Pennsylvania Department of Environmental Protection

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0084964**
Facility Type	**Municipal**	APS ID	**43490**
Major / Minor	**Minor**	Authorization ID	**1518433**

Applicant and Facility Information

Applicant Name	**Bethel Township Fulton County**	Facility Name	**Bethel Township STP**
Applicant Address	PO Box 239	Facility Address	283 Pigeon Cove Road
	Warfordsburg, PA 17267-0239		Warfordsburg, PA 17267
Applicant Contact	Michael Crunkleton	Facility Contact	Michael Crunkleton
Applicant Phone	(301) 988-7361	Facility Phone	(301) 988-7361
Client ID	74499	Site ID	246347
Ch 94 Load Status	Not Overloaded	Municipality	Bethel Township
Connection Status	No Limitations	County	Fulton
Date Application Received	March 5, 2025	EPA Waived?	Yes
Date Application Accepted	March 6, 2025	If No, Reason	

Purpose of Application: NPDES Permit Renewal.

Summary of Review

Bethel Township Sewer Authority has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The permit was issued on July 9, 2020, and became effective on August 1, 2020. The permit authorized discharge of treated sewage from the existing wastewater treatment plant (WWTP) located in Bethel Township, Fulton County to Little Tonoloway Creek. The existing permit expiration date is July 31, 2025.

The discharge design flow is 0.048 MGD. This facility is owned, operated by Bethel Township, and serves the Warfordsburg area of Bethel Township.

WQM No. 299340 95-1 amendment was issued on September 27, 1995.

Sludge use and disposal description and location(s): N/A because sludge is hauled by facility's contractor.

Changes from the previous permit: The E. Coli monitoring and report requirements will add to the proposed permit.

Based on the review outlined in this fact sheet, it is recommended that the permit be drafted. A public notice of the draft permit will be published in the *Pennsylvania Bulletin* for public comments for 30 days.

Approve	Deny	Signatures	Date
X		Hilaryle Hilary H. Le / Environmental Engineering Specialist	June 13, 2025
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	July 3, 2025

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.048
Latitude	39º 45' 9.43"	Longitude	-78º 10' 48.93"
Quad Name	Needmore	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Little Tonoloway Creek (TSF)	Stream Code	60871
NHD Com ID	49477840	RMI	2.9 miles
Drainage Area	49.9 mi.^{2}	Yield (cfs/mi^2)	See comments below
Q_{7-10} Flow (cfs)	See comments below	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	484.25	Slope (ft/ft)	
Watershed No.	13-B	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	R.C. Wilson Water Treatment Plant near Williamsport, MD		
PWS Waters	Potomac River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	Approximate 20.0 miles

Changes Since Last Permit Issuance:

Drainage Area
The discharge is to Little Tonoloway Creek at RMI 2.9 miles. A drainage area upstream of the discharge is estimated to be 49.9 mi.^{2}, according to USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Stream Flow
There are no nearby stream gages with low flow data that have extensive or recent periods of record. Since USGS PA StreamStats estimated the drainage area that is below the minimum value allowed by USGS's regression equations, the USGS StreamStats on Tonoloway Creek at the PA/MD border will be used to calculate the Q_{7-10} at the point of discharge using a low flow yield method. The Q_{7-10} here is 1.67 cfs and the drainage area is 112 mi.^{2} which results in a Q_{7-10} low flow yield of 0.015 cfs/mi.^{2}. This information is used to obtain a chronic or 30-day (Q_{30-10}), and an acute or 1-day (Q_{1-10}) exposure stream flow for the discharge point as follows (Guidance No. 391-2000-023):

$$\text{Low Flow Yield} = Q_{7-10gage} / \text{Drainage Area}_{gage} = 1.67 \text{ cfs} / 112 \text{ mi.}^2 = 0.015 \text{ cfs/mi.}^2$$
$$Q_{7-10discharge} = 0.015 \text{ cfs/mi.}^2 * \text{Drainage Area}_{discharge} = 0.015 \text{ cfs/mi.}^2 * 49.9 \text{ mi.}^2 = 0.75 \text{ cfs}$$
$$Q_{30-10} = 1.36 * Q_{7-10discharge} = 1.36 * 0.75 \text{ cfs} = 1.02 \text{ cfs}$$
$$Q_{1-10} = 0.64 * Q_{7-10discharge} = 0.64 * 0.75 \text{ cfs} = 0.48 \text{ cfs}$$

Little Tonoloway Creek
25 Pa Code § 93.9z classifies Little Tonoloway Creek as trout stocking fishes (TSF) surface water. Based on the 2024 Integrated Report, Little Tonoloway Creek, (Assessment ID 2714), is not impaired. A TMDL currently does not exist for this stream segment, therefore, no TMDL has been taken into consideration during this review.

Potable Water Supply Intake
The nearest downstream public water supply intake is the R.C. Wilson Water Treatment Plant near Williamsport, MD intake on the Potomac River, approximately 20 miles from the point of discharge. Given the nature and dilution, the discharge is not expected to significantly impact the water supply.

Treatment Facility Summary				
Treatment Facility Name: Bethel Township STP				
WQM Permit No.	**Issuance Date**			
299340 95-1	9/27/1995			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Chlorine With Dechlorination	0.048
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.048	85	Not Overloaded	Aerobic Digestion	Combination of methods

Changes Since Last Permit Issuance:

Other Comments:
The treatment process consists of a pump station/wet well (1), comminutor (1), bar screen (1), equitization tanks (3), aeration tanks (8), clarifiers/settling tanks (2), chlorine contact tank (1), dichlorination tank (1), sludge holding tanks (2), discharge (outfall).

