; July 30 (15.3 mg/L)
- September 3 (18.7 mg/L); September 10 (21.5 mg/L); September 24 (21.0 mg/L)
- October 1 (18.0 mg/L); October 8 (16.0 mg/L); October 15 (23.5 mg/L);
October 29 (20.0 mg/L)
- November 5 (15.7 mg/L); November 19 (20.0 mg/L); November 26 (26.3 mg/L)
- December 10 (26.3 mg/L); December 17 (37.0 mg/L); and December 23 (20.0 mg/L)

Total phosphorus (TP) refers to the amount of phosphorus in a sample. Excess TP stimulates algae and weed growth that may cause fluctuations in dissolved oxygen in the receiving waters. In 2024, the average TP complied with the monthly limit of 1 mg/L and 3.3 kg/day. The objective of 1 mg/L was not exceeded.

The pH of a solution is an indication of its acidic and basic properties and measured on a scale ranging between 0 and 14. Very high or very low pH levels can be corrosive to pipes, screening equipment and pumps, can damage biological processes and form undesirable toxic gases or heavy metals. In 2024 the effluent pH level stayed within the compliance range of 6.0 - 9.5 inclusive.

Total residual chlorine (TRC) is the remaining chlorine content after the chlorine has been in contact with the sewage for given amount of time, if the disinfectant used is chlorine. Wastewater disinfection is widely used to reduce pathogenic bacteria in effluents. In 2024 the monthly average effluent TRC concentrations complied with the monthly limit of 0.02 mg/L. The objective of ≤ 0.02 mg/L was exceeded the following months:

- January (max 0.04 mg/L)
- February (max 0.03 mg/L)
- April (max 0.04 mg/L)
- May (max 0.03 mg/L)
- June (max 0.04 mg/L)
- July (max 0.04 mg/L)
- September (max 0.03 mg/L)
- October (max 0.04 mg/L)
- November (max 0.04 mg/L)

Escherichia coli (*E. coli*) are common bacteria that live in human and animal intestines, where it is present in large numbers. There are hundreds of *E. coli* strains and most are relatively harmless, however a notorious exception is *E. coli* strain O157:H7, an emerging pathogen that produces a powerful toxin and can cause severe illness. *E. coli* is used as the most widely adopted indicator of faecal pollution in water and wastewater. The monthly geometric mean density of *E. coli* did not exceeded the limit of 200 colony forming units per one-hundred milliliters (cfu/100 mL). The objective of 150 cfu/100 mL was exceeded the following months:

- February (max 580 cfu/100 mL)
- April (max 200 cfu/100 mL)
- July (max 302 cfu/100 mL)
- August (max 1,360 cfu/100 mL)
- December (max 1,100 cfu/100 mL)

3.0 OPERATING PROBLEMS AND CORRECTIVE ACTIONS

In order to minimize operating problems, preventative maintenance is performed to help in identifying issues before they occur.

The following non-compliances were reported:

January 2024	<p>January monthly average for total suspended solids was 41.0 mg/L, which exceeds the monthly average of <25 mg/L specified in ECA 8745-68TKCW (SAC Ref #: SAC Ref #: 1-4N48CV)</p> <p>Individual sample results: January 2 = 13 mg/L, January 9 = 64 mg/L, January 16 = 41.3 mg/L, January 23 = 46 mg/L, and January 30 = 40.7 mg/L</p> <p>The cold weather has made the water more dense, which affects how the sludge settles in the clarifiers. At the start of January, the sludge return line froze, and there was a breakdown of a contractors Vac Truck that prevented the sludge hauling when it was required. The return line was thawed out and the Vac Truck was rescheduled immediately following the breakdown. Wasting has already been increased as a countermeasure.</p>
February 2024	<p>February monthly average for total suspended solids was 34.5 mg/L, which exceeds the monthly average of <25 mg/L specified in ECA 8745-68TKCW (SAC Ref #: 1-4T5J1D)</p> <p>Individual sample results: February 6 = 24.7 mg/L, February 13 = 32.7 mg/L, February 20 = 45.3 mg/L, and February 27 = 35.3 mg/L</p> <p>The cold weather had made the water more dense, which affects how the sludge settles in the clarifiers. During February, the sludge transfer line from Clarifier #2 had frozen, and additionally, the valves that control decanting had also froze shut. Operators attempted to thaw out the frozen components; however, they continued to have freezing issues. The transfer line and valving was thawed out so the decanting and sludge hauling can resume normally.</p>

