

MOUNT BRYDGES WASTEWATER TREATMENT FACILITY

2022 ANNUAL REPORT

as per ECA # 7788-8BJRL8 Section 9.(5)
Works # 110001441



1. Monitoring and Compliance Summary (Certificate of Approval 10. 6. (a))

The Mt Brydges WWTF has a design rated capacity of 825 m³/day, with a peak flow rate of 1,650 m³/day. During 2022, the annual average daily flow was 315 m³/day, which is 38% of the design rated capacity for the treatment facility. The maximum daily flow was recorded at 485 m³/day, which is 29% of the peak flow rate.

The annual effluent laboratory results for carbonaceous biochemical oxygen demand, total suspended solids, total phosphorus, total nitrogen, DO and pH and their comparison to the compliance criteria is found in Appendix A.

There were also no bypasses experienced at the treatment plant in 2022.

Compliance with the effluent limits is determined by comparing the monthly average concentration of the samples with the corresponding Non-Freeze/Freeze effluent limits. The Non-Freezing period definition has recently been changed that it is for the period of April 1st to November 30th. The Freezing period is now defined as December 1st to March 31st.

Table 1
Mt Brydges WWTF – Effluent Quality Summary

Description	Range of Monthly Averages mg/L	Effluent Limits mg/L	# Months Limits Achieved/ # Months
CBOD5 (non-freezing period April-Nov)	2.80 – 10.75	10	6/8
CBOD5 (freeze period Dec - Mar)	4.75 – 9.2	15	4/4
Suspended Solids (non-freezing period April-Nov)	6.20 – 17.50	10	4/8
Suspended Solids (freeze period Dec - Mar)	9.75 – 15.25	15	3/4
Total Phosphorus (non-freezing period April-Nov)	0.15 – 0.40	0.5	8/8
Total Phosphorus (freeze period Dec - Mar)	0.20 – 0.63	1	4/4

Total Ammonia Nitrogen (non-freezing period April-Nov)	1.83 – 15.3	3	3/8
Total Ammonia Nitrogen (freeze period Dec-March)	5.98 – 13.88	5	0/4
E.Coli (counts/100mL)	0.06 – 74.5	200 (geometric mean)	8/8
DO (min)	3.3	>5	11/12
pH	6.40 – 7.40	6.0 - 9.5	12/12

The following summarizes the exceedances for the year.

January

- Total Ammonia Nitrogen

February

- Total Ammonia Nitrogen

March

- Total Ammonia Nitrogen

April

- Total Carbonaceous Biochemical Oxygen Demand
- Total Suspended Solids
- Total Ammonia Nitrogen

May

- Total Carbonaceous Biochemical Oxygen Demand
- Total Suspended Solids
- Total Ammonia Nitrogen
- DO

June

- Total Suspended Solids
- Total Ammonia Nitrogen

July

- Total Suspended Solids

August

- Total Ammonia Nitrogen

November

- Total Ammonia Nitrogen

December

- Total Suspended Solids
- Total Ammonia Nitrogen

2. Graphical Report of TSS Probe Monitoring (Certificate of Approval 10. 6. (b))

This report can be found in Appendix B

3. Operation Problems and Corrective Actions (Certificate of Approval 10. 6. (c))

During the year, there were exceedances of the Environmental Compliance Approval final effluent limits. These exceedances were reported to the MECP.

For 2022, Council had approved a budget of \$5 million dollars to upgrade the Mt Brydges WWTF. For the 2023 proposed capital budget there is an additional \$1,000,000 proposed to be added to the capital budget. In May 2022, the Municipality submitted an ECA application for an interim solution of adding equalization to the Mt Brydges WWTF. The Municipality is currently waiting to receive an updated ECA to implement these changes.

The Municipality has also submitted an ECA (January 2023) for the conversion to an extended aeration process, which includes the addition of a headworks structure and the necessary equipment at the wastewater facility. It is anticipated that the construction for these upgrades will occur in early 2024.

The Mt Brydges WWTF did experience mechanical failures during the year as well. This included failures of the gearbox, bearings and the RBC media supports. These have all been repaired. To help reduce the torque on the RBC's, soft starts on the drive motors have been installed.

4. Maintenance Summary (Certificate of Approval 10. 6. (d))

The operators performed the routine maintenance throughout the year. In addition to the routine maintenance, which includes greasing and oiling, a detailed list is included in Appendix C.

5. Quality Assurance/Quality Control (Certificate of Approval 10. 6. (e))

On a monthly basis, the operator collected and submitted influent samples to SGS Canada Inc for total suspended solids, biochemical oxygen demand, TKN and total phosphorus analysis.

On a weekly basis, the operator collected effluent samples for analysis by SGS Canada Inc for total suspended solids, carbonaceous biochemical oxygen demand, total phosphorus, total ammonia nitrogen and E. Coli analysis. The operator performed analysis for pH, DO and temperature in-house.

In-house laboratory testing also included monitoring of reactive phosphorus, total suspended solids, and ammonia in the effluent.

6. Calibration/Maintenance Summary (Certificate of Approval 10. 6. (f))

Flow meter calibrations were carried out by SCG in February 2022. The laboratory, SGS Canada Inc was used for all the required analytical chemical and biological testing of influent and effluent from the wastewater treatment facility.

7. Effluent Objectives (Certificate of Approval 10. 6. (g))

Strathroy-Caradoc attempted to meet the objectives in the Environmental Compliance Approval (ECA) through regular testing and monitoring of the treatment system.

In the table below, monitoring data and analytical results are compared to the Effluent Objectives as listed in the ECA.

Table 2
Mt Brydges WWTF – Effluent Objective Summary

Description	Range of Monthly Averages mg/L	Effluent Objectives mg/L	# Months Objectives Achieved/# Months
CBOD5 (non-freezing period April-Nov)	2.80 – 10.75	5	4/8
CBOD5 (freeze period Dec - Mar)	4.75 – 9.2	10	4/4
Suspended Solids (non-freezing period April-Nov)	6.20 – 17.50	5	0/8
Suspended Solids (freeze period Dec - Mar)	9.75 – 15.25	10	1/4
Total Phosphorus (non-freezing period April-Nov)	0.15 – 0.40	0.3	5/8
Total Phosphorus (freeze period Dec - Mar)	0.20 – 0.63	0.8	4/4
Total Ammonia Nitrogen (non-freezing period April-Nov)	1.83 – 15.3	1	0/8
Total Ammonia Nitrogen (freeze period Dec - Mar)	5.98 – 13.88	3	0/4
E.Coli (counts/100mL)	0.06 – 74.5	150 (geometric mean)	8/8
pH	6.40 – 7.40	6.5 - 8.5	9/12

7. Sludge Management (Certificate of Approval 10. 6. (h))

Waste activated sludge is discharged into the tank located beneath the RBC. Sludge was pumped out and hauled to the City of London. Each load is 12 m³. The table below summarizes the sludge removed from the plant:

Table 3
Mt Brydges WWTF – Sludge Removal

Month	Sludge Volume (Loads)	Month	Sludge Volume (Loads)
January	11 Loads	July	8 Loads
February	37 Loads	August	9 Loads
March	36 Loads	September	8 Loads
April	14 Loads	October	7 Loads
May	11 Loads	November	10 Loads
June	8 Loads	December	9 Loads

The sludge production and sludge handling methods for 2023 is estimated to be the same as in 2022.

8. Complaints Summary (Certificate of Approval 10. 6. (i))

The complaint received related to the Mt Brydges WWTP in 2022 related to the ability to have upgrades at the existing site and the noise from the vacuum trucks that have been used on site.

9. Summary of By-pass, Spill or Abnormal Events (Certificate of Approval 10. 6. (j))

On July 20 2022, a contractor was cleaning the biomass off the Mt Brydges WWTF RBC media that had been removed when doing repairs. There was a small amount of biomass in the area beside the RBC. This area was cleaned up and the biomass was disposed of in the garbage.

