2025 ANNUAL WASTEWATER TREATMENT SYSTEM SUMMARY REPORT

Woodstock Wastewater Treatment Plant

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing wastewater treatment operation and treated effluent discharge quality for every municipal wastewater treatment plant (WWTP) annually. The reports detail the latest effluent quality testing results and quantity statistics, and any non-compliance conditions that may have occurred for the previous year. They are available for review by the end of March on the County website at http://www.oxfordcounty.ca/waterwastewater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is as accurate as possible.

If you have any questions or comments concerning the report, please contact the County at the address and phone number listed below or by email at wastewater@oxfordcounty.ca.

Wastewater Treatment Plant:	Woodstock WWTP
Wastewater Treatment Plant Number:	120000685
Environmental Compliance Approval (ECA):	5950-7XQKXS (December 18, 2009)
Reporting Period:	January 1, 2025 – December 31, 2025

Wastewater Treatment Plant Owner & Contact Information:

Oxford County Public Works Department - Wastewater Services
P.O. Box 1614
21 Reeve Street
Woodstock, ON N4S 7Y3
Telephone: 519-539-9800
Toll Free: 866-537-7778
Email: wastewater@oxfordcounty.ca

1.1 System Description

The Woodstock WWTP is a Class IV rated treatment facility, as defined by Ontario Regulation (O. Reg.) 129/04, which provides wastewater treatment for residential, commercial, and industrial users in the City of Woodstock and for the communities of Embro and Innerkip. It also provides treatment for septic tank waste, hauled waste, and holding tank waste from within Oxford County. The Woodstock nominally separated wastewater collection system includes six (6) sewage pump stations (SPS), 253.3 kilometers of sanitary gravity sewers, 8.6 kilometers of sanitary forcemain sewers and 0.7 kilometers of sanitary low-pressure sewers. The Embro and Innerkip wastewater collection systems together include eight (8) sewage pump stations, two odour control facilities, 18.1 kilometers of sanitary gravity sewers, 22.4 kilometers of sanitary forcemain sewers and 0.9 kilometers of sanitary low-pressure sewers.

The Woodstock WWTP is a conventional activated sludge system consisting of primary and secondary treatment, with an outfall pipe to the Thames River.

A standby generator is available to run the entire Woodstock WWTP and onsite Thames Valley Lift Station in the event of a power failure. A secondary backup generator is available and dedicated to Thames Valley Lift Station in case of an emergency. The wastewater system is maintained by licensed wastewater treatment system operators and licensed mechanics that operate, monitor, and maintain the treatment equipment, in accordance with the regulations, and collect samples as required by the ECA. Alarms automatically notify operators in the event of failure of critical operational requirements.

The Woodstock WWTP is located at 195 Admiral Street, Woodstock, Ontario, with the Facility description provided below:

Facility	Woodstock WWTP
Design Capacity	33,000 m^3/d
Design Capacity (Peak Flow)	66,000 m^3/d
2025 Average Daily Flow	21,724 m^3/d
2025 Maximum Daily Flow	99,435 m^3/d
2025 Total Volume of Wastewater	* 7,958,410 m^3/year
2025 Total Received Hauled Waste	27,059 m^3/year (7,461 m^3/year leachate)

* Included in this total is 198,132 m^3/year from the Embro & Innerkip wastewater collection systems.

1.2 Major Expenses

In 2025, the Woodstock WWTP had forecast operating and maintenance expenditures of approximately $6,767,000.

In 2025, Embro and Innerkip wastewater collection systems had forecast operating and maintenance expenditures of approximately $541,000.

Planning for major wastewater system expenses is included within Oxford County's Wastewater Services Master Plan and managed according to our Asset Management and Capital

Replacement Program. In addition to regular operational and maintenance expenditures, Capital Improvement Projects for Woodstock were forecast at approximately $10,690,000 which included improvements to the wastewater collection system (including Embro and Innerkip) and the Woodstock WWTP.