Calcium Hypochlorite is used for disinfection.

Industrial/Commercial Users:
The permit application indicated there is no industrial/commercial contributor to the treatment plant.

Biosolids:
Liquid Biosolids are hauled off site by facility's contractor.

Compliance History	
Summary of DMRs:	DMRs reported last 12 months are summarized in next page.
Summary of Inspections:	12/27/2024: Mr. Clark, DEP WQS, conducted compliance evaluation inspection. There were no violations noted during inspection. The field sample test results were within the permit limits. Recommendations were to repair or replace overflow weirs in clarifier tank and check & adjust clarifier skimmers as needed. 6/7/2023: Mr. Clark, DEP WQS, conducted compliance evaluation inspection. There were no violations noted during inspection. The field sample test results were within the permit limits. Recommendations were to obtain a copy of the April 2022 sludge hauling receipt and file with other sludge records, check and adjust clarifier skimmers as needed, and obtain a thermometer for storage refrigerator.
Other Comments:	There are currently no open violations associated with the permittee or the facility.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from May 1, 2024 to April 30, 2025)

Parameter	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24
Flow (MGD) Average Monthly	0.008280	0.010155	0.011854	0.010394	0.008284	0.005117	0.005384	0.00485	0.008997	0.004042	0.004980	0.007626
Flow (MGD) Daily Maximum	0.0128	0.013700	0.016100	0.021500	0.0165	0.012100	0.0108	0.00960	0.046900	0.0078	0.0099	0.031800
pH (S.U.) Daily Minimum	7.0	7.2	7.2	7.2	7.2	7.2	7.2	6.9	7.1	6.9	7.1	7.0
pH (S.U.) Instantaneous Maximum	8.0	7.7	7.7	7.6	7.8	7.9	8.4	7.6	7.9	7.7	8.0	7.9
DO (mg/L) Daily Minimum	8.1	9.1	10.1	10.2	8.3	8.9	7.9	8.7	7.8	8.3	8.3	8.7
TRC (mg/L) Average Monthly	0.03	0.04	0.05	0.05	0.06	0.05	0.04	0.04	0.03	0.03	0.03	0.04
TRC (mg/L) Instantaneous Maximum	0.08	0.15	0.14	0.21	0.19	0.17	0.13	0.20	0.11	0.20	0.16	0.21
CBOD5 (lbs/day) Average Monthly	0.20	0.44	0.32	0.37	0.45	0.21	0.14	0.155	0.08	0.008	0.13	0.26
CBOD5 (lbs/day) Weekly Average	0.21	0.63	0.32	0.54	0.67	0.28	0.20	0.17	0.127	0.009	0.13	0.34
CBOD5 (mg/L) Average Monthly	3.0	5.1	3.0	3.4	3.9	3.0	3.0	3.0	3.0	3.9	3.0	4.7
CBOD5 (mg/L) Weekly Average	3.0	7.1	3.0	3.8	4.9	3.0	3.0	3.0	3.0	4.8	3.0	6.3
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	15.3	19.9	21.4	8.9	21.6	16.6	11.0	13.1	5.5	4.8	10.5	12.1
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	18.3	23.4	25.5	14.0	26.8	24.7	12.1	15.9	8.6	5.4	10.6	13.6
BOD5 (mg/L) Raw Sewage Influent Average Monthly	238.5	233.5	199.5	103.9	209.5	231.5	310.5	250.5	198	226	241.5	212.0
TSS (lbs/day) Average Monthly	0.375	0.46	0.44	0.51	0.44	0.27	0.43	0.24	0.07	0.06	0.38	0.12
TSS (lbs/day) Raw Sewage Influent Average Monthly	20.5	29.6	22.1	10.9	26	25.3	13.2	11.7	8.6	4.5	16.2	13.5

TSS (lbs/day) Raw Sewage Influent Daily Maximum	20.7	40.1	26.0	16.4	31.4	34.6	13.4	12.3	13.6	6.2	17.5	15.1
TSS (lbs/day) Weekly Average	0.43	0.46	0.68	0.71	0.44	0.30	0.78	0.29	0.11	0.09	0.315	0.15
TSS (mg/L) Average Monthly	5.8	5.4	4.0	5.0	4.6	4.4	7.6	4.6	4.4	2.8	3.8	2.2
TSS (mg/L) Raw Sewage Influent Average Monthly	315.5	356	206.0	129.5	254	371	397.5	226	306	203	374	234
TSS (mg/L) Weekly Average	6.4	5.6	6.4	6.0	6.0	5.6	12.0	5.2	5.6	4.0	6.0	2.8
Fecal Coliform (No./100 ml) Geometric Mean	230	135	418	128	84	41	103	443	355	214	21	13
Fecal Coliform (No./100 ml) Instantaneous Maximum	1102	174	646	156	96	140	125	626	818	436	57	21
Nitrate-Nitrite (mg/L) Average Monthly	24.89	29.40	28.95	29.26	51.89	39.04	26.12	40.80	57.91	54.44	47.06	20.96
Total Nitrogen (mg/L) Average Monthly	25.39	29.99	29.45	29.76	52.39	39.54	26.62	41.30	58.41	54.94	47.46	21.46
Ammonia (lbs/day) Average Monthly	0.004	0.09	0.059	0.011	0.011	0.017	0.005	0.0055	0.003	0.002	0.004	0.006
Ammonia (mg/L) Average Monthly	0.10	0.10	0.10	0.10	0.10	0.34	0.10	0.10	0.10	0.10	0.10	0.10
TKN (mg/L) Average Monthly	0.50	0.5	0.50	0.50	0.50	0.50	0.5	0.50	0.50	0.50	0.50	0.50
Total Phosphorus (mg/L) Average Monthly	4.83	4.01	4.22	4.13	6.51	6.91	6.5	7.04	9.36	9.80	8.15	4.86

Existing Effluent Limitations and Monitoring Requirements

Outfall 001.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
D.O.	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
$CBOD_5$	10.0	16.0 Wkly Avg	XXX	25.0	40.0	50.0	2/month	8-Hr Composite
TSS	12.0	18.0 Wkly Avg	XXX	30.0	45.0	60.0	2/month	8-Hr Composite
BOD_5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Ammonia	5.8	XXX	XXX	14.5	XXX	40.0	2/month	8-Hr Composite
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
TKN	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.048
Latitude 39º 45' 9.43" **Longitude** -78º 10' 48.93"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

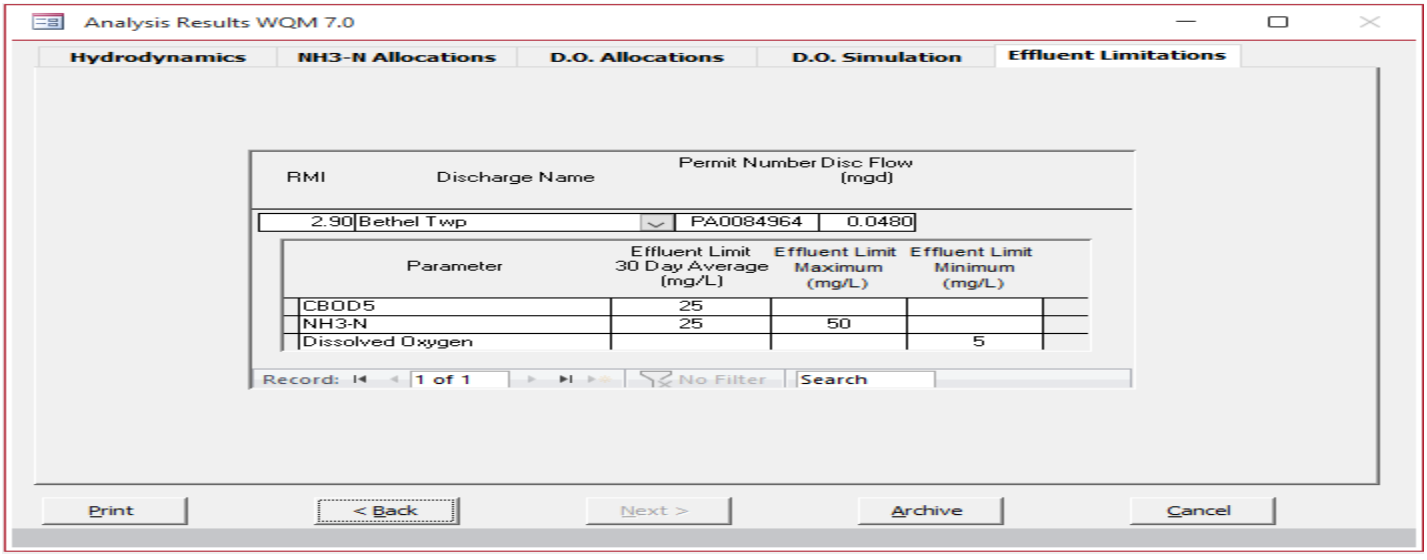
Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	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:

Water Quality-Based Limitations

Ammonia (NH_3-N):
NH_3-N calculations were first based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the in-stream NH_3-N criteria used in the attached computer model of the stream:

Discharge pH	=	7.0	(Default)
Discharge Temperature	=	20°C	(Default)
Stream pH	=	7.0	(Default)
Stream Temperature	=	20ºC	(Default)
Background NH_3-N	=	0	(Default)



The printout of the WQM 7.0 output indicates that at a discharge of 0.048 MGD, limits (rounded according to the NPDES Technical Guidance 362-0400-001) of 25.0 mg/L NH_3-N as average monthly (AML) and 50.0 mg/L NH_3-N instantaneous maximum (IMAX) are necessary to protect the aquatic life from toxicity effects. However, the more stringent in existing limits of 14.5 mg/L AML and 40.0 mg/L IMAX will remain in the proposed permit due to anti-backsliding requirements. Additionally, past DMRs and inspection reports show that the facility has been consistently achieving concentrations under these limits. Mass limits are calculated as follows:

Mass based AML (lbs/day) = 14.5 (mg/L) x 0.048 (MG/day) x 8.34 (lbs/MG)(L/mg) = 5.80 lbs/day

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$):
The attached computer printout of the WQM 7.0 stream model indicates that a monthly average limit of 25.0 mg/L, or secondary treatment, is adequate to protect the water quality of the stream. However, the existing limits of 25.0 mg/L average monthly (AML), 40.0 mg/L average weekly limit (AWL), and 50.0 mg/L instantaneous maximum (IMAX) will remain in the proposed permit as per guidance document 391-2000-014. Recent DMRs and inspection reports show that the facility has been consistently achieving these limits. Mass limits are calculated as follows:

Mass based AML (lbs/day) = 25.0 (mg/L) x 0.048 (MG/day) x 8.34 (lbs/MG)(L/mg) = 10.01 lbs/day
Mass based AWL (lbs/day) = 40.0 (mg/L) x 0.048 (MG/day) x 8.34 (lbs/MG)(L/mg) = 16.01 lbs/day

Dissolved Oxygen (D.O.):
A minimum D.O. of 5.0 mg/L is required per 25 Pa. Code § 93.7. This is consistent with the previous permit and current Department criteria.

Total Suspended Solids (TSS):
There is no water quality criterion for TSS. A limit of 30.0 mg/L AML and 60.0 mg/L IMAX will be required based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 Pa. Code § 92a.47(a)(1), and an AWL of 45.0 mg/L per 40 CFR 133.102(b)(2) and 25 Pa. Code § 92a.47(a)(2). Mass limits are calculated as follows:

Mass based AML (lbs/day) = 30.0 (mg/L) x 0.048 (MG/day) x 8.34 (lbs/MG)(L/mg) = 12.0 lbs/day
Mass based AWL (lbs/day) = 45.0 (mg/L) x 0.048 (MG/day) x 8.34 (lbs/MG)(L/mg) = 18.0 lbs/day

pH:
The effluent discharge pH should remain above 6.0 and below 9.0 standard units according to 25 Pa. Code § 95.2(2).

Fecal Coliform:
The recent coliform guidance in 25 Pa. Code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100 ml and 25 Pa. Code § 92a.47.(a)(5) requires a winter limit of 2,000/100 ml as a geometric mean and an instantaneous maximum not greater than 10,000/100 ml.

E. Coli:
As recommended by DEP's SOP No. BCW-PMT-033, version 2.0 revised February 5, 2024, a routine monitoring for E. Coli will be included in the proposed permit under 25 Pa. Code § 92a.61. This requirement applies to all sewage dischargers greater than 0.002 MGD in their new and reissued permits. A monitoring frequency of 1/year will be included in the permit to be consistent with the recommendation from this SOP.

Influent BOD_5 and TSS Monitoring:
The permit will include influent BOD_5 and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements, per DEP policy.

Biosolids Management:
According to the permit renewal application submitted on March 5, 2025; the total sewage sludge/biosolids production within the facility for the previous year was approximately 1.2 dry tons. These sewage sludge/biosolids production were hauled by Glenn Smith Septic Hauler to Washington Township, MD WWTP. Since the facility is located in Maryland, there is no PADEP-issued permit associated with this plant.

Total Residual Chlorine (TRC):
The attached computer printout utilizes the equations and calculations as presented in the Department's 2003 Implementation Guidance for Total Residual Chlorine, dated 11/15/94 (ID No. 391-2000-015) for developing chlorine limitations. The attached printout indicates that an average monthly water quality limit of 0.5 mg/L and 1.6 mg/L max daily would be needed to prevent toxicity concerns. This is consistent with the existing permit. The treatment facility is meeting this limit.

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.75	= Q stream (cfs)	0.5	= CV Daily
0.048	= 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 = 3.241	1.3.2.iii	WLA cfc = 3.152
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 1.208	5.1d	LTA_cfc = 1.833

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)**

Chesapeake Bay Strategy:
The Department formulated a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). Sewage discharges have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual loading caps based on their design flow on August 29, 2005 and concentrations of 6.0 mg/L TN and 0.8 mg/L TP. These limits may be achieved through a combination of treatment technology, credits, or offsets. Phase 4 (0.2 -0.4 MGD) will be required to monitor and report TN and TP during permit renewal monthly and Phase 5 (below 0.2 MGD) will monitor during current permit renewal once a year unless two years of monitoring were completed and documented. Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. This plant is classified as a phase 5 and will be required to monitor and report Nitrate-Nitrite as N, Total Kjeldahl Nitrogen, Total Phosphorus, and Total Nitrogen. The one per month monitoring and report requirements for these parameters will remain in the proposed permit.

Toxics:
This is a minor sewage facility receiving domestic wastewater only and the current application does not require sampling of toxic pollutants (or heavy metals) for those facilities with design flows less than 0.1 MGD. Therefore, no reasonable potential analysis for toxic pollutants has been performed for this permit renewal.

Stormwater:
There are no known stormwater outfalls associated with this facility.

Anti-Degradation (93.4)

Since the Chapter 93 classification of this stream is Trout Stocking Fishes (TSF), anti-degradation requirements do not apply. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

303d Listed Streams:

The discharge is not located on a 303d listed stream segment.

Additional Considerations

Flow Monitoring
The requirement to monitor the volume of effluent will remain in the proposed permit per 40 CFR § 122.44(i)(1)(ii).

Monitoring Frequency and Sample Type
The facility currently is required to collect daily effluent grab samples for D.O., pH, and TRC; two-month effluent 8-hr composite samples of $CBOD_5$, TSS, and Ammonia-Nitrogen; two-month effluent grab samples of fecal coliform; two-month influent 8-hr composite sample of BOD_5 and TSS; one per month effluent 8-hr composite samples of Nitrate-Nitrite as N, Total Kjeldahl Nitrogen, and TP; and one per month effluent calculation samples of TN. Based on the best professional judgement of the author, the existing monitoring frequencies are sufficient and necessary. Therefore, the existing monitoring frequencies will remain the same as those specified in the proposed permit.

WQM 7.0 :

Discharge pH	=	7.0	(Default)
Discharge Temperature	=	20°C	(Default)
Stream pH	=	7.0	(Default)
Stream Temperature	=	20°C	(Default)
Background NH_3-N	=	0	(Default

Node 1: Little Tonoloway Creek (stream code 60871)

Elevation:	484.25 ft (USGS National Map Viewer)
Drainage Area:	49.9 $mi.^2$ (USGS PA StreamStats)
River Mile Index:	2.90 miles (PA DEP eMapPA)
Low Flow Yield:	0.015 $cfs/mi.^2$
Discharge Flow:	0.048 MGD (NPDES PA0084964)

Node 2: Just before Trib 60876 to Little Tonoloway Creek

Elevation:	476.64 ft (USGS National Map Viewer)
Drainage Area:	51.00 $mi.^2$ (USGS PA StreamStats)
River Mile Index:	2.39 mile (PA DEP eMapPA)
Low Flow Yield:	0.015 $cfs/mi.^2$
Discharge Flow:	0.00 MGD

Analysis Results WQM 7.0

Hydrodynamics | NH3-N Allocations | D.O. Allocations | D.O. Simulation | Effluent Limitations

RMI	Discharge Name	Permit Number	Disc Flow (mgd)
2.90	Bethel Twp	PA0084964	0.0480

Parameter	Effluent Limit 30 Day Average (mg/L)	Effluent Limit Maximum (mg/L)	Effluent Limit Minimum (mg/L)
CBOD5	25		
NH3-N	25	50	
Dissolved Oxygen			5

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rptEffLimits

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
13B	66871	LITTLE TONOLOWAY CREEK

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)
2.900	Bethel Twp	PA0084964	0.048	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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rpt_WLA

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
13B	66871	LITTLE TONOLOWAY CREEK

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
2.900	Bethel Twp	16.76	50	16.76	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
2.900	Bethel Twp	1.89	25	1.89	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5 Baseline (mg/L)	CBOD5 Multiple (mg/L)	NH3-N Baseline (mg/L)	NH3-N Multiple (mg/L)	Dissolved Oxygen Baseline (mg/L)	Dissolved Oxygen Multiple (mg/L)	Critical Reach	Percent Reduction
2.90	Bethel Twp	25	25	25	25	5	5	0	0

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rptDOSim

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
13B	60871	LITTLE TONOLOWAY CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.900	0.048	20.000	7.000
Reach Width (ft)	Reach Depth (ft)	Reach WDRatio	Reach Velocity (fps)
19.586	0.554	35.377	0.076
Reach CBOD5 (mg/L)	Reach Kc (1/days)	Reach NH3-N (mg/L)	Reach Kr (1/days)
4.08	0.713	2.26	0.700
Reach DO (mg/L)	Reach Kr (1/days)	Kr Equation	Reach DO Goal (mg/L)
7.950	11.513	Owens	5
Reach Travel Time (days)			
0.419			

Subreach Results

Trav Time (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.042	3.96	2.19	8.03
0.084	3.91	2.13	8.10
0.126	3.75	2.07	8.15
0.168	3.62	2.01	8.19
0.209	3.51	1.95	8.22
0.251	3.41	1.89	8.24
0.293	3.31	1.84	8.24
0.335	3.21	1.78	8.24
0.377	3.12	1.73	8.24
0.419	3.02	1.68	8.24

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rptModelSpecs

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	5	

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rptHydro

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
13B	60871	LITTLE TONOLOWAY CREEK

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 (°C)	Analysis pH
Q7-10 Flow												
2.900	0.75	0.00	0.75	.0743	0.00277	.554	19.59	35.38	0.08	0.419	20.00	7.00
Q1-10 Flow												
2.900	0.48	0.00	0.48	.0743	0.00277	NA	NA	NA	0.06	0.523	20.00	7.00
Q30-10 Flow												
2.900	1.02	0.00	1.02	.0743	0.00277	NA	NA	NA	0.09	0.357	20.00	7.00

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rptGeneral

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
13B	60871	LITTLE TONOLOWAY CREEK	2.900	484.25	49.90	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfs/cfs)	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	0.015	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
Bethel Twp	PA0084964	0.0480	0.0480	0.0480	0.000	20.00	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	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

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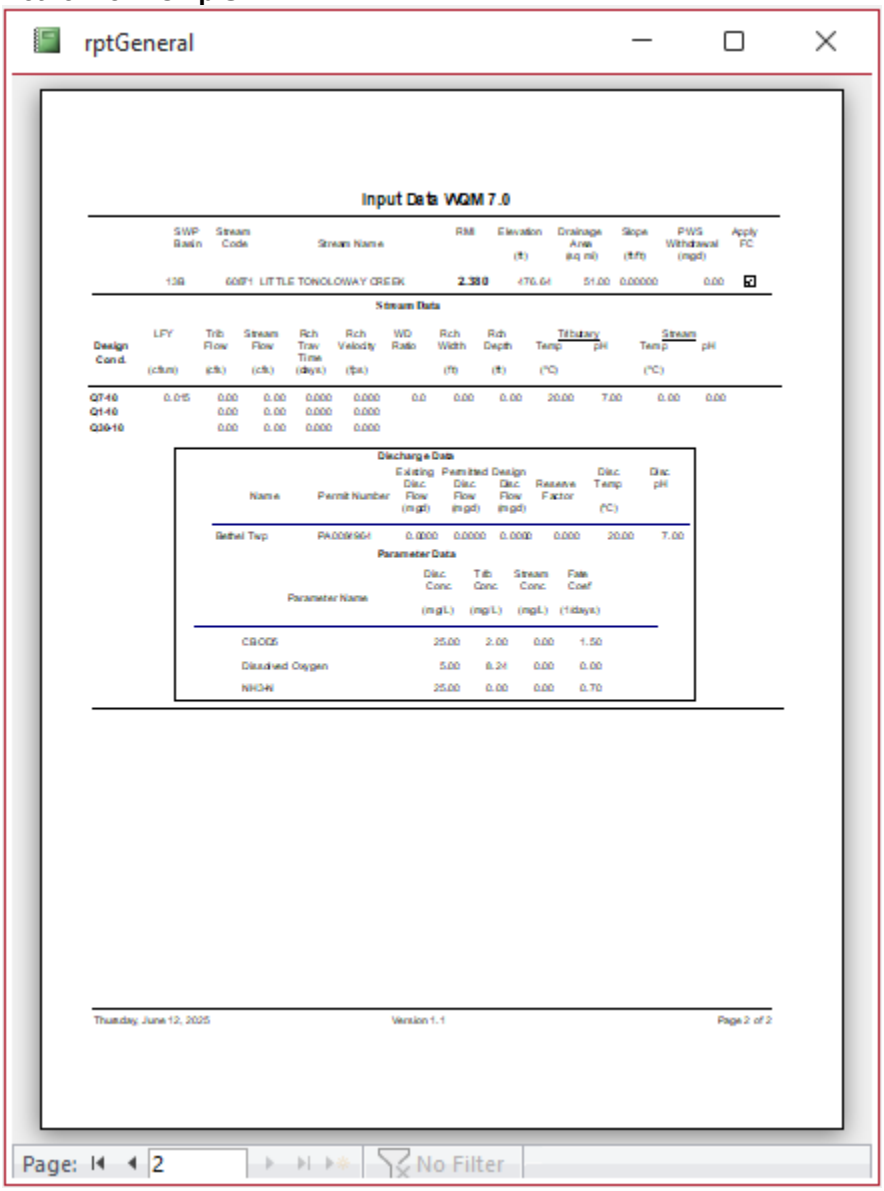
rptGeneral
Input Data WQM 7.0
SWP Basin
Stream Code
Stream Name
RMI
Elevation (ft)
Drainage Area (sq mi)
Slope (ft/ft)
PWS Withdrawal (mgd)
Apply FC
13B
606F1
LITTLE TONOLOWAY CREEK
2.380
476.64
51.00
0.00000
0.00
Stream Data
Design Cond.
LFY (cfsm)
Trib Flow (cfs)
Stream Flow (cfs)
Rch Trav Time (days)
Rch Velocity (fps)
WD Ratio
Rch Width (ft)
Rch Depth (ft)
Tributary Temp (°C)
Tributary pH
Stream Temp (°C)
Stream pH
Q7-10
Q1-10
Q30-10
0.015
0.00
0.00
0.00
0.000
0.000
0.000
0.000
0.0
0.00
0.00
0.00
20.00
7.00
0.00
0.00
Discharge Data
Name
Permit Number
Existing Disc. Flow (mgd)
Permitted Disc. Flow (mgd)
Design Disc. Flow (mgd)
Reserve Factor
Disc. Temp (°C)
Disc. pH
Bethel Twp
PA0084964
0.0000
0.0000
0.0000
0.000
20.00
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
5.00
8.24
0.00
0.00
NH3-N
25.00
0.00
0.00
0.70
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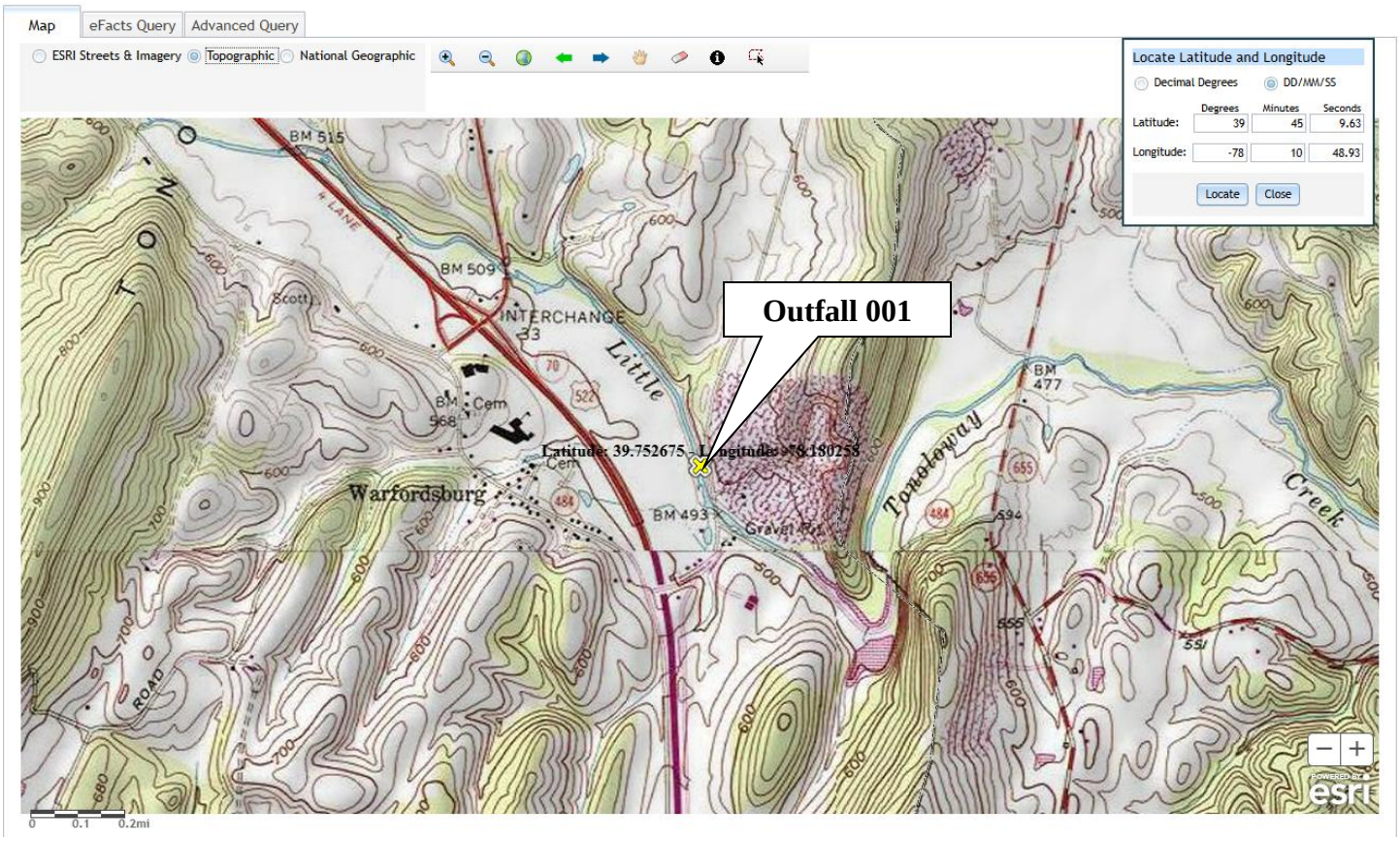
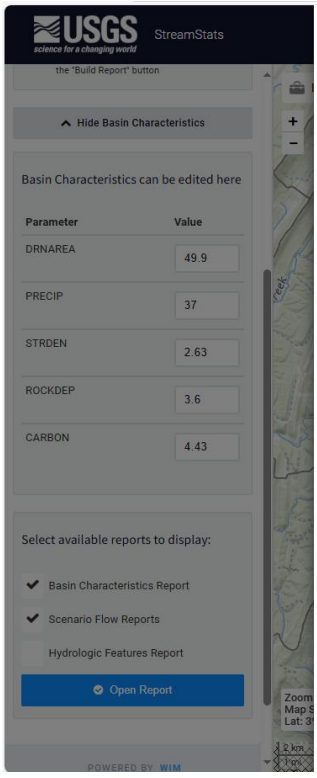
Proposed Effluent Limitations and Monitoring Requirements

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	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
D.O.	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
$CBOD_5$	10.0	16.0	XXX	25.0	40.0	50.0	2/month	8-Hr Composite
BOD_5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	12.0	18.0	XXX	30.0	45.0	60.0	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	2,000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Ammonia	5.8	XXX	XXX	14.5	XXX	40.0	2/month	8-Hr Composite
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
TKN	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite





Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	4.43	percent
DRNAREA	Area that drains to a point on a stream	49.9	square miles
PRECIP	Mean Annual Precipitation	37	inches
ROCKDEP	Depth to rock	3.6	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	2.63	miles per square mile

Low-Flow Statistics

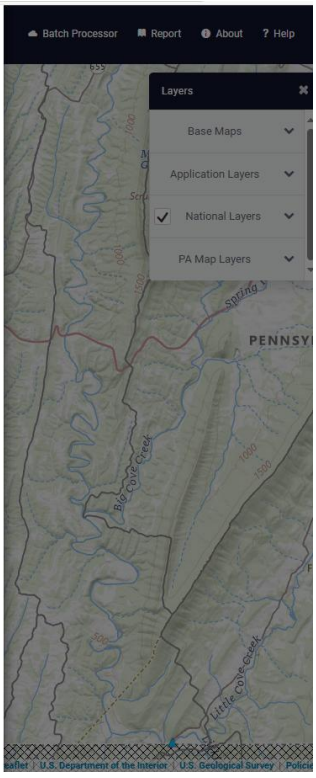
Low-Flow Statistics Parameters [Low Flow Region 2]

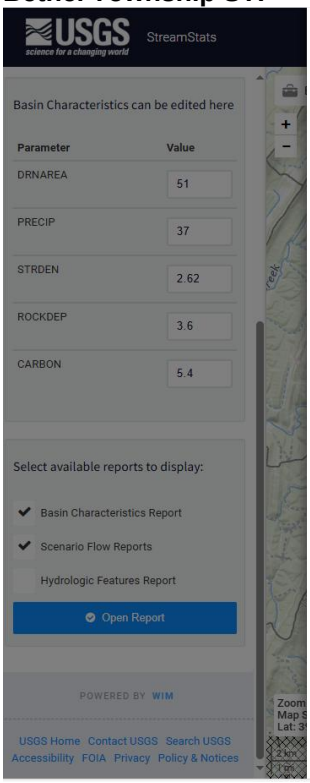
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CARBON	Percent Carbonate	4.43	percent	0	99
DRNAREA	Drainage Area	49.9	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	37	inches	35	50.4
ROCKDEP	Depth to Rock	3.6	feet	3.32	5.65
STRDEN	Stream Density	2.63	miles per square mile	0.51	3.1

Low-Flow Statistics Flow Report [Low Flow Region 2]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	2	ft^3/s	38	38
30 Day 2 Year Low Flow	3.02	ft^3/s	33	33
7 Day 10 Year Low Flow	0.729	ft^3/s	51	51
30 Day 10 Year Low Flow	1.15	ft^3/s	46	46
90 Day 10 Year Low Flow	2.12	ft^3/s	36	36





Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	5.4	percent
DRNAREA	Area that drains to a point on a stream	51	square miles
PRECIP	Mean Annual Precipitation	37	inches
ROCKDEP	Depth to rock	3.6	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	2.62	miles per square mile

Low-Flow Statistics

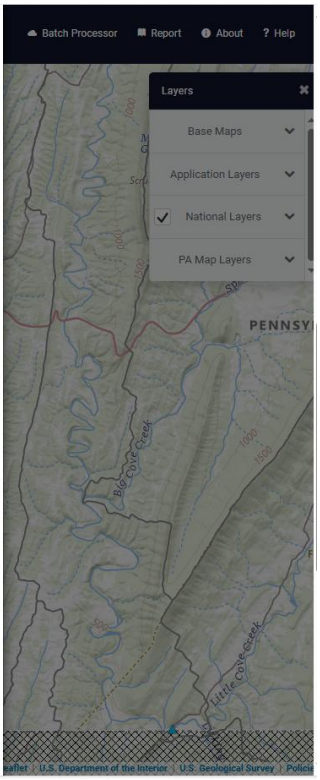
Low-Flow Statistics Parameters [Low Flow Region 2]

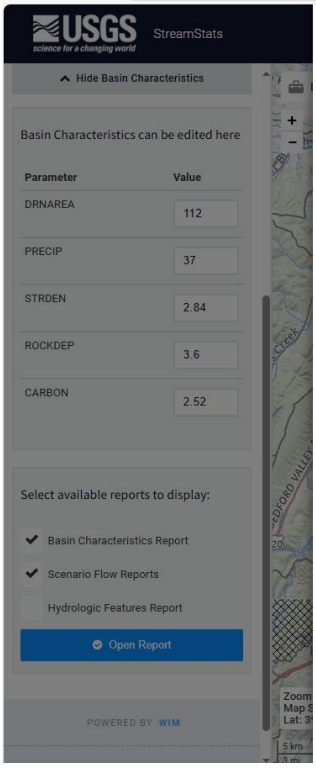
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CARBON	Percent Carbonate	5.4	percent	0	99
DRNAREA	Drainage Area	51	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	37	inches	35	50.4
ROCKDEP	Depth to Rock	3.6	feet	3.32	5.65
STRDEN	Stream Density	2.62	miles per square mile	0.51	3.1

Low-Flow Statistics Flow Report [Low Flow Region 2]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	2.08	ft^3/s	38	38
30 Day 2 Year Low Flow	3.13	ft^3/s	33	33
7 Day 10 Year Low Flow	0.763	ft^3/s	51	51
30 Day 10 Year Low Flow	1.2	ft^3/s	46	46
90 Day 10 Year Low Flow	2.2	ft^3/s	36	36





Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	2.52	percent
DRNAREA	Area that drains to a point on a stream	112	square miles
PRECIP	Mean Annual Precipitation	37	inches
ROCKDEP	Depth to rock	3.6	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	2.84	miles per square mile

Low-Flow Statistics

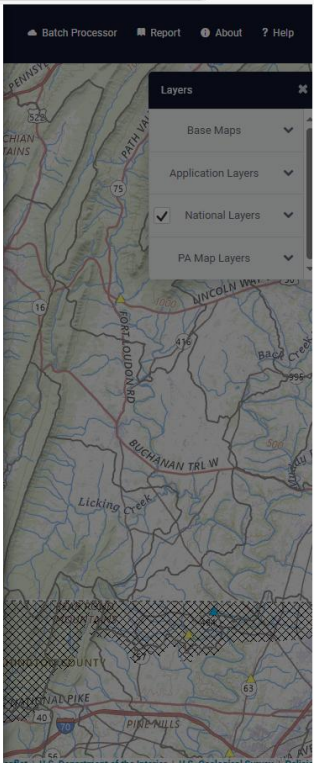
Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CARBON	Percent Carbonate	2.52	percent	0	99
DRNAREA	Drainage Area	112	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	37	inches	35	50.4
ROCKDEP	Depth to Rock	3.6	feet	3.32	5.65
STRDEN	Stream Density	2.84	miles per square mile	0.51	3.1

Low-Flow Statistics Flow Report [Low Flow Region 2]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	4.43	ft^3/s	38	38
30 Day 2 Year Low Flow	6.64	ft^3/s	33	33
7 Day 10 Year Low Flow	1.67	ft^3/s	51	51
30 Day 10 Year Low Flow	2.62	ft^3/s	46	46
90 Day 10 Year Low Flow	4.76	ft^3/s	36	36



Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	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: BCW-PMT-033
☐	Other: