Pennsylvania Department of Environmental Protection

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0247855**
Facility Type	**Municipal**	APS ID	**559917**
Major / Minor	**Minor**	Authorization ID	**1488741**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Belfast Township Fulton County**	Facility Name	**Belfast Township WWTP**
Applicant Address	121 Homestead Lane	Facility Address	323 Martin Road
	Needmore, PA 17238-9425		Needmore, PA 17238-9425
Applicant Contact	Greg Mellott	Facility Contact	Greg Mellott
Applicant Phone	(717) 377-9491	Facility Phone	(717) 377-9491
Client ID	70132	Site ID	659110
Ch 94 Load Status	Not Overloaded	Municipality	Belfast Township
Connection Status	No Limitations	County	Fulton
Date Application Received	June 14, 2024	EPA Waived?	Yes
Date Application Accepted	June 14, 2024	If No, Reason	

Purpose of Application: NPDES permit renewal.

Summary of Review

Belfast Township (Authority/Permittee), applied to the Pennsylvania Department of Environmental Protection (DEP) for issuance of the NPDES permit. The permit was reissued on December 17, 2019 and became effective on January 1, 2020. The permit expires on December 31, 2024.

The average annual design flow is 0.03 MGD, and hydraulic design capacity is 0.034 MGD. The treated effluent is discharged to Tonoloway Creek. The renewal application indicated the STP receives its 100% from the Belfast Township.

WQM No. 2906402 was issued on 8/18/2006. The WQM No. 2906402 A-1 amendment was issued on 10/8/2013.

Sludge use and disposal description and location(s): N/A because sludge is hauling by County Septic.

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	October 25, 2024
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	November 8, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.03
Latitude	39º 50' 40.00"	Longitude	-78º 8' 21.00"
Quad Name	Needmore	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Tonoloway Creek (WWF)	Stream Code	60850
NHD Com ID	49470738	RMI	16.6 miles
Drainage Area	31.8 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)	589.39	Slope (ft/ft)	
Watershed No.	13-B	Chapter 93 Class.	WWF
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 30.0 miles

Changes Since Last Permit Issuance:

Drainage Area
The discharge is to Tonoloway Creek at RMI 16.6 miles. A drainage area upstream of the discharge is estimated to be 31.8 mi.^{2}, according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
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 gage station No. 70403 on Tonoloway Creek watershed (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):

$$\text{Low Flow Yield} = Q_{7\text{-}10gage} / \text{Drainage Area}_{gage} = 1.67 \text{ cfs} / 112 \text{ mi.}^2 = 0.015 \text{ cfs/mi.}^2$$
$$Q_{7\text{-}10discharge} = 0.015 \text{ cfs/mi.}^2 * \text{Drainage Area}_{discharge} = 0.015 \text{ cfs/mi.}^2 * 31.8 \text{ mi.}^2 = 0.48 \text{ cfs}$$
$$Q_{30\text{-}10} = 1.36 * Q_{7\text{-}10discharge} = 1.36 * 0.48 \text{ cfs} = 0.65 \text{ cfs}$$
$$Q_{1\text{-}10} = 0.64 * Q_{7\text{-}10discharge} = 0.64 * 0.48 \text{ cfs} = 0.307 \text{ cfs}$$

Tonoloway Creek
25 Pa Code 93.9z classifies Tonoloway Creek as warm water fishes (WWF) surface water. Based on the 2024 Integrated Report, Tonoloway Creek, 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 30 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: Needmore WWTP & Sewer System				
WQM Permit No.	**Issuance Date**			
2906402	8/18/2006			
2906402 A-1	10/8/2013			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Ultraviolet	0.03
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.034	60	Not Overloaded	Aerobic Digestion	Combination of methods

Changes Since Last Permit Issuance:

Other Comments:
The treatment process consists of a comminutor (1), bar screen (1), equitization tank (1), aeration (4), clarifier (1), UV disinfection (1), sludge holding (2), discharge (outfall).

Industrial/Commercial Users:
There are no industrial/commercial users contributing to this treatment plant.

Biosolids Management:
Liquid biosolids are hauled off site by County Septic.