Notable Woodstock Capital Improvement Projects included:

- $120,000 for replacement of general operating equipment;
- $110,000 for wastewater facilities improvements;
- $2,290,000 for City projects;
- $4,000,000 for Lansdowne SPS;
- $560,000 for Lansdowne sewer extension;
- $180,000 for trunk sewer I&I reduction;
- $2,050,000 for trunk sewer upgrades;
- $120,000 for sanitary replacements; and
- $700,000 for linear railroad crossing.

Capital Improvement Projects for all systems included:

- $1,340,000 to develop Countywide Supervisory Control and Data Acquisition (SCADA) Master Plan for all wastewater systems.

2. SUMMARY AND INTERPRETATION OF MONITORING DATA

2.1 Effluent Quality Assurance and Control Measures

Sampling Procedure

Wastewater samples are collected on a weekly basis. Raw sewage samples are collected where the sewer trunks combine before entering the sewage works. An automatic composite sampler collects samples over a 24-hour period. Following primary treatment, a second 24-hour composite sample is collected. A third and final effluent 24-hour composite sample is collected following secondary treatment, disinfection, and de-chlorination prior to the effluent discharge to the Thames River.

Laboratory and Field Testing

Laboratory analysis is performed by SGS Lakefield Research Ltd. on all samples that are reported for compliance except for pH, dissolved oxygen (DO), and temperature which are collected and analyzed in the field. All other in-house testing is done for process control, the results of which are not included in this report.

2.2 WWTP Performance and Effluent Quality

Final Effluent Compliance Limits

Compliance limits are defined as the maximum effluent concentrations permitted for a given parameter set by the Ministry of Environment, Conservation and Parks (MECP). Compliance limits are detailed within each WWTP ECA. The limits are determined to prevent impairment to the receiving water body quality. The Owner is legally obligated to operate and maintain the treatment system to ensure the compliance limits are achieved.

The Woodstock WWTP provided effective treatment in 2025 and was 100% in compliance with all its regulatory limits for all effluent discharged from the WWTP.

Influent Streams and Effluent Streams

On a weekly basis (minimum), an operator measures pH of both the influent and effluent streams. There was no single pH result for the effluent outside the discharge limit of 6.0 - 9.5 in 2025.

Operators test Total Residual Chlorine (TRC) in the treated effluent on a daily basis during the disinfection period. This exceeds the minimum regulated testing frequency of once per week. TRC results are reported as single sample results or annual averages, which should not exceed 0.05 mg/L or 0.02 mg/L, respectively. In 2025, all results met the single sample limit of less than 0.05 mg/L and were in compliance. The Federal Government's P2 annual target for TRC of 0.02 mg/L was met in 2025.

Graphs of discharge parameters versus effluent discharge limits are included in this report in Appendix 'A'.

Influent wastewater characteristics and effluent discharge values are presented in the tables below:

Influent Wastewater Characteristics (annual average)		
Parameter	**Concentration (mg/L)**	**Loading (kg/d)**
$CBOD_5$	142	3,093
Total Suspended Solids	232	5,032
Total Phosphorus	3.9	85
Total Kjeldahl Nitrogen	26.1	567

Effluent Parameter	**Sample Frequency**	**ECA Effluent Limit (Monthly Average)** (mg/L unless otherwise indicated)	**Monthly Average Result Min. - Max.** (mg/L unless otherwise indicated)	**Percentage Removal**
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) (May 1 to November 30)	weekly	15.0	2.0 – 6.3	95.6 – 98.6
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) (December 1 to April 30)	weekly	20.0	4.6 – 8.8	93.8 – 96.8

Effluent Parameter	Sample Frequency	ECA Effluent Limit (Monthly Average) (mg/L unless otherwise indicated)	Monthly Average Result Min. - Max. (mg/L unless otherwise indicated)	Percentage Removal
Total Suspended Solids (TSS)	weekly	15.0	3.8 – 9.0	96.1 – 98.4
Total Phosphorus (TP)	weekly	0.75	0.18 – 0.42	89.2 – 95.4
Total Ammonia Nitrogen (TAN) (May 1 to November 30)	weekly	3.0	0.10 – 1.68	92.2 – 99.5
Total Ammonia Nitrogen (TAN) (December 1 to April 30)	weekly	5.0	0.90 – 2.50	88.4 – 95.8
TRC (any single sample) (May 1 – October 31)	weekly	<0.05	0.00 – 0.04	--
E. coli (May 1 – October 31)	weekly	200 MPN*/100 mL (Monthly Geometric Mean Density)	2.0 – 40.7 MPN/100 mL (Monthly Geometric Mean Density)	--
pH (any single sample)	weekly	6.0 – 9.5	6.8 – 7.6	--

