Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0209236**
Facility Type	**Municipal**	APS ID	**1152245**
Major / Minor	**Minor**	Authorization ID	**1552136**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Tioga Borough Tioga County**	Facility Name	**Tioga Borough Sanitary Sewer STP**
Applicant Address	PO Box 158	Facility Address	Krieger Lane
	Tioga, PA 16946-0158		Tioga, PA 16946
Applicant Contact	Donald Warriner	Facility Contact	Donald Warriner
Applicant Phone	(570) 835-5226	Facility Phone	(570) 835-5226
Client ID	44851	Site ID	257615
Ch 94 Load Status	Not Overloaded	Municipality	Tioga Township
Connection Status	No Limitations	County	Tioga
Date Application Received	December 8, 2025	EPA Waived?	Yes
Date Application Accepted	December 16, 2025	If No, Reason	

Purpose of Application: Renewal of an NDPES Permit

Summary of Review

The subject facility is a minor Publicly Owned Treatment Works (POTW) serving Tioga Borough and Tioga Township in Tioga County.

Sludge use and disposal description and location(s): The facility's dewatered sludge is disposed by landfill. Per the application 11.85 dry tons were disposed in the previous year.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
✓		Keith C. Allison Keith C. Allison / Project Manager	March 24, 2026
✓		for Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	March 24, 2026

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.06
Latitude	41º 54' 49.74"	Longitude	-77º 7' 50.72"
Quad Name	Jackson Summit, PA	Quad Code	0329
Wastewater Description:	Sewage Effluent		
Receiving Waters	Tioga River (CWF)	Stream Code	30990
NHD Com ID	57350483	RMI	21.0
Drainage Area	280 mi^2	Yield (cfs/mi^2)	0.0858
Q_{7-10} Flow (cfs)	24.3	Q_{7-10} Basis	USGS Gage 0151800, Tioga River @ Tioga, PA
Elevation (ft)	1020	Slope (ft/ft)	0.001388
Watershed No.	4-A	Chapter 93 Class.	CWF
Existing Use	**N/A**	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	SILTATION		
Source(s) of Impairment	DAM OR IMPOUNDMENT		
TMDL Status	**None**	Name	**N/A**
Nearest Downstream Public Water Supply Intake	PA-NY State Line		
PWS Waters	Tioga River	Flow at Intake (cfs)	N/A
PWS RMI	13.0	Distance from Outfall (mi)	8.0

Changes Since Last Permit Issuance: None. The above stream and drainage characteristics determined for previous reviews remain adequate.

Other Comments: The facility is not expected to be a significant contributor to the above-listed impairments to the Tioga River. The facility's generally meets its TSS limitations. The TSS data for the past permit term was reviewed and the effluent violation noted for TSS from April 2025 was the only exceedance in the permit term.

The Tioga River TMDL addresses upstream impairments from AMD. The existing permit includes monitoring for Aluminum, Iron, and Manganese. Monitoring for these was consistently at 0.1 for Total Aluminum, mg/L, 0.2 mg/L for Total Iron, and 0.02 mg/L for Total Manganese which are all below their respective instream criteria. Therefore, because the load of the metals from the discharge has been adequately characterized and the discharge is not expected to contribute to the upstream impairments, no further monitoring for these will be included at this time.

No downstream water supply is expected to be affected by the discharge at this time with the limitations and monitoring proposed. The Department considers the PA/NY state line to the closest water supply due to no closer intakes.

Treatment Facility Summary

Treatment Facility Name: Tioga Borough

WQM Permit No.	Issuance Date
5995405	11/20/1995

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Sequencing Batch Reactor	Hypochlorite	0.06

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.06	110	Not Overloaded	Drying	Landfill

Changes Since Last Permit Issuance: None

Other Comments: The treatment facilities as permitted under WQM Permit 5995405 consists of a grinder pump, two sequencing batch reactors (SBRs), sodium hypochlorite disinfection, and chlorine contact tank.

Industrial Users

The facility receives flows from one industrial user, Tyoga Container.

Hauled-In-Waste

The facility receives no hauled in waste.