Q1 2024 January to March (Q1) quarterly average for total suspended solids was 32.9 mg/L, which exceeds the quarterly average of <25 mg/L as specified in the Federal Fisheries Act – Wastewater Systems Effluent Regulations (WSER)
(SAC Ref #: 1-5KD1C4)
Monthly Data for TSS: January = 41.0 mg/L, February = 34.5 mg/L, and
March = 23.1 mg/L
The cold weather had made the water more dense which affects how the sludge settles in the clarifiers. In January, the sludge return line froze, and there was a breakdown of the contractors Vac Truck that prevented sludge hauling when it was required. In February, the sludge transfer line and valving that controls decanting also froze. The freezing continued into March. Operations continuously worked to thaw out different components of the plant. The decanting and sludge hauling had resumed. Colder weather had ended and the results improved.

4.0 MAINTENANCE PROCEDURES PERFORMED ON THE WORKS

Routine maintenance is done as per OCWA’s Work Management System program.

Capital expenses include:

- Extra sludge hauling
- Chemical analyzer parts
- Chemical pump parts
- Lifting device inspection
- Annual generator maintenance
- Confined space equipment certification
- Blower #1 repairs
- Blower belts and maintenance parts

5.0 EFFLUENT QUALITY ASSURANCE AND CONTROL MEASURES UNDERTAKEN

Each operator has current and appropriate level of certification for the operation of the facility and possesses a high level of process knowledge and regulatory competence.

Samples are collected as required and analyzed by Testmark Laboratories located in Kirkland Lake or Timmins, Ontario. Licensed operators conduct in-house tests for monitoring purposes using procedures as per Standard Methods of Water and Wastewater.

Any bypass or upset events that occur at the pumping stations or plant site are tested, monitored and reported to the Spills Action Center (SAC).

6.0 CALIBRATION AND MAINTENANCE OF ALL MONITORING EQUIPMENT

Plant maintenance, including non-scheduled maintenance, is monitored using the Hansen Preventative Maintenance software program. Monitoring equipment is calibrated based on the manufactures recommendations. All routine and preventative maintenance measures were conducted as scheduled in 2024.

All in-house monitoring equipment is calibrated based on the manufactures recommendations. Refer to Table 6.1 for a summary of calibrations conducted in 2024.

6.1 Calibration Summary

Instrument	Date	% Accuracy
Effluent Flow Meter – Clarifier #1	September 24, 2024	99.1
Effluent Flow Meter – Clarifier #2	September 24, 2024	87.6
Portable chlorine analyzer	June 19, 2024	100
Portable pH Meter (Oakton)	June 19, 2024	99.5
Portable chlorine analyzer	December 16, 2024	100
Portable pH Meter (Oakton)	December 16, 2024	99.8

7.0 EFFORTS MADE TO MEET EFFLUENT OBJECTIVES

The mechanical elements of the sewage treatment plant are in good repair, and each member of the operational staff possesses a high level of process knowledge and regulatory competence.

Sodium hypochlorite addition is not paced to flow, which makes it difficult to account for intermittent high flows from rain and melting snow. Operators monitor the V-notch chlorine residuals on a daily basis and constantly adjust the sodium hypochlorite and sodium bisulfite dosages to prevent occurrences of high E. coli results and ensure low total chlorine residuals.

Total suspended solids (TSS) exceedances are usually a result due to the cold weather making the water more dense, which affects how the sludge settles in the clarifiers. Additionally, in the winter freezing of the components of the plant continue to occur. Once identified operations makes every effort to thaw the frozen components as fast as possible. Operations have increased the volume of wasting, and they continue to work towards improving the decanting and thickening process for the sludge.