*MPN: Most Probable Number

2.3 Final Effluent Design Objectives

Final Effluent Design Objectives (objectives) are non-enforceable effluent quality values which the Owner is obligated to use best efforts to strive towards achieving on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively, and voluntarily before environmental impairment occurs and before the compliance limits are exceeded.

All effluent discharge objectives listed in the WWTP ECA were met at the Woodstock WWTP in 2025, with the exception of 17 single samples. The results are summarized below.

The following table presents the range of effluent discharge values and the comparable ECA Objectives:

Effluent Parameter	Sample Frequency	Monthly Average ECA Objective Concentration (mg/L unless otherwise indicated)	Monthly Average Result Min-Max (mg/L unless otherwise indicated)
$CBOD_5$	weekly	12.0	2.0 – 8.8

Effluent Parameter	**Sample Frequency**	**Monthly Average ECA Objective Concentration** (mg/L unless otherwise indicated)	**Monthly Average Result Min-Max** (mg/L unless otherwise indicated)
TSS	weekly	12.0	3.8 – 9.0
TP	weekly	0.5	0.18 – 0.42
TAN (May 1 to November 30)	weekly	2.0	0.10 – 1.68
TAN (December 1 to April 30)	weekly	3.0	0.90 – 2.50
E. coli (May 1 – October 31)	weekly	200 MPN/100 mL (Monthly Geometric Mean Density)	2.0 – 40.7 MPN/100 mL (Monthly Geometric Mean Density)
pH (any single sample)	weekly	6.0 - 8.5	6.8 – 7.6

Woodstock effluent single samples that did not meet effluent objective concentrations in 2025 included the following:

Date	**Parameter**	**Objective** (mg/L unless otherwise indicated)	**Result** (mg/L unless otherwise indicated)
January 21, 2025	TAN	3.0	4.1
February 4, 2025	$CBOD_5$	12.0	14.0
February 11, 2025	TAN	3.0	6.1
April 11, 2025	$CBOD_5$	12.0	21.0
April 11, 2025	TSS	12.0	19.0
April 11, 2025	TAN	3.0	3.5
May 8, 2025	TP	0.5	0.52
May 8, 2025	E. coli	200 MPN/100 mL	214 MPN/100 mL
June 10, 2025	TAN	2.0	3.8
June 17, 2025	TP	0.5	0.60
June 17, 2025	TAN	2.0	2.6
June 17, 2025	E. coli	200 MPN/100 mL	345 MPN/100 mL
July 2, 2025	E. coli	200 MPN/100 mL	517 MPN/100 mL
July 7, 2025	E. coli	200 MPN/100 mL	285 MPN/100 mL
November 28, 2025	TAN	2.0	4.0

Date	Parameter	Objective (mg/L unless otherwise indicated)	Result (mg/L unless otherwise indicated)
December 4, 2025	TAN	3.0	4.6
December 9, 2025	TAN	3.0	3.8

3. OVERFLOWS, BYPASSING, UPSETS, SPILLS, AND ABNORMAL CONDITIONS

There were no overflows, bypasses, upsets, spills, or abnormal conditions at the Woodstock WWTP in 2025.

The Woodstock WWTP received three (3) complaints in 2025 regarding odours:

- A complaint was received on August 18, regarding odours on Tecumseh Street near the WWTP
- Two (2) complaints came in from the same individual on September 11 and again on October 10

Staff investigated all the complaints when received and responded that they could not detect any abnormal odours or process issues at the WWTP.

No other complaints were received in 2025.

4. MAINTENANCE OF WORKS

The operating and maintenance staff at the Woodstock WWTP conduct regularly scheduled maintenance of the WWTP equipment. The WWTP utilizes a database known as Cartegraph to issue work orders and maintain records for regular maintenance and repair at the WWTP.