Compliance History

DMR Data for Outfall 001 (from February 1, 2025 to January 31, 2026)

Parameter	JAN-26	DEC-25	NOV-25	OCT-25	SEP-25	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25
Flow (MGD) Average Monthly	0.0255	0.0221	0.0212	0.0206	0.0208	0.0229	0.0274	0.0325	0.0338	0.0254	0.0247	0.0223
Flow (MGD) Daily Maximum	0.0375	0.0323	0.031	0.029	0.0293	0.037	0.0364	0.0472	0.0544	0.0327	0.0349	0.0302
pH (S.U.) Instantaneous Minimum	7.46	7.50	7.43	7.18	7.09	7.14	7.13	7.12	7.21	7.51	7.40	7.48
pH (S.U.) Instantaneous Maximum	7.64	7.62	7.59	7.47	7.32	7.37	7.30	7.32	7.58	7.61	7.58	7.78
DO (mg/L) Instantaneous Minimum	5.1	4.9	4.6	4.1	3.7	2.3	2.3	2.8	3.5	4.9	4.5	5.8
TRC (mg/L) Average Monthly	0.38	0.29	0.32	0.35	0.28	0.34	0.31	0.43	0.46	0.38	0.39	0.46
TRC (mg/L) Instantaneous Maximum	0.98	0.88	0.87	0.66	0.74	1.15	0.84	1.02	1.04	0.83	0.90	1.48
CBOD5 (lbs/day) Average Monthly	2.4	2.8	2.2	1	1.3	1.4	2.0	2	3.3	4.1	3.4	2.4
CBOD5 (lbs/day) Weekly Average	2.9	2.9	2.6	1.2	14	1.7	2.2	2.2	4.7	5.7	4.2	3.7
CBOD5 (mg/L) Average Monthly	13	17	14	6	9	9	9	8	13	22	16	12
CBOD5 (mg/L) Weekly Average	16	18	16	7	10	11	10	9	17	30	20	18
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	52	81	55	59	61	38	57	48	49	46	43	49
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	53	97	61	61	82	45	77	60	50	47	48	51
BOD5 (mg/L) Raw Sewage Influent Average Monthly	273	481	349	375	401	228	237	194	194	237	205	270
TSS (lbs/day) Average Monthly	2.1	2.8	2.7	1	1.7	0.9	1.7	2	4.4	6.5	4.2	2.1
TSS (lbs/day) Raw Sewage Influent Average Monthly	39	41	32	41	52	21	44	35	42	31	31	31
TSS (lbs/day) Raw Sewage Influent Daily Maximum	49	41	35	42	56	25	53	45	53	39	35	33

TSS (lbs/day) Weekly Average	2.1	2.9	3.1	1	2.0	0.9	2.4	2.2	5.5	7.4	4.9	2.9
TSS (mg/L) Average Monthly	11	17	17	6	12	6	8	8	17	34	20	11
TSS (mg/L) Raw Sewage Influent Average Monthly	205	246	202	259	342	122	184	142	162	162	145	170
TSS (mg/L) Weekly Average	12	19	19	6	13	6	11	9	20	39	23	14
Fecal Coliform (No./100 ml) Geometric Mean	28	202	125	190	133	109	46	10	6	27	227	30
Fecal Coliform (No./100 ml) Instantaneous Maximum	98	426	1553	225	411	109	345	11	11	141	1120	308
E. Coli (No./100 ml) Instantaneous Maximum		68			124			649			2420	
Ammonia (lbs/day) Average Monthly	7.5	7.9	6.5	4.4	2.1	3.2	5.6	4.6	4.2	9.5	8.5	7.5
Ammonia (mg/L) Average Monthly	40	48	41	28	14	19	24	19	15	49	41	41

Compliance History, Continued

Effluent Violations for Outfall 001, from: February 1, 2025 to: January 31, 2026

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	04/30/25	Avg Mo	34	mg/L	30	mg/L

Compliance History, Continued

Summary of Inspections:	The most recent inspection by the Department of the facility on January 22, 2025, identified NPDES effluent violations.
Other Comments:	There are no open violations in eFACTS for Tioga Borough, Tioga County.

Existing Effluent Limitations and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	13	20	XXX	25	40	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	15	23	XXX	30	45	60	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Aluminum	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Total Iron	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Total Manganese	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.06
Latitude 41º 54' 50.10" **Longitude** -77º 7' 49.60"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: The above limitations are applicable and are included in the existing permit.