Compliance History	
Summary of DMRs:	DMRs reported last 12 months are summarized in the Table below.
Summary of Inspections:	3/12/2024: Mr. Clark, DEP WQS, conducted a compliance evaluation inspection. The discharge was clear. The field test results indicated in permit limits. There were no violations during inspection. 2/03/2013: Mr. Clark, DEP WQS, conducted a compliance evaluation inspection. The discharge was clear. There were no violations during inspection. The recommendation was keeping copies of sludge hauler receipts at the treatment plant. The field test results indicated in permit limits.
Other Comments:	There are no open violations associated with this facility or permittee.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from September 1, 2023 to August 31, 2024)

Parameter	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23
Flow (MGD) Average Monthly	0.006816	0.004155	0.004437	0.004692	0.008587	0.009010	0.008424	0.012645	0.008481	0.006867	0.05410	0.005597
Flow (MGD) Daily Maximum	0.028700	0.00900	0.005600	0.008700	0.041000	0.057500	0.028800	0.070300	0.013800	0.018100	0.007500	0.012400
pH (S.U.) Daily Minimum	7.6	7.9	8.1	7.9	7.6	7.6	3.9	7.5	7.3	7.6	7.7	7.6
pH (S.U.) Instantaneous Maximum	8.2	8.3	8.5	8.2	8.2	8.3	8.4	8.3	8.2	8.5	8.3	8.1
DO (mg/L) Daily Minimum	7.3	7.6	9.0	10.5	11.1	11.5	11.6	11.6	9.7	8.7	8.0	7.1
CBOD5 (lbs/day) Average Monthly	0.12	0.06	0.10	0.12	0.25	0.36	0.57	0.20	0.20	0.13	0.13	0.12
CBOD5 (lbs/day) Weekly Average	0.13	0.09	0.12	0.17	0.28	0.38	0.90	0.23	0.25	0.14	0.13	0.14
CBOD5 (mg/L) Average Monthly	3.00	3.00	3.00	3.14	6.42	8.02	8.15	3.00	3.00	3.00	3.00	3.00
CBOD5 (mg/L) Weekly Average	3.00	3.00	3.00	3.28	7.50	8.56	12.00	3.00	3.00	3.00	3.00	3.00
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	6.5	4.2	8.0	6.2	7.7	7.5	9.3	12.3	13.3	8.5	7.3	9.2
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	7.0	6.9	10.8	8.4	9.3	8.2	11.3	16.3	15.8	10.1	8.0	9.4
BOD5 (mg/L) Raw Sewage Influent Average Monthly	170	208	231	178	192.5	170.5	149.5	185	202	192	175.5	248
TSS (lbs/day) Average Monthly	0.08	0.10	0.13	0.07	0.25	0.33	0.57	0.24	0.41	0.13	0.12	0.14
TSS (lbs/day) Raw Sewage Influent Average Monthly	6.9	3.6	2.8	3.0	4.0	3.3	6.2	5.4	5.7	4.8	4.1	7.8
TSS (lbs/day) Raw Sewage Influent Daily Maximum	9.4	6.6	3.9	4.3	4.7	3.9	8.9	7.9	7.4	5.4	4.4	10.6
TSS (lbs/day) Weekly Average	0.10	0.16	0.20	0.11	0.39	0.39	1.01	0.31	0.45	0.14	0.17	0.19

TSS (mg/L) Average Monthly	2.2	5.6	3.8	1.8	6.2	7.4	8.0	3.6	6.7	3.0	2.8	3.4
TSS (mg/L) Raw Sewage Influent Average Monthly	188	152	82	81.5	101	73.5	90.5	78	84	108	97.0	225
TSS (mg/L) Weekly Average	2.8	6.0	5.2	2.0	9.2	7.6	13.5	4.0	9.0	3.0	4.0	4.0
Fecal Coliform (No./100 ml) Geometric Mean	16	11	26	1	3	8	67	4	180	23	5	12
Fecal Coliform (No./100 ml) Instantaneous Maximum	49	21	345	1	8	11	285	7	1120	26	7	17
UV Transmittance (%) Daily Minimum	9.1	7.7	9.9	9.4	7.4	5.5	3.9	0.0	5.3	4.1	4.2	5.1
Total Nitrogen (lbs/day) Annual Average									1.0			
Total Nitrogen (lbs/day) Total Annual									1.0			
Total Nitrogen (mg/L) Annual Average									11.91			
Total Phosphorus (lbs/day) Annual Average									0.2			
Total Phosphorus (lbs/day) Total Annual									0.2			
Total Phosphorus (mg/L) Annual Average									2.3			