8.0 VOLUME OF SLUDGE GENERATED

The total volume of sludge hauled during the 2024 reporting year was 1,044 m³. Almost all sludge was hauled by Environmental 360 Solutions and taken to their lagoon in Moonbeam. On one occasion GFL Environmental from Timmins was used to haul sludge due to the availability of E360.

8.1 Sludge Disposal Sites Used in 2024

Location	Mass Hauled (kg)	Volume Hauled (m³)
Digester #2	39,737	1,044

Refer to Appendix D for sludge sampling data.

9.0 COMPLAINTS

There were no complaints received during the reporting period.

10.0 BYPASS, OVERFLOW, AND UPSET EVENTS

Each bypass event was verbally reported to the Ministry of the Environment’s Spills Action Center and a written report containing the above information was submitted to SAC and Environment Canada. In addition, a courtesy call was made to the Porcupine Health Unit. A record of the time, location, duration, quantity and reason for each occurrence was prepared.

Bypass and spill events during the 2024 reporting period include the following:

Sample Date	Details (Date, Duration, Actions Taken, etc.)
APRIL 12	Raw Sewage Bunker Overflow Type of incident: Overflow SAC Ref No.: 1-5OZL30 Start Date & Time: April 12, 2024 @ 14:35 Termination: April 13, 2024 @ 11:50 Duration: 21 hours and 15 minutes Approximate volume: 1,382 m ³ Details: Heavy rainfall Receiver: Mattagami River Actions: Reported, sampled and monitor Reporting: Verbal reports to SAC and MOH, written report to EC, MOH, Owner and SAC.
JUNE 13	Raw Sewage Bunker Overflow Type of incident: Overflow SAC Ref No.: 1-7MUVF7 Start Date & Time: June 13, 2024 @ 15:00 Termination: June 13, 2024 @ 16:00 Duration: 1 hour Approximate volume: 42 m ³ Details: Heavy rainfall Receiver: Mattagami River Actions: Reported, sampled and monitor Reporting: Verbal reports to SAC and MOH, written report to EC, MOH, Owner and SAC.

Sample Date	Details (Date, Duration, Actions Taken, etc.)
JULY 14	Raw Sewage Bunker Overflow Type of incident: Overflow SAC Ref No.: 1-8XE2G9 Start Date & Time: July 14, 2024 @ 22:57 Termination: July 15, 2024 @ 13:00 Duration: 14 hours and 3 minutes Approximate volume: 2,113 m ³ Details: Heavy rainfall Receiver: Mattagami River Actions: Reported, sampled and monitor Reporting: Verbal reports to SAC and MOH, written report to EC, MOH, Owner and SAC.
AUGUST 30	Raw Sewage Bunker Overflow Type of incident: Overflow SAC Ref No.: 1-AEMIVF Start Date & Time: August 30, 2024 @ 13:55 Termination: August 30, 2024 @ 14:05 Duration: ~ 10 minutes Approximate volume: 7 m ³ Details: Heavy rainfall Receiver: Mattagami River Actions: Reported, sampled and monitor Reporting: Verbal reports to SAC and MOH, written report to EC, MOH, Owner and SAC.

Please note, the Ministry of Environment, Conservation and Parks (MECP) has changed the definitions of bypasses and overflows. The ECA's definition of "bypass" is now what the MECP considers an "overflow". The listed events above are considered bypasses by the ECA's definition; however, they were reported to the MECP as an overflow due to this change.

A total of 4 overflows were observed during the 2024 reporting period, with an approximate total volume of 3,544 m³.

When possible, overflowed sewage was sampled and analyzed for cBOD₅, TSS, pH and *E. coli*. Refer to Appendix E for a record of overflow events and sample results.