Water Quality-Based Limitations

DO, CBOD5 and NH3-N

The WQM7.0 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia-nitrogen (NH_3-N) into free-flowing streams and rivers. To accomplish this, the model simulates two basic processes: the mixing and degradation of NH_3-N in the stream and the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and NH_3-N. WQM7.0 modeling was performed (see Attachment B) for the discharge to the Tioga River and showed that no more stringent limitations are necessary beyond the existing technology based limits noted above.

Total Residual Chlorine

The Department uses a modeling spreadsheet to analyze the toxicity of a discharge's TRC in a receiving stream, accounting for available dilution. The attached results of the TRC spreadsheet (see Attachment C) show that the existing technology-based limit of 0.5 mg/l is adequate to protect the receiving stream.

Water Quality Toxics Management

No "Reasonable Potential Analysis" was performed to determine additional parameters with the reasonable potential to violate water quality standards for this minor STP discharge with no significant industrial influent.

Chesapeake Bay/Nutrient Requirements

A portion of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the Water Pollution Control Act, 33 U.S.C. §1313(d). Total Nitrogen and Total Phosphorus cap loads have been established for significant dischargers in Pennsylvania in order to reduce the total nutrient load to the Bay and meet State of Maryland Water Quality Standards. Tioga Borough is considered a Phase 5, Significant Chesapeake Bay discharger. Therefore, no Nutrient cap loads have been established for this facility pursuant to the Phase III Watershed Implementation Plan. Monitoring under a previous issuance found the Total Nitrogen and Total Phosphorus to average 22.1 mg/L and 1.65 mg/L, respectively. Therefore, because the Total Nitrogen and Total Phosphorus loads from the facility have been characterized, no additional nutrient monitoring will be required at this time.

E. Coli Monitoring

Quarterly E. Coli monitoring is included in the existing permit consistent with recent changes to Chapter 93 of the Department's regulations and Departmental policy and will remain.

Best Professional Judgment (BPJ) Limitations

Comments: No additional BPJ limitations are necessary at this time beyond the technology and water quality-based limitations noted above.

Anti-Backsliding

No proposed technology or BPJ-based limitations have been made less stringent consistent with the Anti-degradation requirements of The Clean Water Act and 40 CFR 122.44(I).

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	13	20	XXX	25	40	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	15	23	XXX	30	45	60	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite

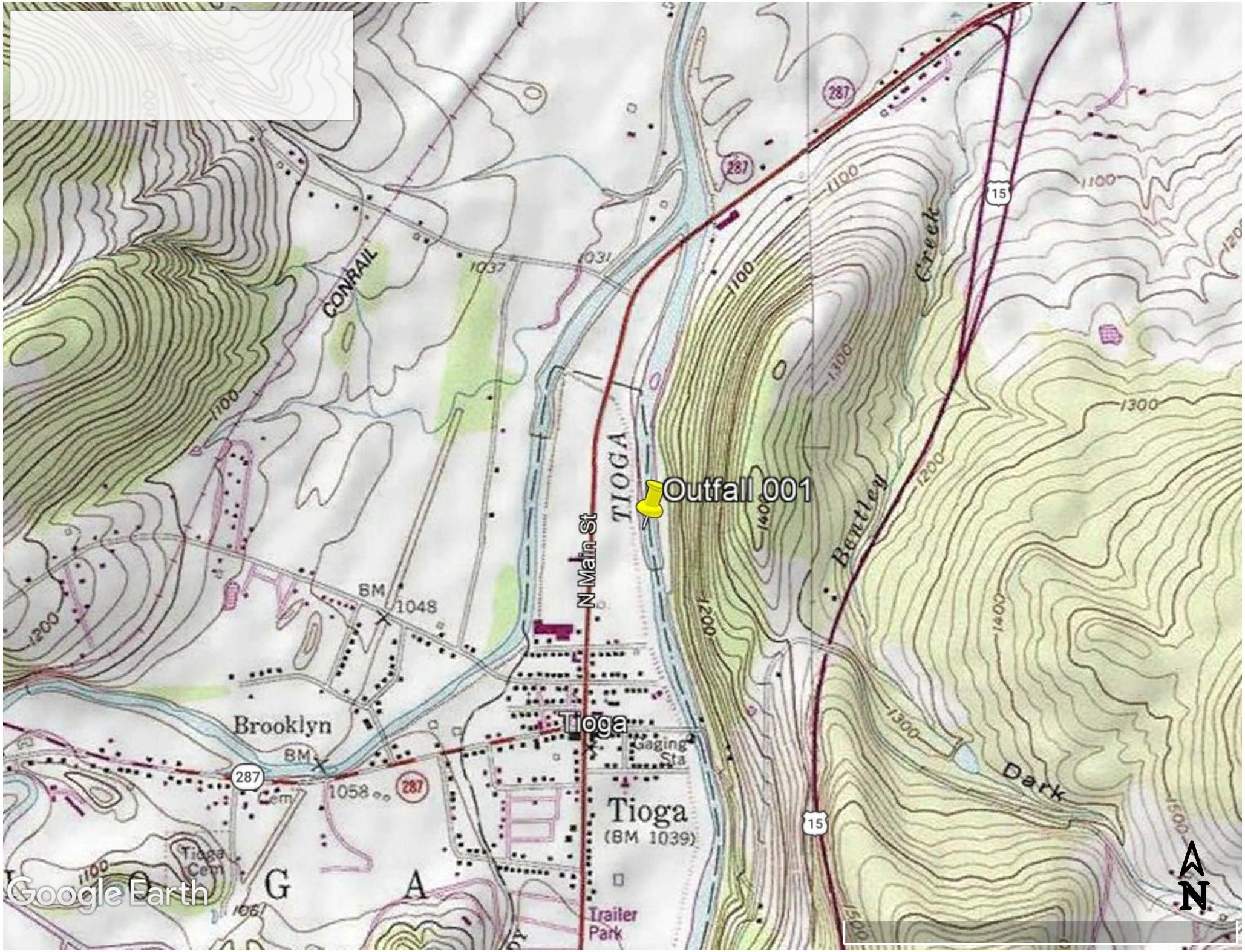
Compliance Sampling Location: Outfall 001