5. MONITORING EQUIPMENT MAINTENANCE AND CALIBRATION

The calibration of flow meters is conducted by JBF Controls Ltd in accordance with the requirements of the ECA. The records are kept on-site at the Woodstock WWTP.

All other operational monitoring equipment is calibrated by staff and records are kept on-site at the WWTP.

6. BIOSOLIDS PROGRAM

Biosolids are anaerobically digested and dewatered at the Woodstock WWTP using two Alfa-Laval Centrifuges. The biosolids are then stored at the County Biosolids Centralized Storage Facility (BCSF) prior to land application. The sampling results and land application details are summarized in a separate Biosolids Annual report, available at: www.oxfordcounty.ca/services-for-you/water-wastewater/wastewater/reports-and-policies.

7. INSPECTION, PILOTS, AND TRIALS

The MECP did not perform an inspection of the Woodstock WWTP in 2025. The MECP inspections typically occur on a three-year schedule.

Woodstock WWTP Biogas Utilization Project

Oxford County is undertaking a biogas utilization upgrade at the Woodstock Wastewater Treatment Plant (WWTP) as part of the County's Renewable Energy Plan, 2022-2032 This project will implement a Combined Heat and Power (CHP) system to generate heat and electricity from biogas produced at the WWTP, thereby decreasing the WWTP's dependence on the energy grid.

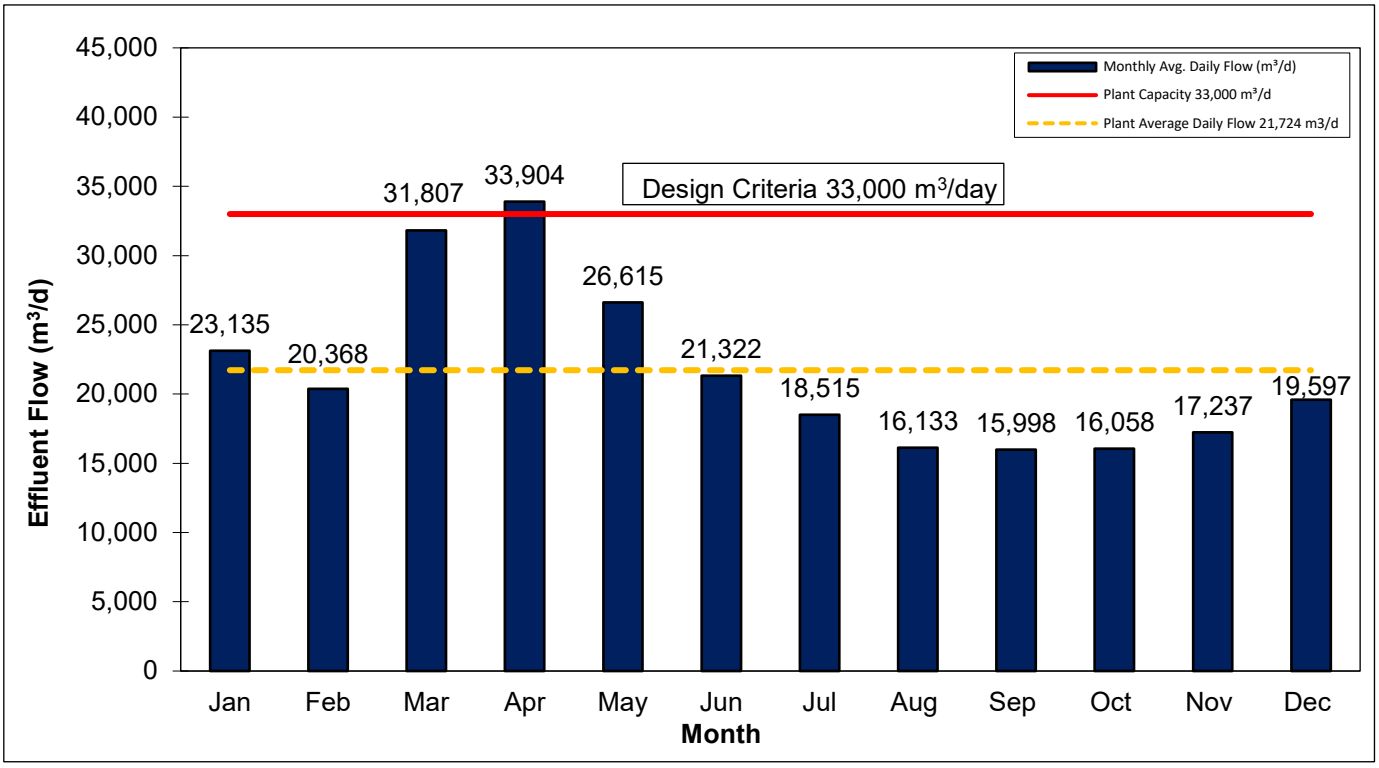
This new CHP system will offset 40% of the grid electricity used at the WWTP, and 39% of the heat energy requirement at the WWTP. This project will reduce the annual greenhouse gas emission for heat and electricity at the WWTP by 58%.