11.0 CLI-ECA ADDITIONAL DATA

The Municipal Sewage Collection System within the Town of Smooth Rock Falls consists of works for the collection and transmission of sewage, consisting of separate gravity sewers with discharge into the Smooth Rock Falls Sewage Treatment Plant. There are no pumping stations or collection system overflow locations. The sewage treatment plant consistently operates within its rated capacity; however, there are occasional plant overflows during heavy rain or rapid snow melting events. This may indicate possible inflow or infiltration into the collection system and may warrant a future I&I study. There is currently no immediate needs for modifications.

APPENDIX A: MONTHLY PROCESS DATA – INFLUENT

	01/2024	02/2024	03/2024	04/2024	05/2024	06/2024	07/2024	08/2024	09/2024	10/2024	11/2024	12/2024
Alkalinity (as CaCO ₃) - mg/L												
Count Lab	1	1	1	1	1	1	1	1	1	1	1	1
Mean Lab	204	83	162	178	278	205	214	202	182	200	299	277
Carbonaceous Biochemical Oxygen Demand: CBOD ₅ - mg/L												
Count Lab	1	1	1	1	1	1	1	1	1	1	1	1
Mean Lab	55	46	37	45	25	47	30	54	42	49	48	60
Total Kjeldahl Nitrogen: TKN - mg/L												
Count Lab	1	1	1	1	1	1	1	1	1	1	1	1
Mean Lab	16.3	9.2	7.5	11.9	6.9	12.8	8.9	22.5	12.8	17.0	18.2	19.2
Total Phosphorus: TP - mg/L												
Count Lab	1	1	1	1	1	1	1	1	1	1	1	1
Mean Lab	2.09	0.871	0.83	1.27	0.648	2.07	1.18	2.48	1.47	1.45	1.48	2.45
Total Suspended Solids: TSS - mg/L												
Count Lab	1	1	1	1	1	1	1	1	1	1	1	1
Mean Lab	150	120	52	80	56	79	32	140	80	115	77	170

APPENDIX B: MONTHLY PROCESS DATA – EFFLUENT

	01/2024	02/2024	03/2024	04/2024	05/2024	06/2024	07/2024	08/2024	09/2024	10/2024	11/2024	12/2024
Alkalinity (as CaCO ₃) - mg/L												
Count Lab	5	4	4	5	4	4	5	4	4	5	4	5
Max Lab	182	95	131	246	264	208	205	133	158	185	237	195
Mean Lab	113.4	85.5	108.5	216.4	215.0	185.25	162.6	114.0	136.75	150.8	225.25	172.0
Min Lab	78	74	86	144	186	161	136	95	124	137	213	147

	01/2024	02/2024	03/2024	04/2024	05/2024	06/2024	07/2024	08/2024	09/2024	10/2024	11/2024	12/2024
Carbonaceous Biochemical Oxygen Demand: CBOD5 - mg/L												
Count Lab	5	4	4	5	4	4	5	4	4	5	4	5
Max Lab	2.2	3.5	3.4	8.0	1.6	0.9	2.7	1.7	1.7	1.8	1.8	8.1
Mean Lab	1.92	2.73	2.90	3.74	1.33	0.75	2.04	1.18	1.33	1.36	< 1.45	3.64
Min Lab	1.4	1.8	1.9	2.1	1.2	0.5	1.7	0.5	1.0	0.6	< 0.5	1.5
Dissolved Reactive Phosphorus (Orthophosphate) - mg/L												
Count Lab	5	4	4	5	4	4	5	4	4	5	4	5
Max Lab	0.02	0.01	0.01	0.02	0.01	0.01	0.03	0.01	0.01	0.03	0.01	0.01
Mean Lab	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Min Lab	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
E. coli: EC - cfu/100mL												
GMD	1	3	1	33	3	2	19	6	3	4	8	49
Count Lab	5	4	4	5	4	4	5	4	4	5	4	5
Max Lab	6	580	0	200	95	14	302	1360	118	84	14	1100
Mean Lab	1.6	145	0	85.2	< 24.5	4.5	72.8	340.75	< 30	19	8.75	409.4
Min Lab	0	0	0	0	0	0	2	0	0	0	3	3
Temperature - °C												
Count IH	5	4	4	5	4	4	5	4	4	5	4	5
Max IH	13.1	12.0	10.9	10.8	16.3	17.0	20.4	20.1	19.7	17.2	7.6	8.4
Mean IH	8.54	9.05	9.48	8.92	12.63	12.68	16.72	14.60	13.58	11.18	7.08	7.64
Min IH	5.7	6.3	8.2	6.8	8.9	9.7	9.1	7.8	7.5	7.0	6.8	7.0
Total Ammonia Nitrogen: NH3 + NH4+ as N - mg/L												
Count Lab	5	4	4	5	4	4	5	4	4	5	4	5
Max Lab	5.64	3.96	5.39	2.45	2.93	2.32	0.23	0.14	0.03	0.03	0.30	2.63
Mean Lab	1.43	2.35	3.44	1.54	1.91	0.67	< 0.09	0.10	< 0.02	< 0.02	0.16	1.04
Min Lab	0.12	0.94	2.09	0.70	0.85	0.09	< 0.01	0.07	< 0.01	< 0.01	0.04	0.06
Total Phosphorus: TP - mg/L												
Count Lab	5	4	4	5	4	4	5	4	4	5	4	5