Other Comments: The above limitations and monitoring are unchanged from the existing permit except for the removal of Total Aluminum, Total Iron, and Total Manganese monitoring as noted above..

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☒	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☒	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

Attachments:

A. Discharge Location Map
B. WQM7.0 Model
C. TRC Model


Outfall 001
N Main St
TIOGA
Bentley Creek
CONRAIL
Brooklyn
Tioga
Tioga
(BM 1039)
Gaging Sta
Trailer Park
Tioga Cem
Dark
BM 1048
BM
Cem
1058
1037
1031
1100
1200
1300
1400
1500
287
15
Google Earth
N

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
04A	30990	TIOGA RIVER	**21.000**	1020.00	280.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.086	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Tioga Borough	PA0209236	0.0600	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
04A	30990	TIOGA RIVER	**18.300**	1000.00	285.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.086	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
04A	30990	TIOGA RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (ºC)	Analysis pH
Q7-10 Flow												
21.000	24.02	0.00	24.02	.0928	0.00140	.911	81.41	89.4	0.33	0.507	20.02	7.00
Q1-10 Flow												
21.000	15.38	0.00	15.38	.0928	0.00140	NA	NA	NA	0.25	0.650	20.03	7.00
Q30-10 Flow												
21.000	32.67	0.00	32.67	.0928	0.00140	NA	NA	NA	0.39	0.427	20.01	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
04A	30990	TIOGA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
21.000	0.060	20.019	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
81.405	0.911	89.395	0.325
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.09	0.049	0.10	0.701
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.223	3.116	Tsivoglou	6
Reach Travel Time (days)			
0.507			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.051	2.08	0.09	8.24
0.101	2.08	0.09	8.24
0.152	2.07	0.09	8.24
0.203	2.07	0.08	8.24
0.254	2.06	0.08	8.24
0.304	2.06	0.08	8.24
0.355	2.05	0.08	8.24
0.406	2.05	0.07	8.24
0.456	2.04	0.07	8.24
0.507	2.04	0.07	8.24

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
04A	30990	TIOGA RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
21.000	Tioga Borough	16.72	50	16.72	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
21.000	Tioga Borough	1.89	25	1.89	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
21.00	Tioga Borough	25	25	25	25	3	3	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
04A	30990	TIOGA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
21.000	Tioga Borough	PA0209236	0.060	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

24.3	= Q stream (cfs)	0.5	= CV Daily
0.06	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 83.532	1.3.2.iii	WLA cfc = 81.430
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 31.126	5.1d	LTA_cfc = 47.340

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

WLA afc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))... ...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))... ...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)