On November 24, 2022 the Operator at the Mt Brydges WWTF noticed there was wastewater coming out the door and side the RBC that had been repaired the previous day. Further investigation found that the valve from the RBC to the clarifier had not been opened when the train was put back in service after a repair, resulting in the RBC to overflow.

10. Additional Information (Certificate of Approval 10. 6. (k))

No additional requests for information were made by the District Manager.

APPENDIX A

Year: 2022

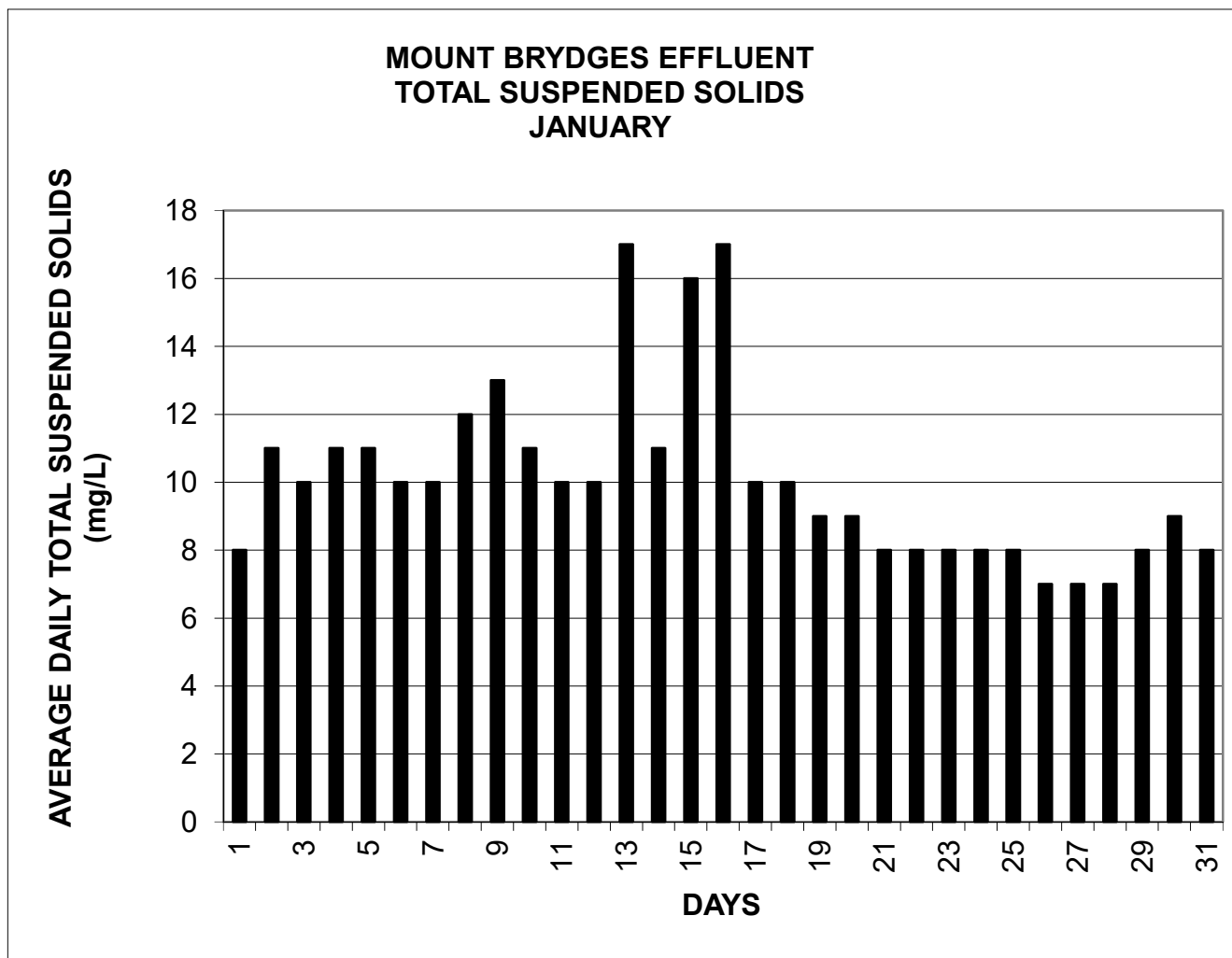
Year: 2022

APPENDIX B

**Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022**

DATE	Suspended Solids (mg/L)
Jan. 1	8.0
2	11.0
3	10.0
4	11.0
5	11.0
6	10.0
7	10.0
8	12.0
9	13.0
10	11.0
11	10.0
12	10.0
13	17.0
14	11.0
15	16.0
16	17.0
17	10.0
18	10.0
19	9.0
20	9.0
21	8.0
22	8.0
23	8.0
24	8.0
25	8.0
26	7.0
27	7.0
28	7.0
29	8.0
30	9.0
31	8.0

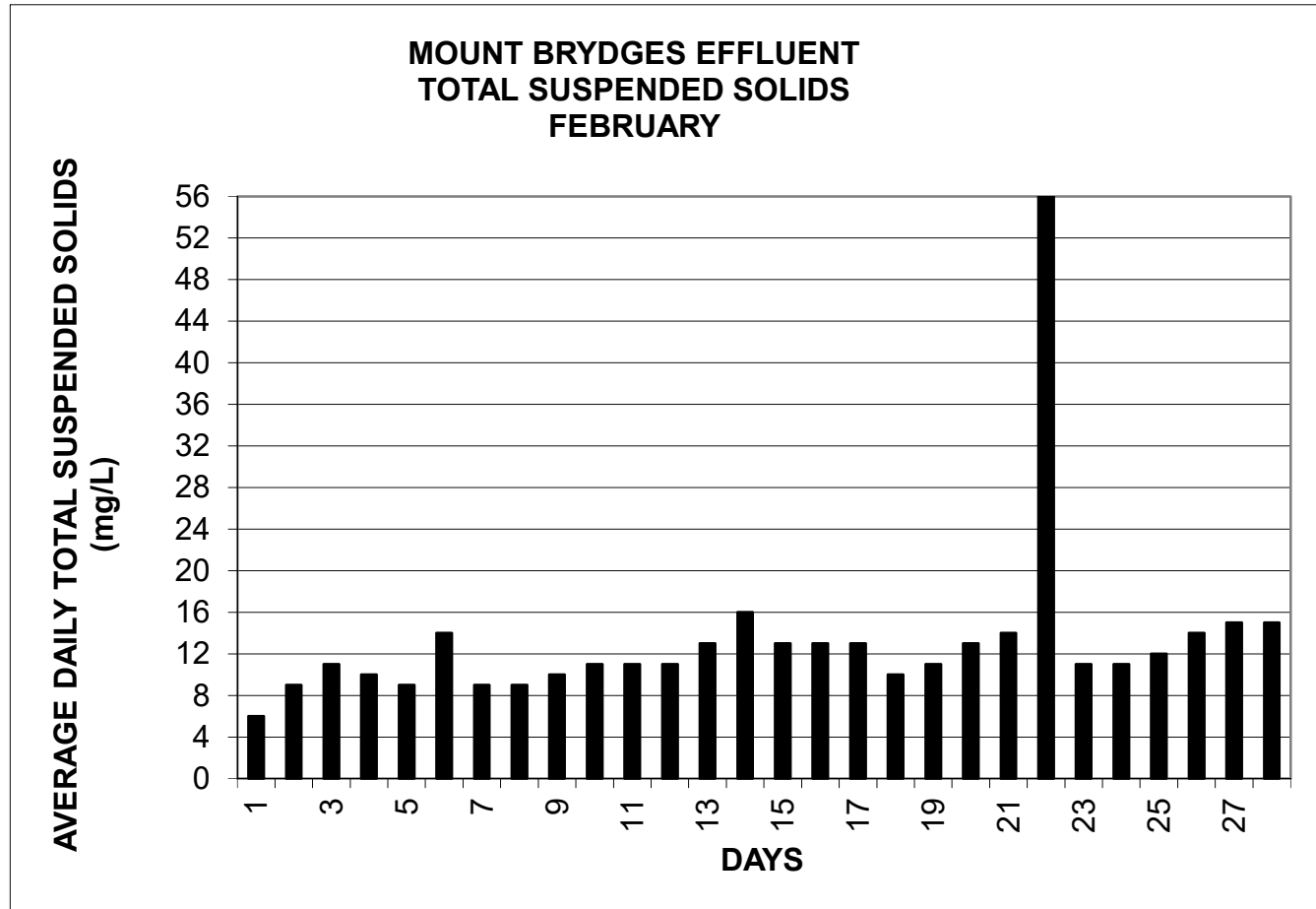
AVERAGE: 10.1 mg/L



Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022

DATE	Suspended Solids (mg/L)
Feb. 1	6.0
2	9.0
3	11.0
4	10.0
5	9.0
6	14.0
7	9.0
8	9.0
9	10.0
10	11.0
11	11.0
12	11.0
13	13.0
14	16.0
15	13.0
16	13.0
17	13.0
18	10.0
19	11.0
20	13.0
21	14.0
22	56.0
23	11.0
24	11.0
25	12.0
26	14.0
27	15.0
28	15.0

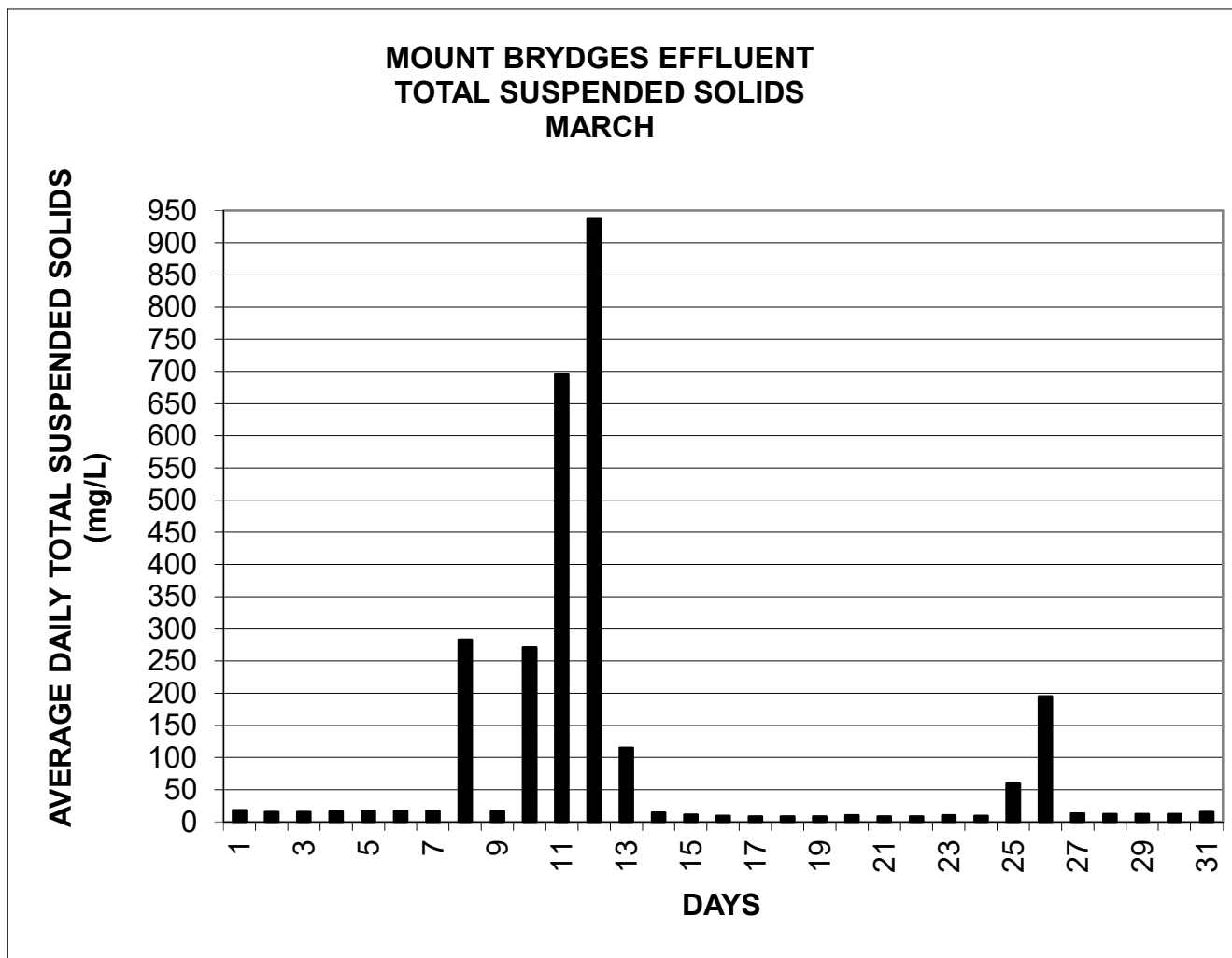
AVERAGE: 13.2 mg/L



Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022

DATE	Suspended Solids (mg/L)
Mar. 1	18.0
2	15.0
3	15.0
4	16.0
5	17.0
6	17.0
7	17.0
8	283.0
9	16.0
10	271.0
11	695.0
12	938.0
13	115.0
14	14.0
15	11.0
16	9.0
17	8.0
18	8.0
19	8.0
20	10.0
21	8.0
22	8.0
23	10.0
24	9.0
25	59.0
26	195.0
27	13.0
28	12.0
29	12.0
30	12.0
31	15.0

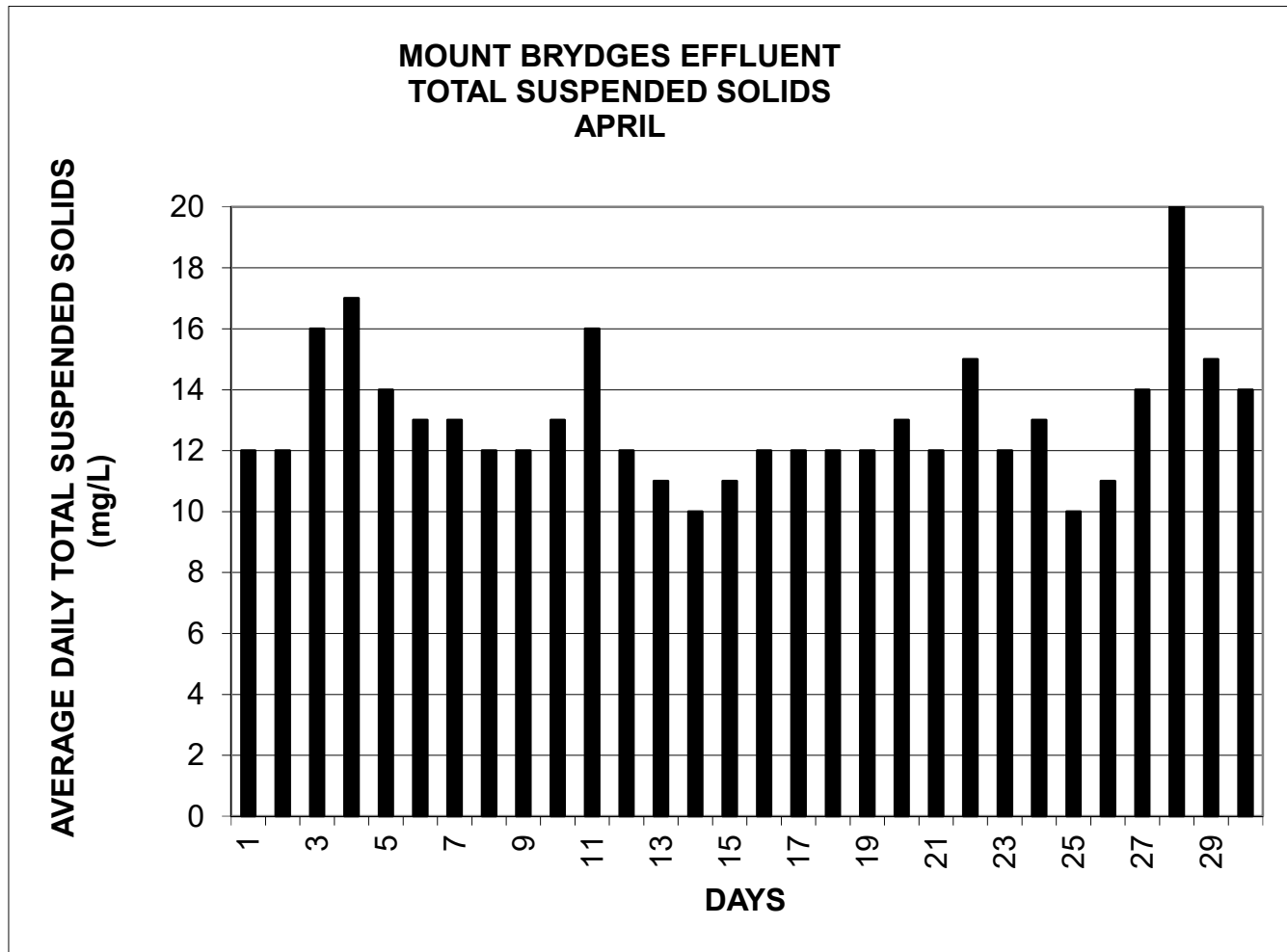
AVERAGE: 92.1 mg/L



Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022

DATE	Suspended Solids (mg/L)
Apr. 1	12.0
2	12.0
3	16.0
4	17.0
5	14.0
6	13.0
7	13.0
8	12.0
9	12.0
10	13.0
11	16.0
12	12.0
13	11.0
14	10.0
15	11.0
16	12.0
17	12.0
18	12.0
19	12.0
20	13.0
21	12.0
22	15.0
23	12.0
24	13.0
25	10.0
26	11.0
27	14.0
28	20.0
29	15.0
30	14.0

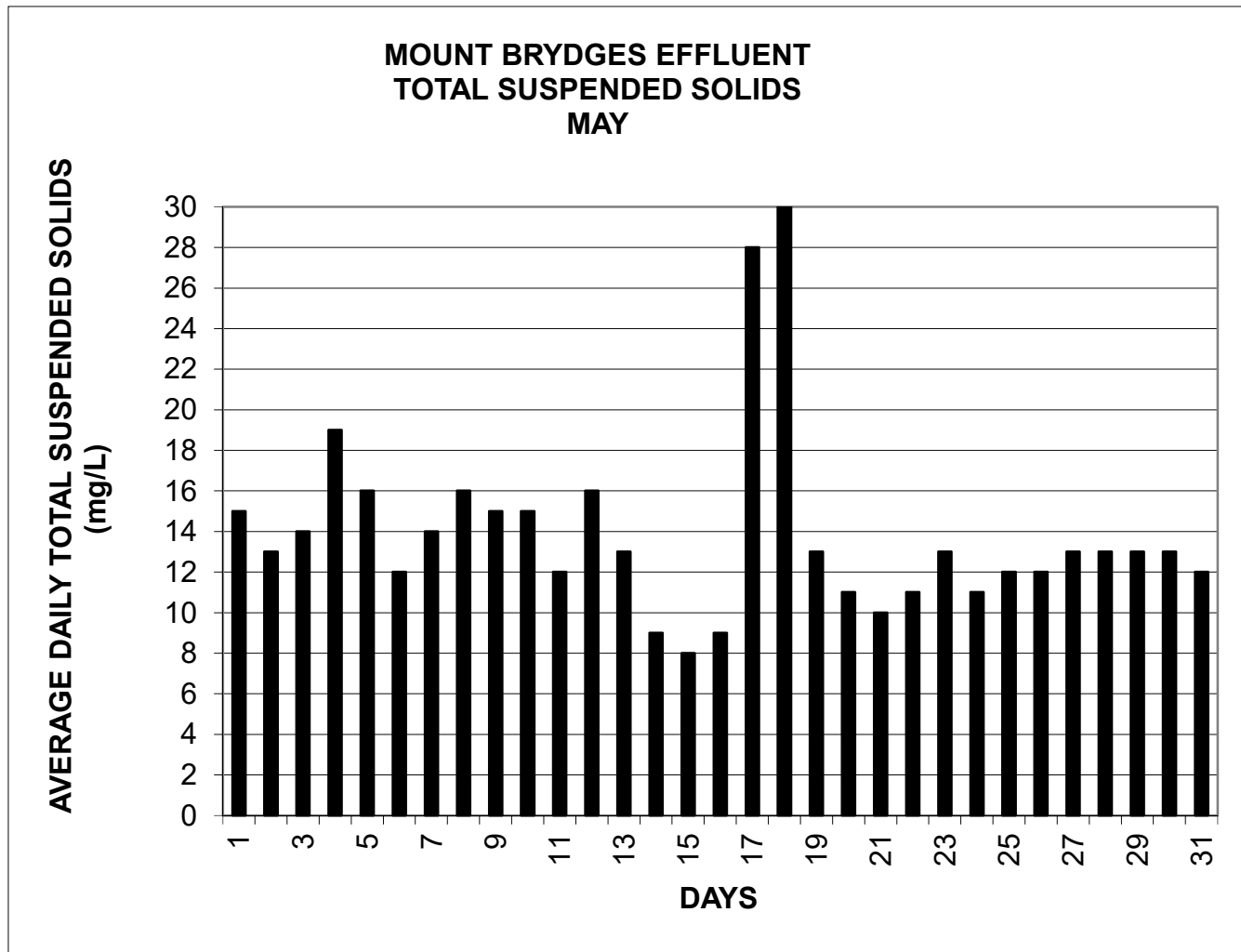
AVERAGE: 13.0 mg/L



**Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022**

DATE	Suspended Solids (mg/L)
May.1	15.0
2	13.0
3	14.0
4	19.0
5	16.0
6	12.0
7	14.0
8	16.0
9	15.0
10	15.0
11	12.0
12	16.0
13	13.0
14	9.0
15	8.0
16	9.0
17	28.0
18	30.0
19	13.0
20	11.0
21	10.0
22	11.0
23	13.0
24	11.0
25	12.0
26	12.0
27	13.0
28	13.0
29	13.0
30	13.0
31	12.0

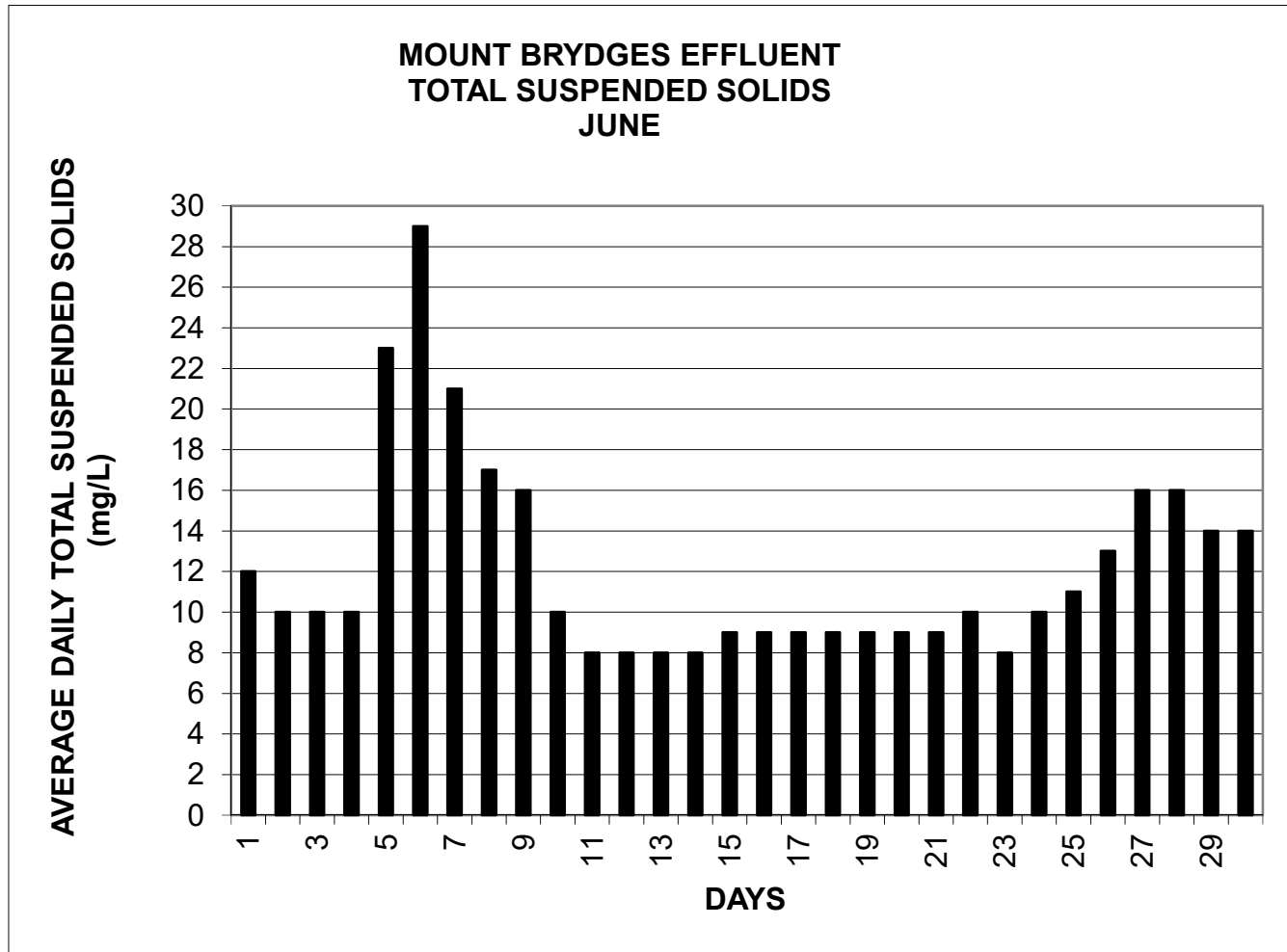
AVERAGE: 13.9 mg/L



Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022

DATE	Suspended Solids (mg/L)
Jun. 1	12.0
2	10.0
3	10.0
4	10.0
5	23.0
6	29.0
7	21.0
8	17.0
9	16.0
10	10.0
11	8.0
12	8.0
13	8.0
14	8.0
15	9.0
16	9.0
17	9.0
18	9.0
19	9.0
20	9.0
21	9.0
22	10.0
23	8.0
24	10.0
25	11.0
26	13.0
27	16.0
28	16.0
29	14.0
30	14.0

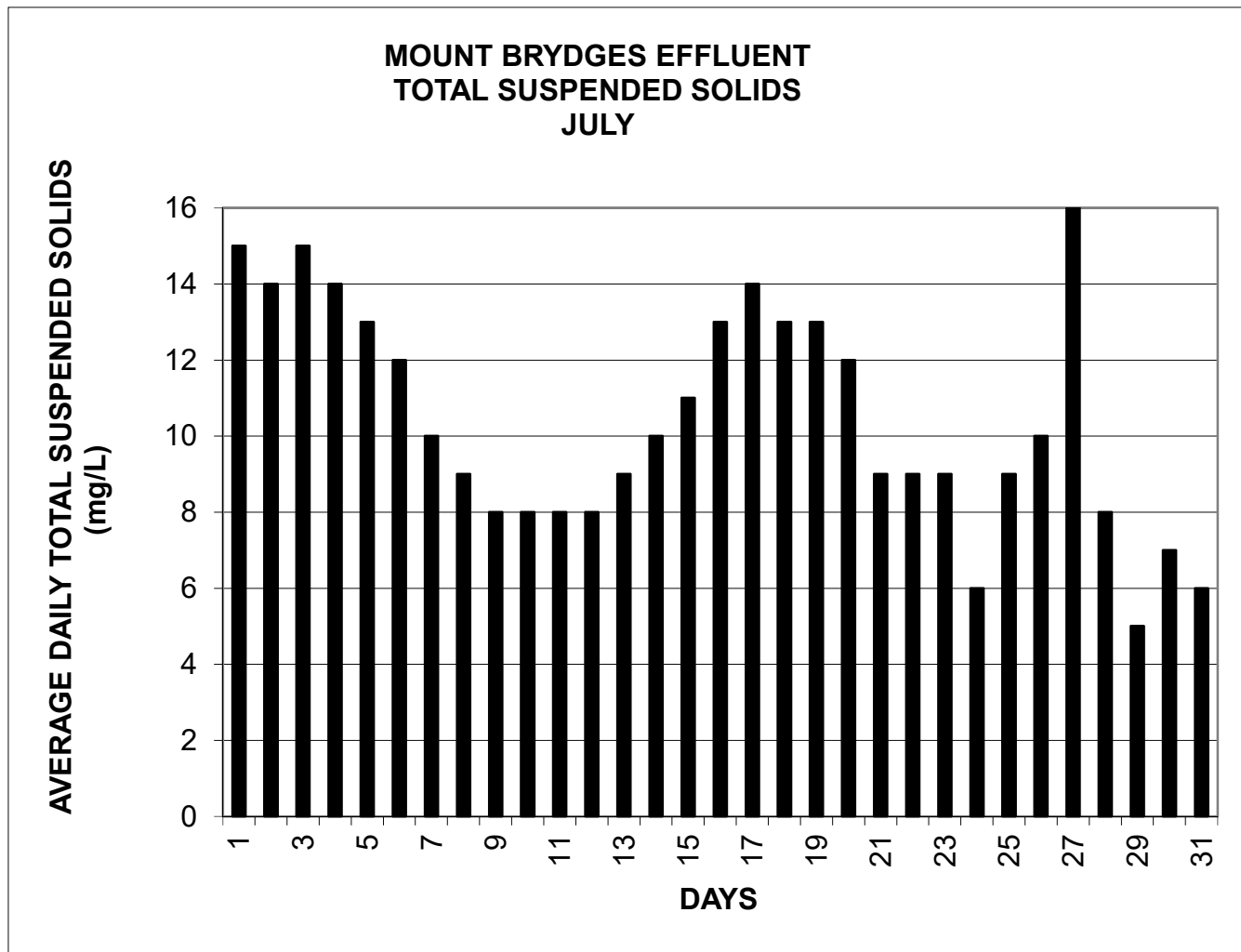
AVERAGE: 12.2 mg/L



**Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022**

DATE	Suspended Solids (mg/L)
Jul.1	15.0
2	14.0
3	15.0
4	14.0
5	13.0
6	12.0
7	10.0
8	9.0
9	8.0
10	8.0
11	8.0
12	8.0
13	9.0
14	10.0
15	11.0
16	13.0
17	14.0
18	13.0
19	13.0
20	12.0
21	9.0
22	9.0
23	9.0
24	6.0
25	9.0
26	10.0
27	16.0
28	8.0
29	5.0
30	7.0
31	6.0

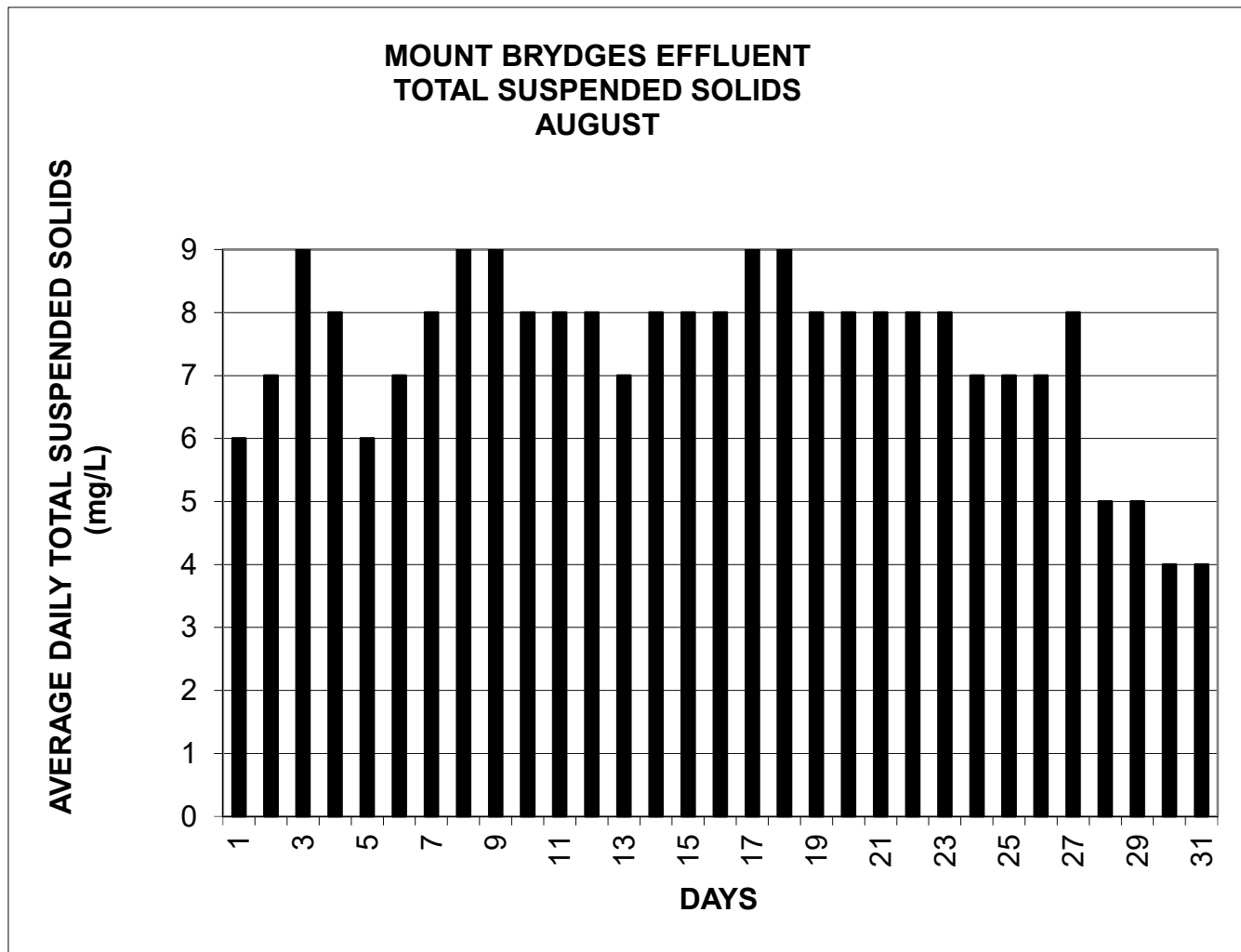
AVERAGE: 10.4 mg/L



**Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022**

DATE	Suspended Solids (mg/L)
Aug. 1	6.0
2	7.0
3	9.0
4	8.0
5	6.0
6	7.0
7	8.0
8	9.0
9	9.0
10	8.0
11	8.0
12	8.0
13	7.0
14	8.0
15	8.0
16	8.0
17	9.0
18	9.0
19	8.0
20	8.0
21	8.0
22	8.0
23	8.0
24	7.0
25	7.0
26	7.0
27	8.0
28	5.0
29	5.0
30	4.0
31	4.0

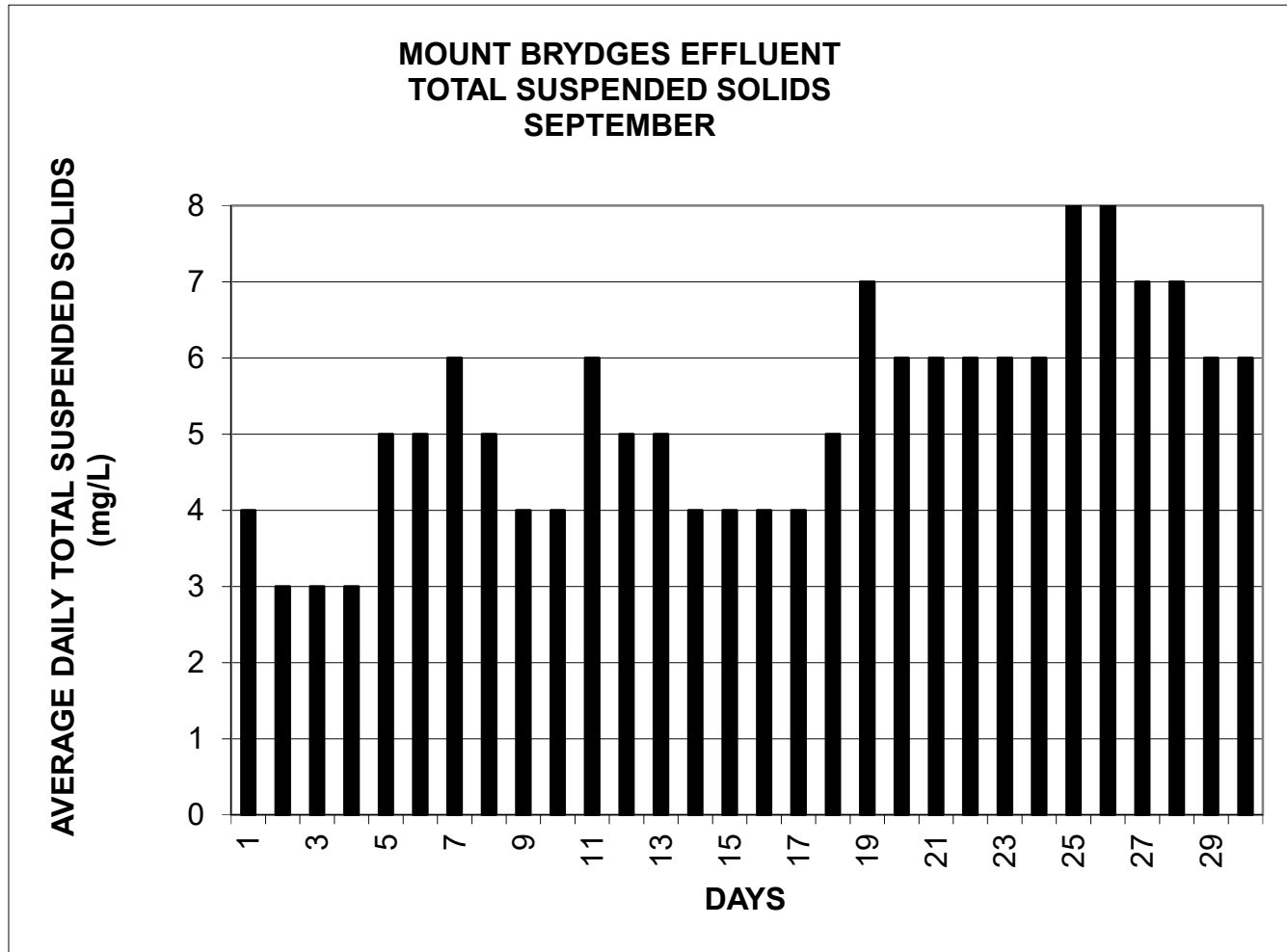
AVERAGE: 7.4 mg/L



Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022

DATE	Suspended Solids (mg/L)
Sep. 1	4.0
2	3.0
3	3.0
4	3.0
5	5.0
6	5.0
7	6.0
8	5.0
9	4.0
10	4.0
11	6.0
12	5.0
13	5.0
14	4.0
15	4.0
16	4.0
17	4.0
18	5.0
19	7.0
20	6.0
21	6.0
22	6.0
23	6.0
24	6.0
25	8.0
26	8.0
27	7.0
28	7.0
29	6.0
30	6.0

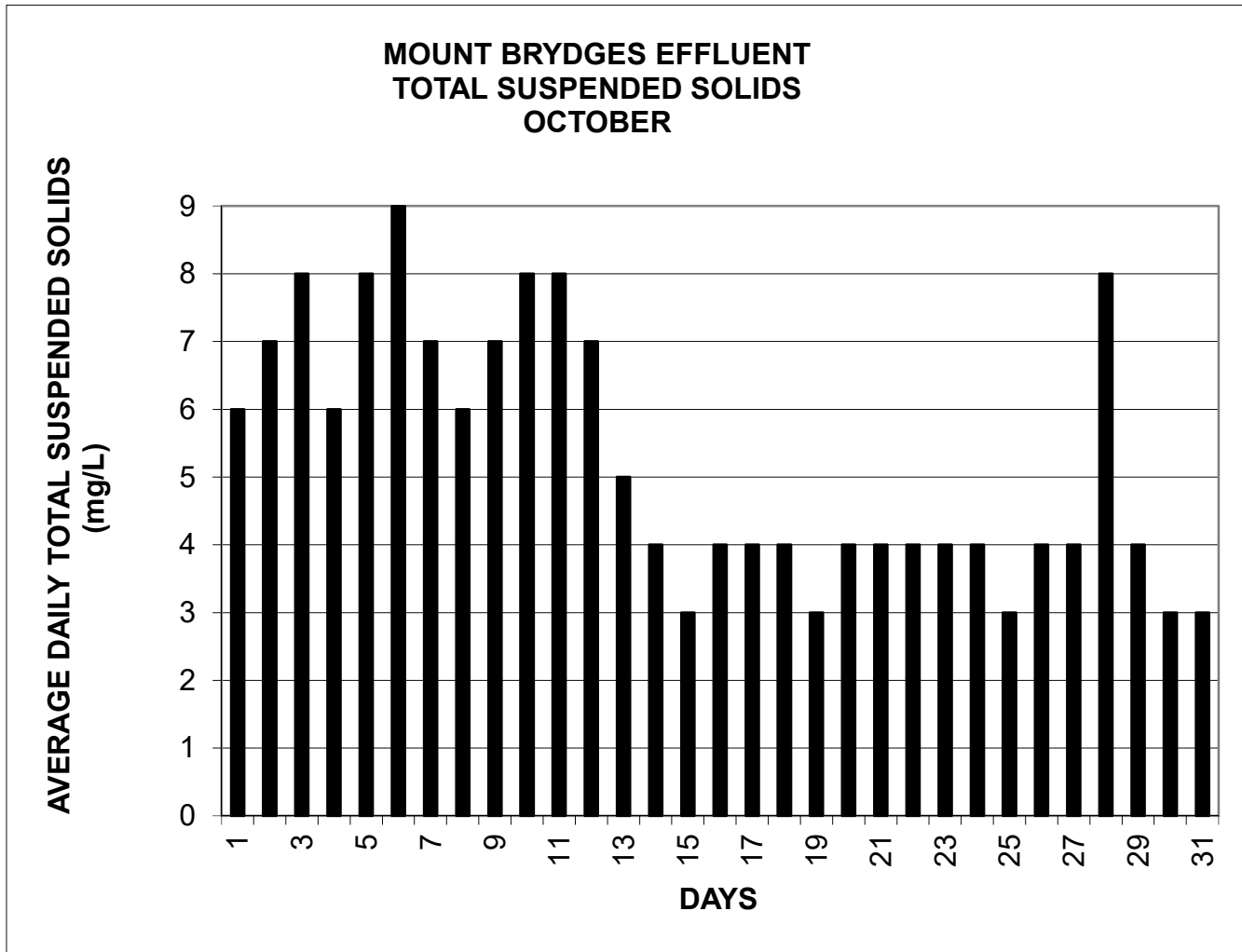
AVERAGE: 5.3 mg/L



**Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022**

DATE	Suspended Solids (mg/L)
Oct. 1	6.0
2	7.0
3	8.0
4	6.0
5	8.0
6	9.0
7	7.0
8	6.0
9	7.0
10	8.0
11	8.0
12	7.0
13	5.0
14	4.0
15	3.0
16	4.0
17	4.0
18	4.0
19	3.0
20	4.0
21	4.0
22	4.0
23	4.0
24	4.0
25	3.0
26	4.0
27	4.0
28	8.0
29	4.0
30	3.0
31	3.0

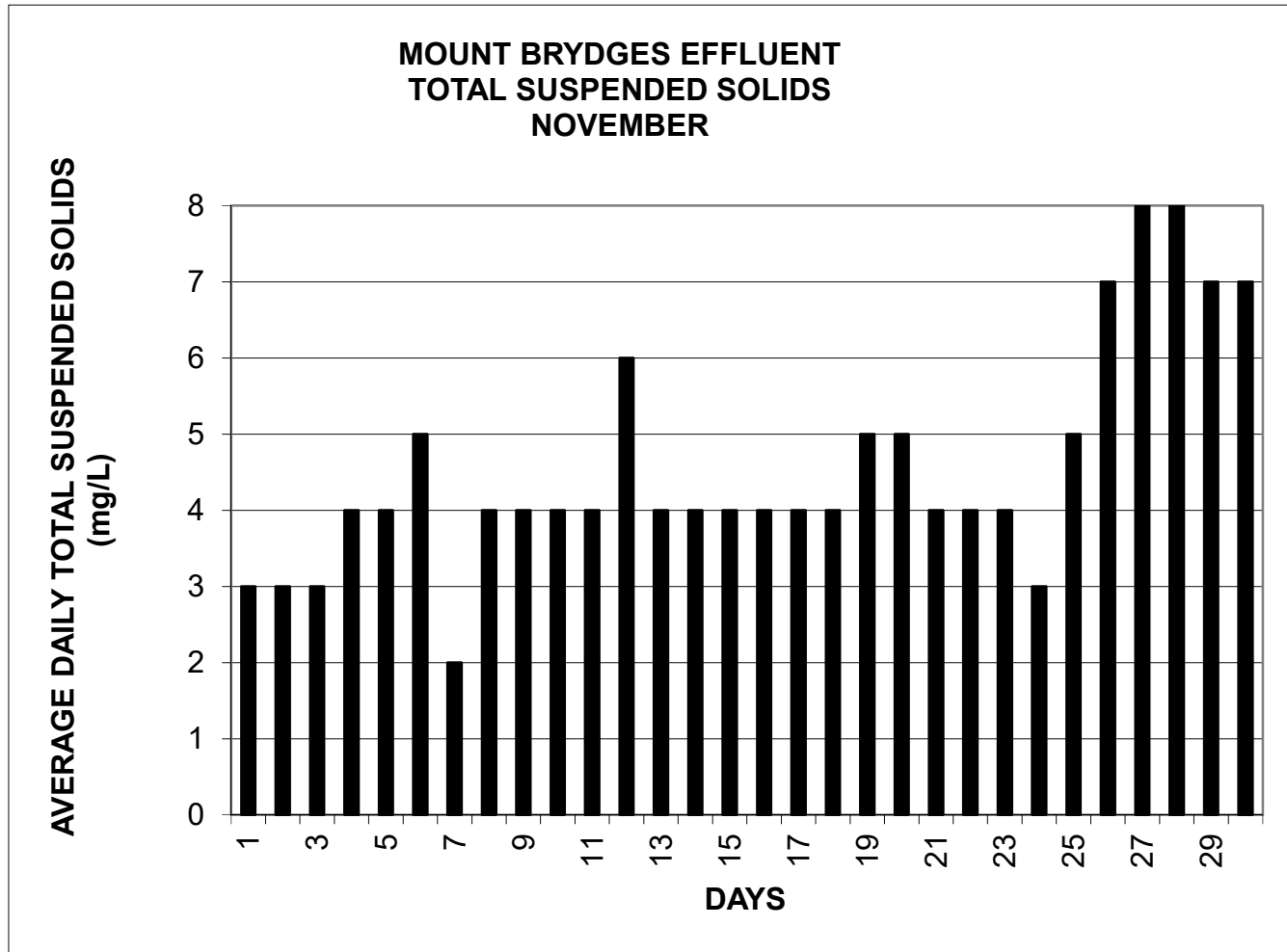
AVERAGE: 5.3 mg/L



Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022

DATE	Suspended Solids (mg/L)
Nov. 1	3.0
2	3.0
3	3.0
4	4.0
5	4.0
6	5.0
7	2.0
8	4.0
9	4.0
10	4.0
11	4.0
12	6.0
13	4.0
14	4.0
15	4.0
16	4.0
17	4.0
18	4.0
19	5.0
20	5.0
21	4.0
22	4.0
23	4.0
24	3.0
25	5.0
26	7.0
27	8.0
28	8.0
29	7.0
30	7.0

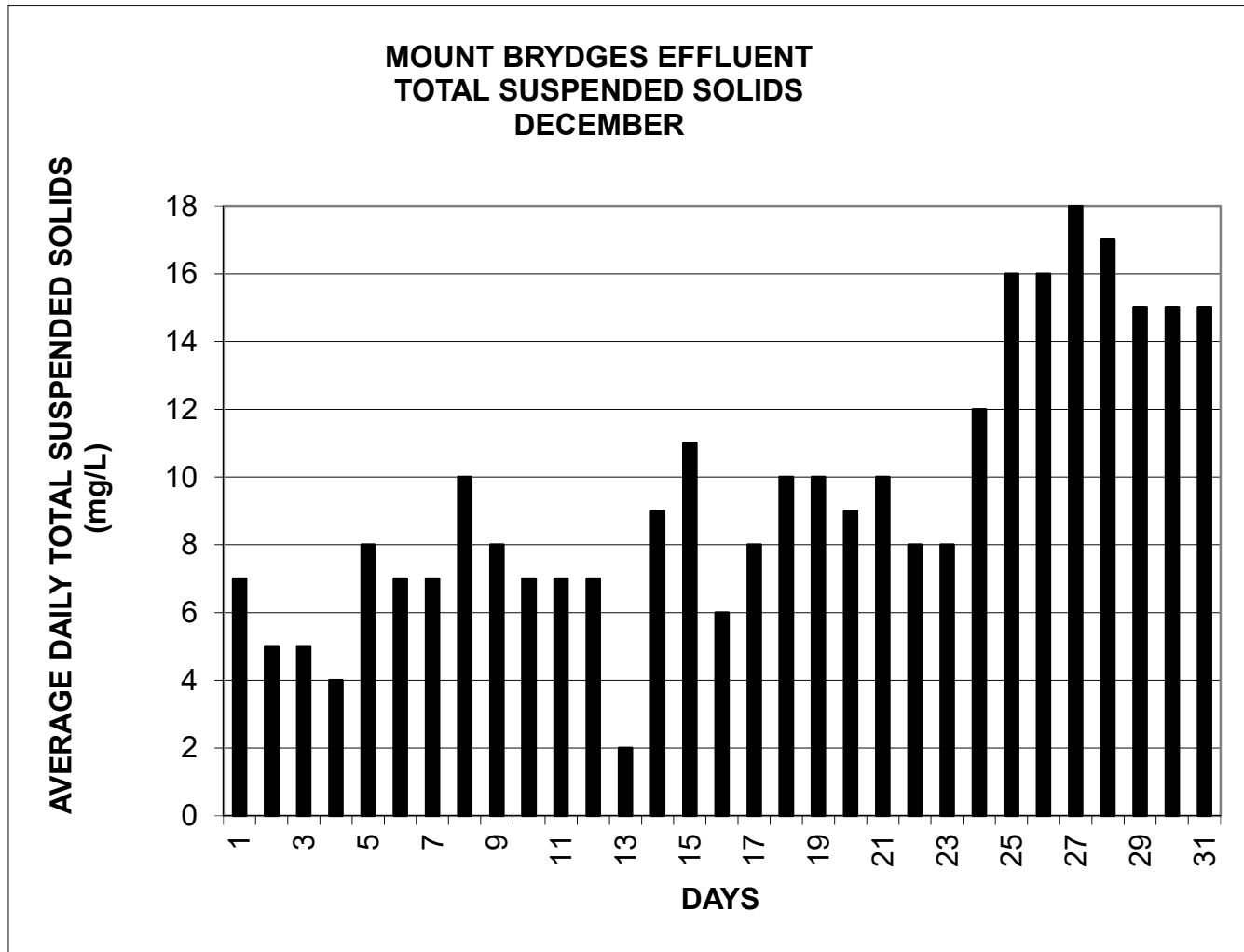
AVERAGE: 4.6 mg/L



**Municipality of Strathroy-Caradoc
Mount Brydges WWTF Total Suspended Solids Summary Report
2022**

DATE	Suspended Solids (mg/L)
Dec. 1	7.0
2	5.0
3	5.0
4	4.0
5	8.0
6	7.0
7	7.0
8	10.0
9	8.0
10	7.0
11	7.0
12	7.0
13	2.0
14	9.0
15	11.0
16	6.0
17	8.0
18	10.0
19	10.0
20	9.0
21	10.0
22	8.0
23	8.0
24	12.0
25	16.0
26	16.0
27	18.0
28	17.0
29	15.0
30	15.0
31	15.0

AVERAGE: 9.6 mg/L



APPENDIX C

2022 Annual Maintenance Summary for: MOUNT BRYDGES WWTF

January

- Routine maintenance

February

- Routine maintenance

March

- Replaced UV bulbs and ballasts

April

- Routine maintenance

May

- Installed Desludge Pump
- Reject Pump removed for repair
- RBC 2 bearing repairs

June

- Replaced media in RBC 1

July

- Repaired media in RBC 1
- RBC 1 bearing repair
- Install soft start on RBC

August

- Cleaning of clarifiers
- Repaired air compressor air leak

September

- Replaced RBC 2 gearbox

October

- Rebuilt and testing of backflow device

November

- Gear box of RBC 1 repair
- Changed oil in clarifier 1 gearbox
- Changed oil in clarifier 2 gearbox

December

- Shaft alignment on RBC 2