A Renewable Energy Approval (REA) for this project is required by the Ministry of the Environment, Conservation and Parks (MECP). As part of this process, Oxford County is consulting with members of the public, Indigenous communities and agencies. Public meetings on the project were held on October 29, 2024, and February 25, 2025. Project reports and design work were completed, and the REA application was submitted to the MECP on April 23, 2025. The MECP has finished its completeness check and posted the application on the Environmental Registry of Ontario (ERO) on January 20, 2026. Based on the MECP's six-month service standard for technical review, the REA is anticipated to be issued in Q3 of 2026.

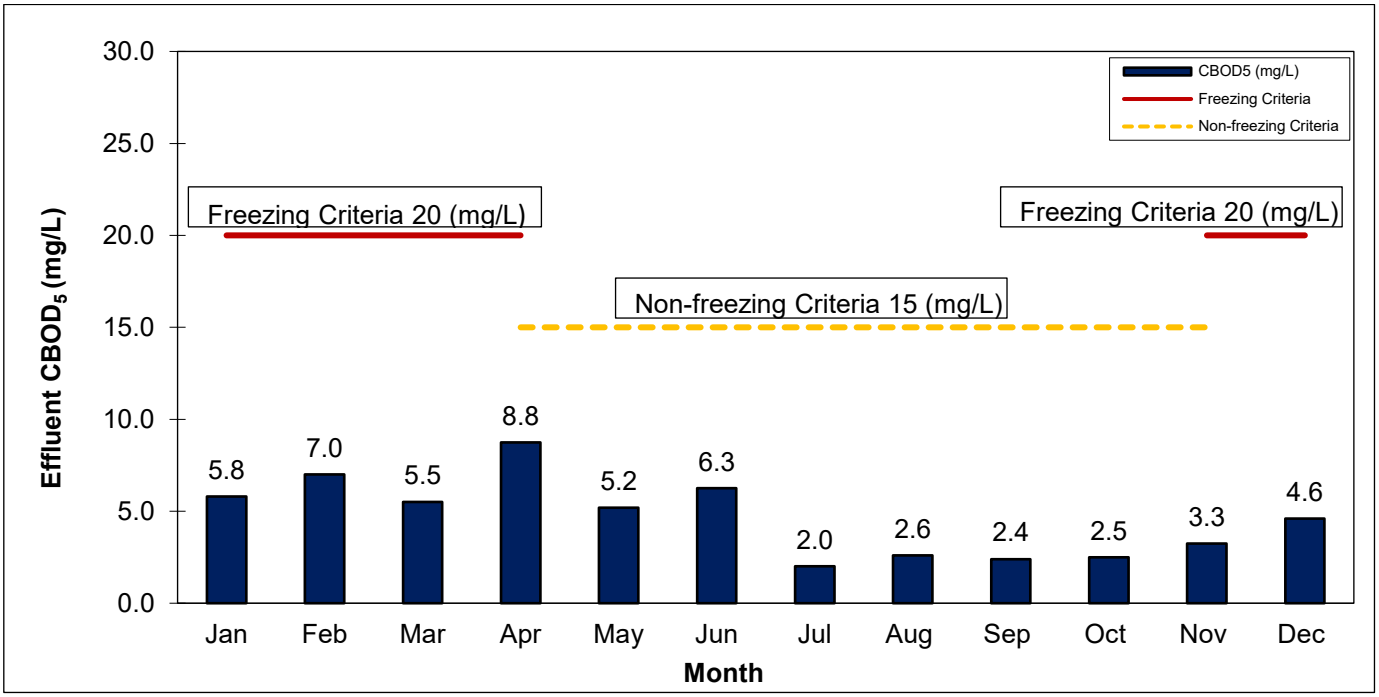
Procurement of long-lead items has begun, and with construction expected to start around the time of REA approval, the CHP is anticipated to be completed in early 2027.

APPENDIX A: GRAPHS OF 2025 DISCHARGE PARAMETERS VS. EFFLUENT DISCHARGE LIMITS

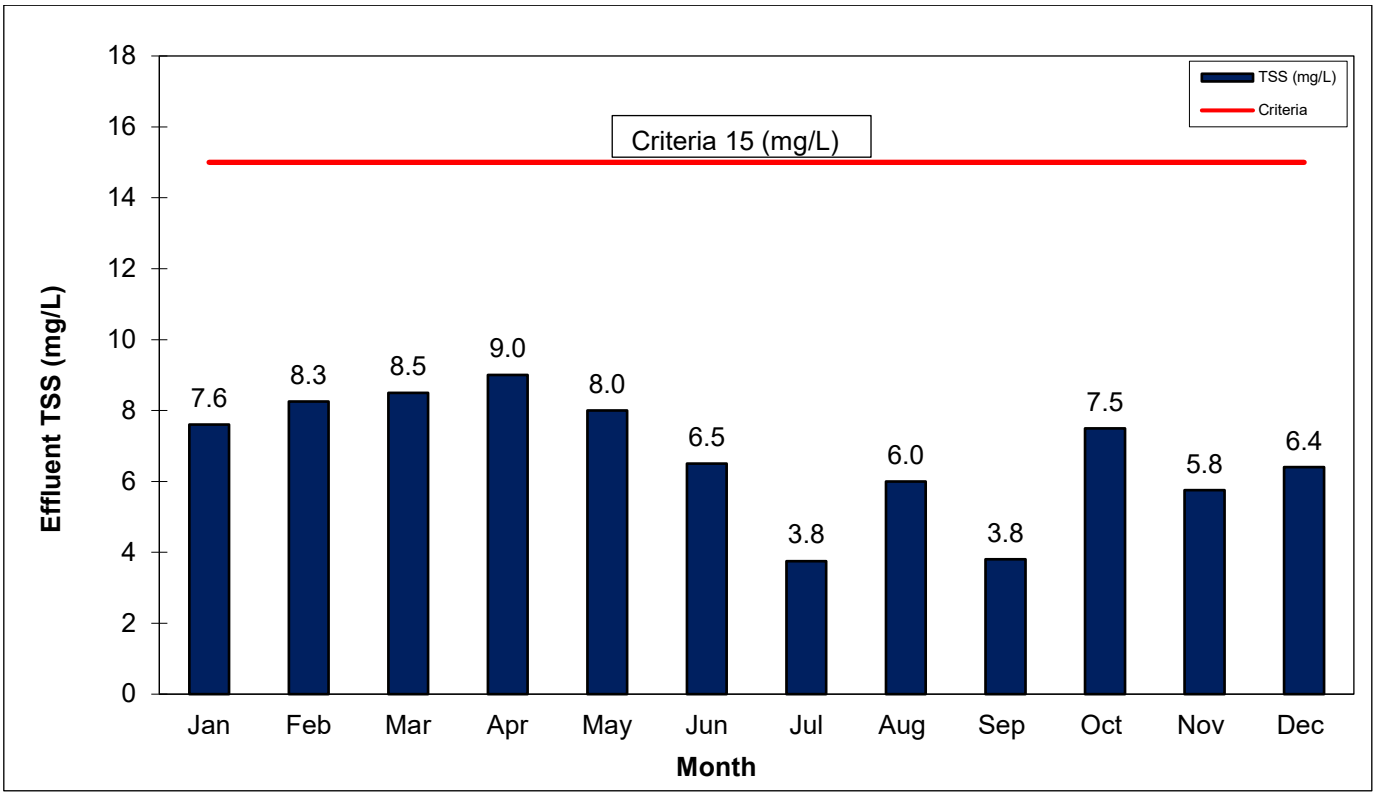
Woodstock WWTP Effluent, Monthly Average Daily Flow in Cubic Meters per Day, 2025



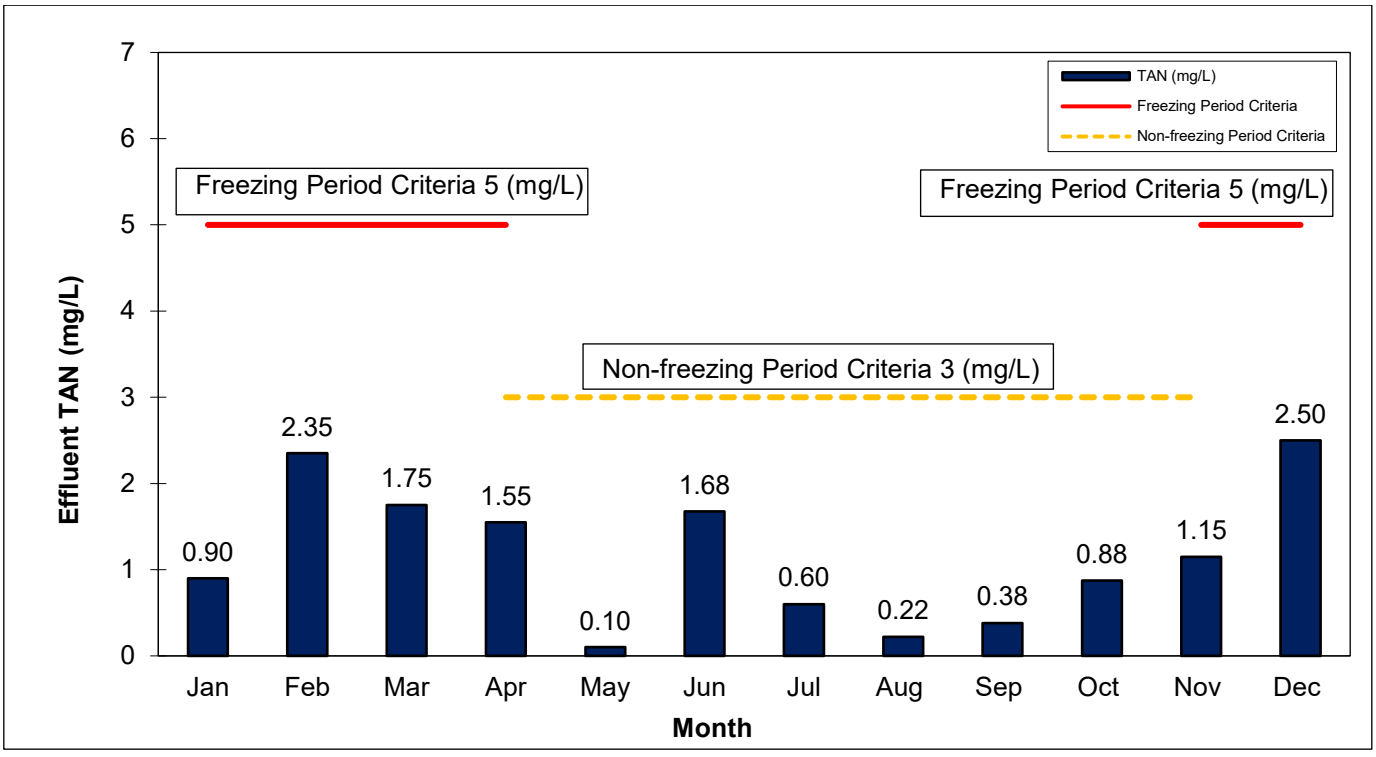
Woodstock WWTP Effluent, Monthly Average $CBOD_5$ (mg/L), 2025



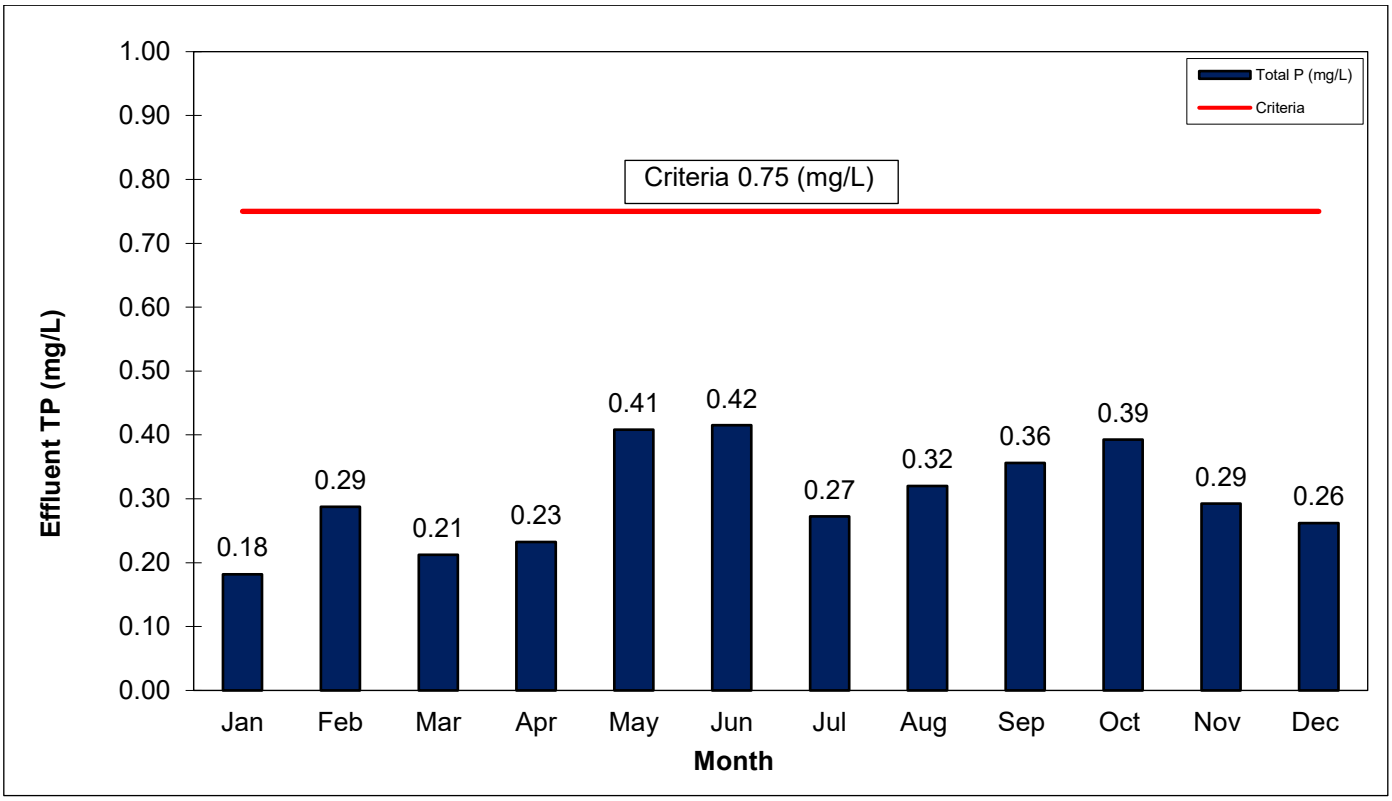
Woodstock WWTP Effluent, Monthly Average TSS (mg/L), 2025



Woodstock WWTP Effluent, Monthly Average TAN (mg/L), 2025



Woodstock WWTP Effluent, Monthly Average TP (mg/L), 2025



Woodstock WWTP Effluent, Monthly Geometric Mean Density E. coli (MPN/100 mL), 2025