	01/2024	02/2024	03/2024	04/2024	05/2024	06/2024	07/2024	08/2024	09/2024	10/2024	11/2024	12/2024
Max Lab	0.71	0.60	0.51	0.32	0.27	0.12	0.44	0.22	0.29	0.38	0.31	0.40
Mean Lab	0.495	0.489	0.325	0.283	0.149	0.085	0.290	0.171	0.236	0.308	0.234	0.290
Min Lab	0.17	0.37	0.18	0.23	0.06	0.06	0.22	0.06	0.18	0.25	0.13	0.17
Total Suspended Solids: TSS - mg/L												
Count Lab	5	4	4	5	4	4	5	4	4	5	4	5
Max Lab	64.0	45.3	40.0	23.3	21.0	6.0	26.5	14.0	21.5	23.5	26.3	37.0
Mean Lab	41.0	34.5	23.1	18.4	11.1	4.0	19.5	10.1	18.7	18.1	18.25	22.0
Min Lab	13.0	24.7	11.7	14.7	4.7	1.3	15.0	4.3	13.7	13.0	11.0	12.9
Un-ionized Ammonia: NH3 - mg/L												
Count IH	5	4	4	5	4	4	5	4	4	5	4	5
Max IH	0.04	0.02	0.03	0.01	0.06	0.02	0.00	0.00	0.00	0.00	0.01	0.04
Mean IH	0.01	0.01	0.02	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Min IH	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
pH												
Count IH	5	4	4	5	4	4	5	4	4	5	4	5
Max IH	7.70	7.45	7.56	7.80	7.85	7.91	8.01	8.00	7.99	8.10	8.11	8.05
Mean IH	7.34	7.30	7.43	7.67	7.77	7.76	7.74	7.73	7.80	7.92	7.92	7.96
Min IH	7.18	7.14	7.27	7.46	7.67	7.51	7.59	7.45	7.61	7.71	7.40	7.83
Cl Residual: Total - mg/L												
Count IH	31	29	31	30	31	30	31	31	30	31	30	31
Max IH	0.04	0.03	0.02	0.04	0.03	0.04	0.04	0.01	0.03	0.04	0.04	0.02
Mean IH	0.011	0.009	0.006	0.008	0.006	0.013	0.011	0.004	0.009	0.008	0.016	0.005
Min IH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX C: LOADING CALCULATIONS
SMOOTH ROCK FALLS WASTEWATER TREATMENT FACILITY

	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec	Average
Flow: Average (m ³ /d)	857	892	1111	1982	1351	1208	1211	860	1016	1152	1451	1176	1189
Total Phosphorus Average (mg/L)	0.49	0.49	0.32	0.28	0.15	0.08	0.29	0.17	0.24	0.31	0.23	0.29	0.28
Total Phosphorous Loadings (kg/d)	0.42	0.44	0.36	0.56	0.20	0.10	0.35	0.15	0.24	0.36	0.34	0.34	0.33
TSS Average (mg/L)	41.0	34.5	23.1	18.4	11.1	4.0	19.5	10.1	18.7	18.1	18.3	22.0	19.9
TSS Loadings (kg/d)	35.1	30.8	25.7	36.5	15.0	4.8	23.6	8.7	19.0	20.9	26.5	25.9	23.7
CBOD5 Average (mg/L)	1.9	2.7	2.9	3.7	1.3	0.8	2.0	1.2	1.3	1.4	1.5	3.6	2.0
cBOD5 Loadings (kg/d)	1.6	2.4	3.2	7.4	1.8	0.9	2.5	1.0	1.3	1.6	2.1	4.3	2.4

APPENDIX D: SLUDGE DATA

	01/2024	02/2024	03/2024	04/2024	05/2024	06/2024	07/2024	08/2024	09/2024	10/2024	11/2024	12/2024
Arsenic: As - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	0.002		0.004	0.003	0.003		0.003	0.002	0.001	0.002	0.002	0.003
Mean Lab	0.002		0.004	0.003	0.003		0.003	0.001	0.001	0.002	0.002	0.003
Min Lab	0.001		0.004	0.003	0.002		0.003	0.001	0.001	0.002	0.002	0.003
Cadmium: Cd - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	0.004		< 0.000	0.004	0.002		< 0.000	0.003	0.005	0.007	0.003	0.005
Mean Lab	0.004		< 0.000	0.004	< 0.001		< 0.000	0.002	0.004	0.006	0.003	0.005
Min Lab	0.004		< 0.000	0.004	< 0.000		< 0.000	0.002	0.002	0.004	0.003	0.005
Chromium: Cr - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	0.007		0.012	0.007	0.004		0.007	0.009	0.017	0.006	0.008	0.015

	01/2024	02/2024	03/2024	04/2024	05/2024	06/2024	07/2024	08/2024	09/2024	10/2024	11/2024	12/2024
Mean Lab	0.007		0.012	0.007	0.004		0.006	0.008	0.012	0.005	0.008	0.015
Min Lab	0.006		0.012	0.007	0.004		0.005	0.007	0.006	0.004	0.008	0.015
Cobalt: Co - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	0.009		0.016	0.016	0.016		0.016	0.015	0.018	0.021	0.014	0.017
Mean Lab	0.008		0.016	0.016	0.010		0.013	0.014	0.017	0.019	0.014	0.017
Min Lab	0.007		0.016	0.016	0.005		0.010	0.013	0.016	0.017	0.014	0.017
Copper: Cu - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	0.160		0.009	0.170	0.023		0.009	0.033	0.093	0.280	0.051	0.220
Mean Lab	0.150		0.009	0.170	0.014		0.007	0.022	0.060	0.186	0.051	0.220
Min Lab	0.140		0.009	0.170	0.005		0.004	0.014	0.027	0.091	0.051	0.220
Lead: Pb - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	0.0011		0.0012	0.0011	0.0003		0.0010	0.0008	0.0010	0.0024	0.0007	0.0023
Mean Lab	0.0011		0.0012	0.0011	< 0.0002		0.0007	0.0005	0.0008	0.0016	0.0007	0.0023
Min Lab	0.0010		0.0012	0.0011	< 0.0001		0.0004	0.0003	0.0005	0.0007	0.0007	0.0023
Mercury: Hg - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	< 0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001
Mean Lab	< 0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Min Lab	< 0.0001		< 0.0001	< 0.0001	< 0.0001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum: Mo - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	< 0.001		< 0.001	0.001	< 0.001		0.002	< 0.001	0.001	< 0.001	< 0.001	< 0.001
Mean Lab	< 0.001		< 0.001	0.001	< 0.001		< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Min Lab	< 0.001		< 0.001	0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

	01/2024	02/2024	03/2024	04/2024	05/2024	06/2024	07/2024	08/2024	09/2024	10/2024	11/2024	12/2024
Nickel: Ni - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	0.074		0.097	0.089	0.065		0.104	0.084	0.102	0.160	0.080	0.117
Mean Lab	0.066		0.097	0.089	0.035		0.084	0.069	0.090	0.133	0.080	0.117
Min Lab	0.058		0.097	0.089	0.005		0.063	0.059	0.078	0.105	0.080	0.117
Nitrate as N: NO3-N - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	27.60		< 0.05	< 0.05	< 0.05		6.42	1.90	1.50	15.70	16.10	47.60
Mean Lab	14.24		< 0.05	< 0.05	< 0.05		3.38	1.26	0.98	8.10	16.10	47.60
Min Lab	0.87		< 0.05	< 0.05	< 0.05		0.34	0.24	0.45	0.50	16.10	47.60
Nitrite as N: NO2-N - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	0.15		< 0.05	< 0.05	< 0.05		0.16	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Mean Lab	< 0.10		< 0.05	< 0.05	< 0.05		< 0.11	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Min Lab	< 0.05		< 0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Selenium: Se - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	< 0.0002		< 0.0002	< 0.0002	0.0024		0.0017	0.0018	0.0017	0.0010	0.0007	< 0.0002
Mean Lab	< 0.0002		< 0.0002	< 0.0002	0.0020		< 0.0010	< 0.0012	0.0014	< 0.0006	0.0007	< 0.0002
Min Lab	< 0.0002		< 0.0002	< 0.0002	0.0016		< 0.0002	< 0.0002	0.0010	< 0.0002	0.0007	< 0.0002
Total Ammonia Nitrogen: NH3 + NH4+ as N - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	2.97		10.10	4.33	35.90		65.50	21.00	3.96	3.10	0.65	0.60
Mean Lab	1.91		10.10	4.33	33.45		58.80	14.54	2.85	2.46	0.65	0.60
Min Lab	0.85		10.10	4.33	31.00		52.10	3.12	1.74	1.82	0.65	0.60
Total Phosphorus: TP - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	421		533	770	708		879	787	712	678	900	485

	01/2024	02/2024	03/2024	04/2024	05/2024	06/2024	07/2024	08/2024	09/2024	10/2024	11/2024	12/2024
Mean Lab	417		533	770	570		803	627	667	556	900	485
Min Lab	413		533	770	431		727	331	621	434	900	485
Total Solids: TS - mg/L												
Count IH	2	0	1	1	2	0	2	3	2	2	1	1
Max IH	2019		30998	35958	47690		44698	38314	37794	38418	42634	35234
Mean IH	1359		30998	35958	45940		42679	15699	29456	36156	42634	35234
Min IH	698		30998	35958	44190		40660	4354	21118	33894	42634	35234
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	32300		31900	35000	45300		46200	45400	43800	40500	41800	36800
Mean Lab	31600		31900	35000	42050		44750	42233	41550	38400	41800	36800
Min Lab	30900		31900	35000	38800		43300	38800	39300	36300	41800	36800
Zinc: Zn - mg/L												
Count Lab	2	0	1	1	2	0	2	3	2	2	1	1
Max Lab	3.54		1.25	3.55	1.97		0.65	3.07	3.91	6.42	3.44	5.22
Mean Lab	3.53		1.25	3.55	1.01		0.55	2.46	3.42	5.08	3.44	5.22
Min Lab	3.51		1.25	3.55	0.06		0.44	1.96	2.92	3.74	3.44	5.22

APPENDIX E: PLANT BYPASS DATA

	01/2024	02/2024	03/2024	04/2024	05/2024	06/2024	07/2024	08/2024	09/2024	10/2024	11/2024	12/2024
Volume - m ³												
Count IH	0	0	0	2	0	1	2	1	0	0	0	0
Total IH				1382		42	2113	7				
Carbonaceous Biochemical Oxygen Demand: CBOD5 - mg/L												
Count Lab	0	0	0	1	0	1	1	1	0	0	0	0
Max Lab				25.0		22.0	72.2	315.0				

	01/2024	02/2024	03/2024	04/2024	05/2024	06/2024	07/2024	08/2024	09/2024	10/2024	11/2024	12/2024
Mean Lab				25.0		22.0	72.2	315.0				
Min Lab				25.0		22.0	72.2	315.0				
E. coli: EC - cfu/100mL												
Count Lab	0	0	0	1	0	1	1	1	0	0	0	0
Max Lab				150000		310000	1290000	1900000				
Mean Lab				45000		310000	1290000	1900000				
Min Lab				45000		310000	1290000	1900000				
Total Phosphorus: TP - mg/L												
Count Lab	0	0	0	1	0	1	1	1	0	0	0	0
Max Lab				0.963		1.11	2.01	5.96				
Mean Lab				0.963		1.11	2.01	5.96				
Min Lab				0.963		1.11	2.01	5.96				
Total Suspended Solids: TSS - mg/L												
Count Lab	0	0	0	1	0	1	1	1	0	0	0	0
Max Lab				119		117	41	900				
Mean Lab				119		117	41	900				
Min Lab				119		117	41	900				
pH												
Count IH	0	0	0	1	0	1	1	1	0	0	0	0
Max IH				7.50		7.38	7.25	7.12				
Mean IH				7.50		7.38	7.25	7.12				
Min IH				7.50		7.38	7.25	7.12				

APPENDIX F: CLI-ECA REPORTING SECTIONS

Collection ECA # 217-W601 Schedule E	Section in Report
4.6.3 If applicable, includes a summary of all required monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized System or system operations.	1.2.3 HISTORICAL AVERAGE INFLUENT FLOW 1.2.4 HISTORICAL MAXIMUM INFLUENT FLOW 10.0 BYPASS, OVERFLOW, AND UPSET EVENTS 11.0 CLI-ECA ADDITIONAL DATA
4.6.4 Includes a summary of any operating problems encountered and corrective actions taken.	3.0 OPERATING PROBLEMS AND CORRECTIVE ACTIONS 10.0 BYPASS, OVERFLOW, AND UPSET EVENTS
4.6.5 Includes a summary of all calibration, maintenance, and repairs carried out on any major structure, Equipment, apparatus, mechanism, or thing forming part of the Municipal Sewage Collection System.	4.0 MAINTENANCE PROCEDURES PERFORMED ON THE WORKS 6.0 CALIBRATION AND MAINTENANCE OF ALL MONITORING EQUIPMENT
4.6.6 Includes a summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints.	9.0 COMPLAINTS
4.6.7 Includes a summary of all Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat.	4.0 MAINTENANCE PROCEDURES PERFORMED ON THE WORKS
4.6.8 Includes a summary of all Collection System Overflow(s) and Spill(s) of Sewage, including: a) Dates; b) Volumes and durations; c) If applicable, loadings for total suspended solids, BOD, total phosphorus, and total Kjeldahl nitrogen, and sampling results for E.coli; d) Disinfection, if any; and e) Any adverse impact(s) and any corrective actions, if applicable.	10.0 BYPASS, OVERFLOW, AND UPSET EVENTS
4.6.9 Includes a summary of efforts made to reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses, including the following items, as applicable: a) A description of projects undertaken and completed in the Authorized System that result in overall overflow reduction or elimination including expenditures and proposed projects to eliminate overflows with estimated budget forecast for the year following that for which the report is submitted. b) Details of the establishment and maintenance of a PPCP, including a summary of project progresses compared to the PPCP's timelines. c) An assessment of the effectiveness of each action taken. d) An assessment of the ability to meet Procedure F-5-1 or Procedure F-5-5 objectives (as applicable) and if able to meet the objectives, an overview of next steps and estimated timelines to meet the objectives. e) Public reporting approach including proactive efforts.	11.0 CLI-ECA ADDITIONAL DATA