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	Daily 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
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
CBOD5	6.2	10.0 Wkly Avg	XXX	25.0	40.0	50.0	2/month	8-Hr Composite
BOD5 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
TSS	7.5	11.2 Wkly Avg	XXX	30.0	45.0	60.0	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
Total Nitrogen	Report Annl Avg	Report Total Annual	XXX	Report Annl Avg	XXX	XXX	1/year	Calculation
Total Phosphorus	Report Annl Avg	Report Total Annual	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.03
Latitude 39º 50' 40.00" **Longitude** -78º 8' 21.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

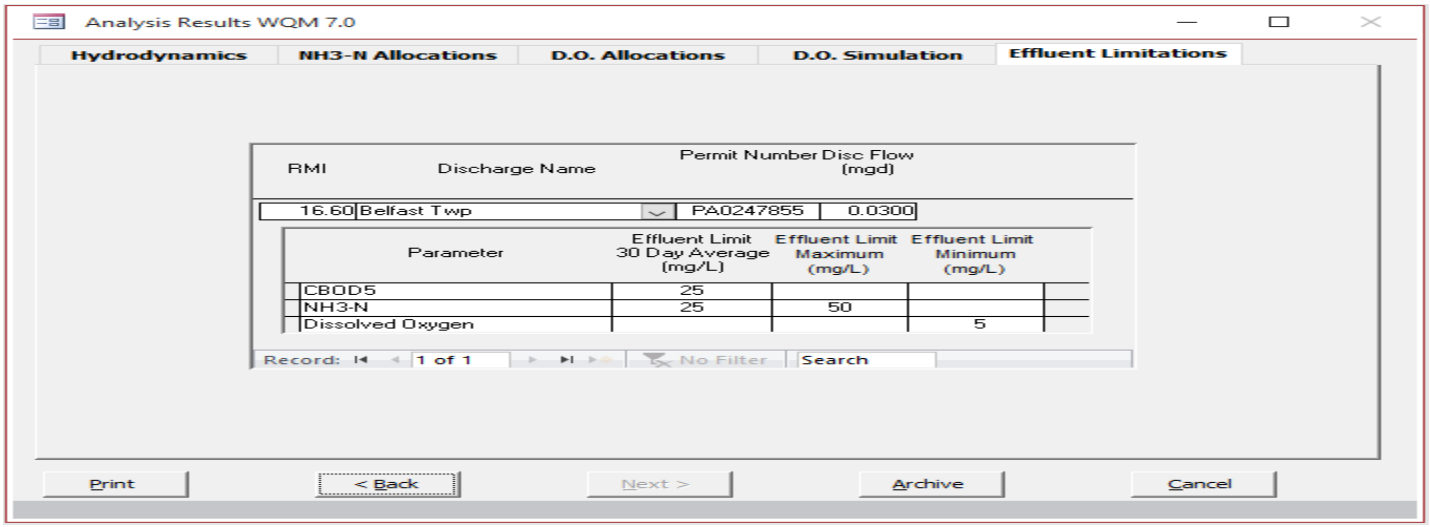
Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	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: Total Residual Chlorine is not applied to this facility

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 attached computer printout of the WQM7.0 stream model shows that no NH_3-N requirements are needed to protect the aquatic life from NH_3-N toxicity.

Dissolved Oxygen (D.O.):
A minimum D.O. of 5.0 mg/L is required per 25 Pa. Code § 93.7. It is recommended that this limit be maintained in the proposed permit to ensure the protection of water quality standards. This approach is consistent with DEP's current Standard Operating Procedure (SOP) No. BCW-PMT-033, version 2.0 revised February 5, 2024, and has been applied to other point source dischargers throughout the state.

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 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 0.03 (MG/day) x 8.34 (lb/MG)(L/mg) = 6.255 lbs/day
Mass based AWL (lbs/day) = 40.0 (mg/L) x 0.03 (MG/day) x 8.34 (lb/MG)(L/mg) = 10.0 lbs/day

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 § 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.

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

Total Suspended Solids (TSS):
There is no water quality criterion for TSS. A limit of 30 mg/L AML 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 § 92a.47(a)(1), and an AWL of 45mg/L per 40CFR 133.102(b)(2) and 25 PA § 92a.47(a)(2). Mass limits are calculated as follows:

Mass based AML (lbs/day) = 30 (mg/L) x 0.03 (MG/day) x 8.34 (lb/MG)(L/mg) = 7.5 lbs/day
Mass based AWL (lbs/day) = 45 (mg/L) x 0.03 (MG/day) x 8.34 (lb/MG)(L/mg) = 11.2 lbs/day

Phosphorus:
No phosphorus permit limitations are necessary for this facility.

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 I, II, and III) dischargers will receive annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/L TN and 0.8 mg/L TP. These limits may be achieved through a combination of treatment technology, credits, or offsets. Phase IV (0.2 - 0.4 MGD) will be required to monitor and report TN and TP during permit renewal monthly and Phase V (below 0.2 MGD) will monitor during current permit renewal once a year. However, any facility in Phases IV and V that undergoes expansion is subjected to cap load right away. This plant is classified as a phase V, will be required to monitor and report TP and TN once a year.

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.

Toxic:

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.

Antidegradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

303d Listed Streams

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

Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

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., and pH; daily measured record UV Light Transmittance (%); two-month effluent 8-hr composite samples of $CBOD_5$, and TSS; two-month effluent grab samples of fecal coliform; two-month influent 8-hr composite sample of BOD_5 and TSS; annually effluent 8-hr composite samples of TP; and annually 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.

Ultraviolet (UV) Monitoring

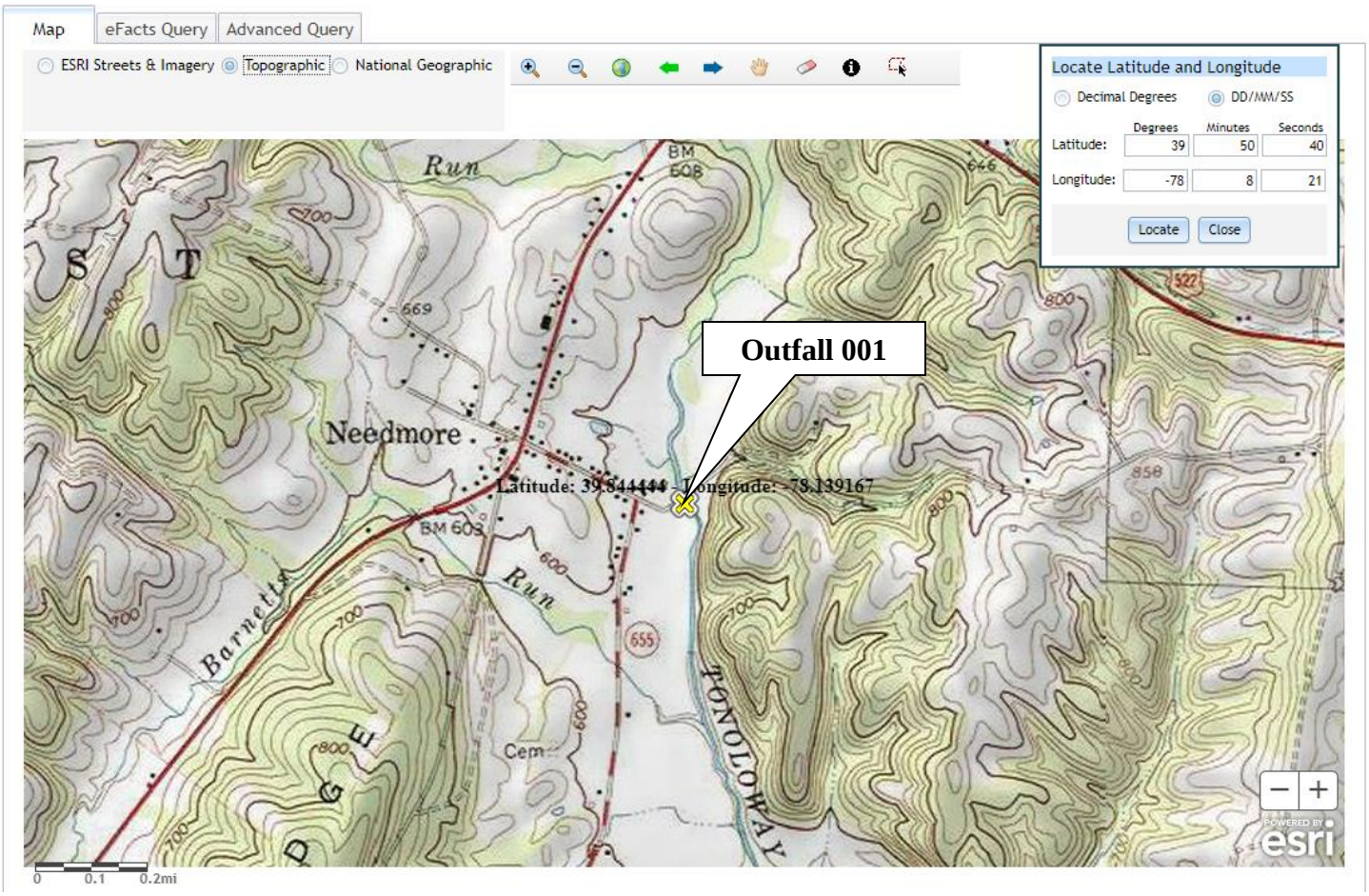
DEP's Standard Operating Procedure (SOP no. BPNPSM-PMT-033) recommends a routine monitoring of Ultraviolet (UV) transmittance or intensity when the facility is utilizing an UV disinfection system in lieu of chlorination. This is a reasonable approach and has been assigned to other facilities equipped with similar technology. Accordingly, the requirement to monitor for UV output transmittance (%) will be remain in the permit.

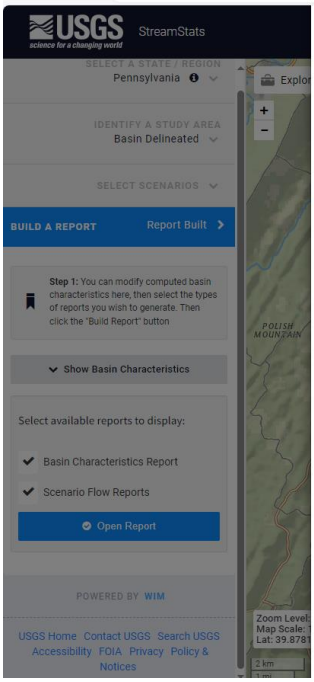
WQM 7.0 MODEL INPUT:

- 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)

1. Outfall 001 on Tonoloway Creek (60850)
    a. Elevation: 589.39 ft
    b. RMI: 16.6 miles to PA & MD boundaries
    c. Drainage Area: 31.8 $mi.^2$
    d. Low Flow Yield: 0.015 $cfs/mi.^2$
    e. Discharge Flow: 0.03 MGD

2. Just after Trib 61046 to Tonoloway Creek
    a. Elevation: 579.68 ft
    b. RMI: 15.98 miles to PA & MD boundaries
    c. Drainage Area: 41.6 $mi.^2$
    d. Low Flow Yield: 0.015 $cfs/mi.^2$
    e. Discharge Flow: 0.000 MGD





Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	31.8	square miles
PRECIP	Mean Annual Precipitation	38	inches
ROCKDEP	Depth to rock	3.6	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	3.02	miles per square mile

Low-Flow Statistics

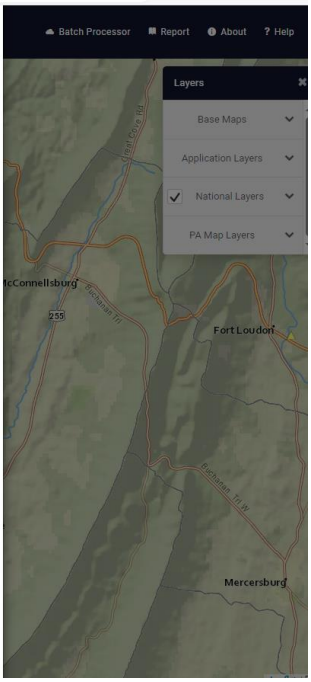
Low-Flow Statistics Parameters [Low Flow Region 2]

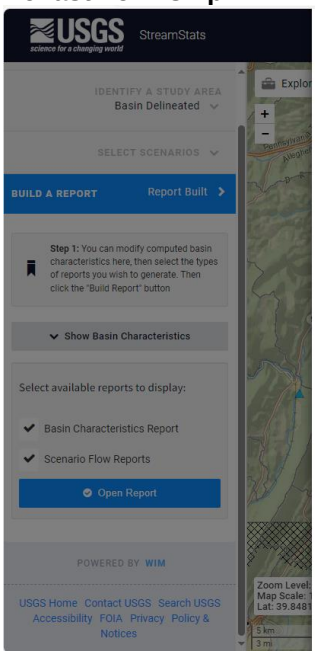
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	31.8	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	38	inches	35	50.4
STRDEN	Stream Density	3.02	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3.6	feet	3.32	5.65
CARBON	Percent Carbonate	0	percent	0	99

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 (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.11	ft^3/s	38	38
30 Day 2 Year Low Flow	1.72	ft^3/s	33	33
7 Day 10 Year Low Flow	0.386	ft^3/s	51	51
30 Day 10 Year Low Flow	0.62	ft^3/s	46	46
90 Day 10 Year Low Flow	1.17	ft^3/s	36	36





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

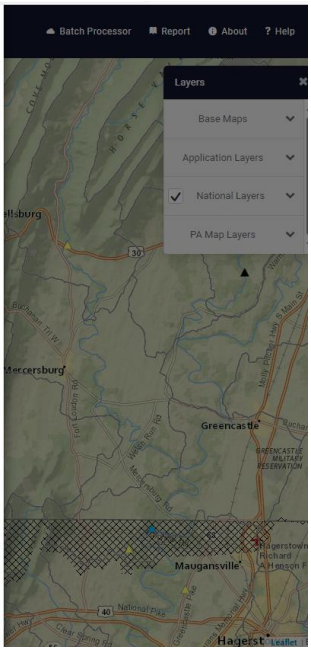
Low-Flow Statistics Parameters [Low Flow Region 2]

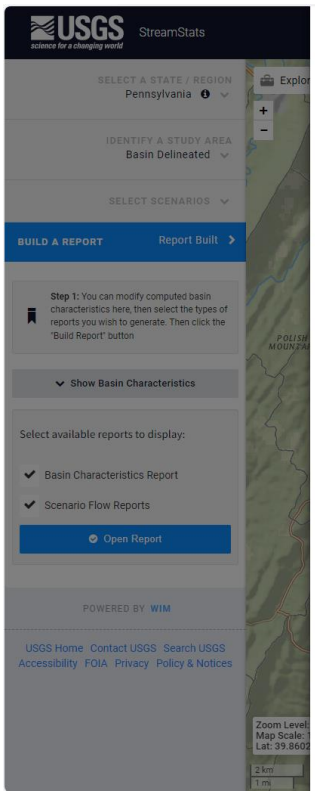
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	112	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	37	inches	35	50.4
STRDEN	Stream Density	2.84	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3.6	feet	3.32	5.65
CARBON	Percent Carbonate	2.52	percent	0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

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 (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





Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0.05	percent
DRNAREA	Area that drains to a point on a stream	41.6	square miles
PRECIP	Mean Annual Precipitation	38	inches
ROCKDEP	Depth to rock	3.6	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	2.97	miles per square mile

Low-Flow Statistics

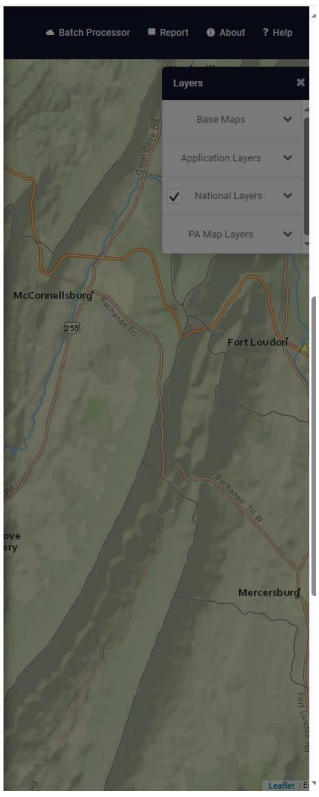
Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	41.6	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	38	inches	35	50.4
STRDEN	Stream Density	2.97	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3.6	feet	3.32	5.65
CARBON	Percent Carbonate	0.05	percent	0	99

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 (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.52	ft^3/s	38	38
30 Day 2 Year Low Flow	2.33	ft^3/s	33	33
7 Day 10 Year Low Flow	0.537	ft^3/s	51	51
30 Day 10 Year Low Flow	0.858	ft^3/s	46	46
90 Day 10 Year Low Flow	1.6	ft^3/s	36	36



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)
16.60	Belfast Twp	PA0247855	0.0300

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

Record: 1 of 1 | No Filter | Search

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rptEffLimits

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
13B	60650	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)
16.600	Belfast Twp	PA0247855	0.030	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

Thursday, October 24, 2024 Version 1.1 Page 1 of 1

Page: 1 | No Filter

rpt_WLA

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
13B	60650	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
16.600	Belfast 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
16.600	Belfast 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
16.600	Belfast Twp	25	25	25	25	5	5	0	0

Thursday, October 24, 2024 Version 1.1 Page 1 of 1

Page: 1 | No Filter

rptDOSim

WQM 7.0 D.O. Simulation

SWP Basin	Stream Code	Stream Name
13B	60850	TONOLOWAY CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
16.600	0.030	20.000	7.000

Reach Width (ft)	Reach Depth (ft)	Reach WD Ratio	Reach Velocity (fps)
15.805	0.506	31.216	0.065

Reach CBOD5 (mg/L)	Reach Kr (1/days)	Reach NH3-N (mg/L)	Reach Kn (1/days)
4.04	0.662	2.22	0.700

Reach DO (mg/L)	Reach Kr (1/days)	Kr Equation	Reach DO Goal (mg/L)
7.955	12.295	Owens	5

Reach Travel Time (days)
0.579

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.058	3.89	2.13	8.12
0.116	3.74	2.04	8.22
0.174	3.60	1.96	8.24
0.232	3.46	1.88	8.24
0.290	3.33	1.81	8.24
0.348	3.21	1.74	8.24
0.406	3.09	1.67	8.24
0.463	2.97	1.60	8.24
0.521	2.86	1.54	8.24
0.579	2.75	1.48	8.24

Thursday, October 24, 2024 Version 1.1 Page 1 of 1

Page: 1 No Filter

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		

Thursday, October 24, 2024 Version 1.1 Page 1 of 1

Page: 1 No Filter

rptHydro

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
13B	60850	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													
	16.600	0.48	0.00	0.48	.0464	0.00297	.506	15.81	31.22	0.07	0.579	20.00	7.00
Q1-10 Flow													
	16.600	0.31	0.00	0.31	.0464	0.00297	NA	NA	NA	0.05	0.724	20.00	7.00
Q30-10 Flow													
	16.600	0.65	0.00	0.65	.0464	0.00297	NA	NA	NA	0.08	0.494	20.00	7.00

Thursday, October 24, 2024 Version 1.1 Page 1 of 1

Page: 1 No Filter

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	60850	TONOLOWAY CREEK	16.600	589.39	31.60	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	0.015	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

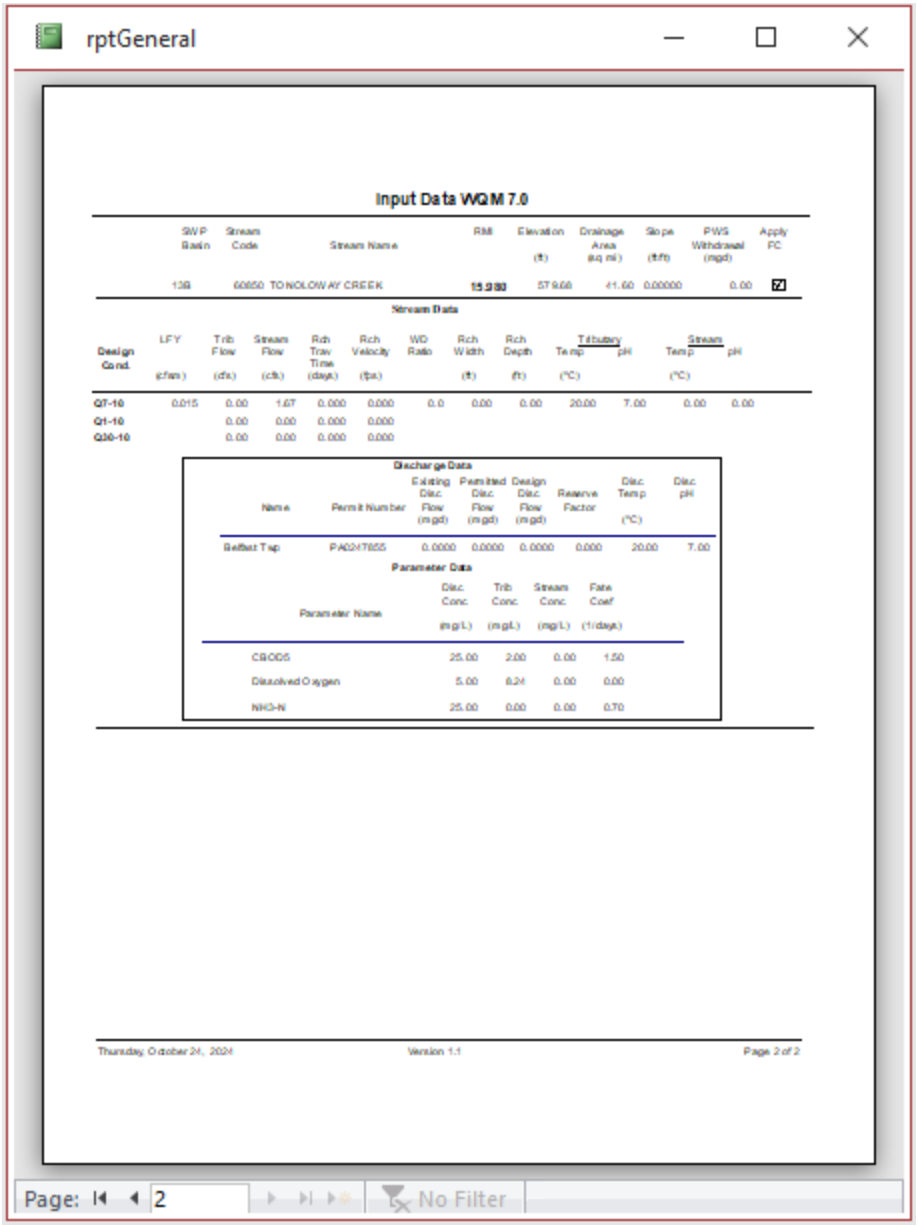
Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Belfast Twp	PA0247855	0.0300	0.0300	0.0300	0.000	20.00	7.00

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

Thursday, October 24, 2024 Version 1.1 Page 1 of 2

Page: 1 No Filter


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
60850
TONOLOWAY CREEK
15.980
579.60
41.60
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
0.015
0.00
1.67
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
Belfast Twp
PA0247855
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
Thursday, October 24, 2024
Version 1.1
Page 2 of 2
Page: 2
No Filter

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	Daily 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
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
$CBOD_5$	6.2	10.0	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	7.5	11.2	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
Total Nitrogen	Report Annl Avg	Report Total Annual	XXX	Report Annl Avg	XXX	XXX	1/year	Calculation
Total Phosphorus	Report Annl Avg	Report Total Annual	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite

Compliance Sampling Location:

Other Comments:

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: