pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0088269**
Facility Type	**Municipal**	APS ID	**47387**
Major / Minor	**Minor**	Authorization ID	**1450991**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Quincy Township Sewer Authority**	Facility Name	**Quincy Township STP**
Applicant Address	7575 Mentzer Gap Road	Facility Address	Nunnery Road
	Waynesboro, PA 17268-8946		Waynesboro, PA 17268
Applicant Contact	Jim Kauffman	Facility Contact	James Kauffman
Applicant Phone	(717) 762-5679	Facility Phone	(717) 729-0782
Client ID	136268	Site ID	459486
Ch 94 Load Status	Not Overloaded	Municipality	Quincy Township
Connection Status	No Limitations	County	Franklin
Date Application Received	August 15, 2023	EPA Waived?	No
Date Application Accepted	September 8, 2023	If No, Reason	West Branch Antietam Creek TMDL
Purpose of Application	NPDES Renewal.		

Summary of Review

Quincy Sewer Authority (Authority) has applied for the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on September17, 2018 and became effective on October 1, 2018. The permit expired on September 30, 2023.

Based on the review outlined in this fact sheet, it is recommended that the permit be drafted.

Sludge is treated via three (3) sludge digesters prior to being hauled off-site via a licensed hauler for land application.

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
X		*Jinsu Kim* Jinsu Kim / Environmental Engineering Specialist	August 29, 2024
X		Maria D. Bebenek for Daniel W. Martin, P.E. / Environmental Engineer Manager	August 29, 2024
X		Maria D. Bebenek Maria D. Bebenek, P.E. / Program Manager	August 29, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.30
Latitude	39º 47' 09"	Longitude	-77º 34' 43"
Quad Name	Waynesboro	Quad Code	2025
Wastewater Description:	Treated Sewage		
Receiving Waters	West Branch Antietam Creek (CWF)	Stream Code	59258
NHD Com ID	49469202	RMI	6.38
Drainage Area	16.9	Yield (cfs/mi^2)	0.256
Q_{7-10} Flow (cfs)	4.34	Q_{7-10} Basis	USGS PA StreamStats
Elevation (ft)	653	Slope (ft/ft)	
Watershed No.	13-C	Chapter 93 Class.	CWF, MF
Existing Use	None	Existing Use Qualifier	None
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	N/A		
Source(s) of Impairment	N/A		
TMDL Status	Final	Name	West Branch Antietam Creek TMDL
Nearest Downstream Public Water Supply Intake	PA-MD Border		
PWS Waters	West Branch Antietam Creek	Flow at Intake (cfs)	
PWS RMI	0.0	Distance from Outfall (mi)	6.38

Drainage Area
The discharge is to West Branch Antietam Creek at RMI 6.38. A drainage area upstream of the discharge is determined to be 16.9 mi^2 based on the USGS PA StreamStats (https://water.usgs.gov/osw/streamstats/pennsylvania.html).

Streamflow
Since no USGS gauging station is located in the vicinity of the point of discharge, Q7-10 of 4.34 cfs produced from the USGS PA StreamStats will be used in a water quality modeling.

West Branch Antietam Creek
25 Pa Code §93.9z classifies the West Branch Antietam Creek as cold water and migratory fishes surface water. While the discharge is located within a stream segment listed as attaining uses based on the 2024 DEP integrated water quality report, a Total Maximum Daily Load was developed for impairment identified within the entire West Branch Antietam Creek watershed. More details on this TMDL will be discussed later in the Development of Effluent Limitations and Monitoring Requirements section of this fact sheet.

Public Water Supply Intake
The nearest downstream public water supply intake is assumed to be the PA-MD border on the West Branch Antietam Creek located approximately 6.38 miles from the point of discharge. Considering the nature and quantity, the discharge is not expected to significantly affect the water supply.

Treatment Facility Summary				
Treatment Facility Name: Quincy Township STP				
WQM Permit No.	**Issuance Date**	**WQM Permit No.**	**Issuance Date**	
2800404	09/26/2000	2805402 A1	03/03/2006	
2805402	09/27/2005	2805402 A2	04/25/2011	
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Ammonia Reduction	Activated Sludge	Ultraviolet	0.30
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.30	416	Not Overloaded	Aerobic Digestion	Land Application

Quincy Township owns and operates the sanitary wastewater treatment facility located in Waynesboro, PA 17268. This facility utilizes an extended aeration activate sludge treatment process consisting of bar screens, equalization tank, aeration tanks (2), clarifiers (2), UV disinfection units (2) and outfall to the West Branch Antietam Creek.

Sludge is treated via three (3) sludge digesters prior to being hauled off-site via a licensed hauler for land application.

Compliance History	
Summary of DMRs:	A summary of past 12-motnh DMR data is presented on pages 4-5 of this fact sheet.
Summary of Inspections:	12/12/2023: DEP conducted a routine inspection and noted that no violations are needed at the time of inspection. 11/01/2023: DEP conducted a routine inspection and noted that the facility failed to properly operate and maintain the facility which is considered a permit violation. 07/28/2022: DEP conducted a follow up inspection after DEP found out that there were transcription errors during the DMR data review.
Other Comments:	A list of past effluent violations occurred since the last permit reissuance is presented on pages 6-7 of this fact sheet. A notice of violation (NOV) was sent on 07/25/2016 to address effluent violations occurred from May through June 2016. A file review reveals that there is one (1) open violation associated with this facility or permittee. A draft permit cover letter will indicate that the permit may not be issued until all pending violations are resolved.

Compliance History

DMR Data for Outfall 001 (from April 1, 2023 to March 31, 2024)

Parameter	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23
Flow (MGD) Average Monthly	0.168	0.155	0.17	0.151	0.141	0.145	0.147	0.239	0.161	0.145	0.145	0.144
Flow (MGD) Daily Maximum	0.275	0.196	0.366	0.249	0.184	0.159	0.161	0.139	0.309	0.281	0.159	0.164
pH (S.U.) Daily Minimum	6.94	6.86	6.79	6.77	6.9	6.9	6.5	3.82	6.92	6.86	6.73	6.4
pH (S.U.) Daily Maximum	8.24	7.13	8.23	7.79	8.2	7.7	7.7	8.0	7.46	7.68	7.01	7.3
DO (mg/L) Daily Minimum	5.74	6.0	5.56	6.19	5.8	5.7	5.8	5.13	5.21	5.08	5.11	5.13
CBOD5 (lbs/day) Average Monthly	8	14	10	12	9	10	6	3.0	6	9	13	10
CBOD5 (lbs/day) Weekly Average	9	19	21	22	14	20	9	4.0	9	11	21	14
CBOD5 (mg/L) Average Monthly	6.0	10.0	6.0	10	7.0	12.0	5.0	3.0	4.6	8.0	11.0	9.0
CBOD5 (mg/L) Weekly Average	6.0	16.0	10.0	19	14	25.0	7.0	4.0	7.2	9.0	17.0	12.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	188	177	266	193	191	143	252	200	190	158	153	182
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	248	139	534	228	215	185	349	315	238	191	179	187
BOD5 (mg/L) Raw Sewage Influent Average Monthly	137	131	160	157	154	122	208	166	147	136	128	154
TSS (lbs/day) Average Monthly	12	15	14	7	8	12	15	8.0	14	10	17	14
TSS (lbs/day) Raw Sewage Influent Average Monthly	185	131	233	177	98	205	158	8.0	163	112	154	184
TSS (lbs/day) Raw Sewage Influent Daily Maximum	303	145	293	192	149	318	325	13.0	250	123	327	322

Parameter	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23
TSS (lbs/day) Weekly Average	22	21	22	12	11	19	35	13.0	19	14	23	20
TSS (mg/L) Average Monthly	9.0	11.4	9.0	6	6	10.0	13.0	10.0	11.0	9.0	14.0	12.0
TSS (mg/L) Raw Sewage Influent Average Monthly	135	131	156	143	83	173	129	6.0	125	97.0	130	156
TSS (mg/L) Weekly Average	15.0	18.0	17.0	10	10	16.0	30.0	10.0	15.0	11.0	19.0	16.0
Fecal Coliform (No./100 ml) Geometric Mean	134	89.967	10.21	2	1	< 1	< 1	1.8	20	1	1.94	2.34
Fecal Coliform (No./100 ml) Instantaneous Maximum	792	> 2420	185	17	1.0	< 1.0	< 1	21.0	1.120	1.0	6.4	4.75
Nitrate-Nitrite (lbs/day) Daily Maximum	24	22	31	13	9	8	6	5.9	1.5	3.7	12	21
Nitrate-Nitrite (mg/L) Daily Maximum	16.42	18.4	24.8	10.9	7.6	6.7	4.4	5.9	1.5	3.7	1.2	21
Total Nitrogen (lbs/day) Daily Maximum	25	26	32	38	28	33	24	14.0	17	15	5.5	2.5
Total Nitrogen (mg/L) Daily Maximum	17.17	21.9	25.9	31.9	23.6	26.7	19.4	14.0	17.0	15.0	5.5	2.5
Ammonia (lbs/day) Average Monthly	9	2	6	8	8	11	15	15.0	15	13	6	0.8
Ammonia (mg/L) Average Monthly	6.69	1.3	3.62	13	6.5	17.0	11.9	12.8	11.5	11.1	5.2	0.68
TKN (lbs/day) Daily Maximum	4	4	1	25	19	25	19	14.0	17	15	5.5	< 2.5
TKN (mg/L) Daily Maximum	2.5	3.5	1.1	21	16	20	15	14.0	17.0	15	5.5	< 2.5
Total Phosphorus (lbs/day) Daily Maximum	5	5	4	8	5	11	5	7.0	6.5	3.2	3.2	4.0
Total Phosphorus (mg/L) Daily Maximum	3.3	4.1	2.8	6.5	4	8.5	3.8	7.0	6.5	3.2	3.2	4.0

Compliance History

Date	Description	Parameter	Results	Limits	Units	SBC
3/1/2019	Sample type not in accordance with permit	Total Nitrogen				
7/1/2019	Late DMR Submission					
12/1/2019	Violation of permit condition	Fecal Coliform	2431	2000	No./100 ml	Geometric Mean
5/1/2020	Violation of permit condition	Ammonia-Nitrogen	35.0	14.0	mg/L	Average Monthly
5/1/2020	Violation of permit condition	Ammonia-Nitrogen	41	35	lbs/day	Average Monthly
6/1/2020	Violation of permit condition	Ammonia-Nitrogen	16.3	14.0	mg/L	Average Monthly
10/1/2020	Late DMR Submission					
3/1/2021	Late DMR Submission					
7/1/2021	Late DMR Submission					
7/1/2021	Violation of permit condition	pH	5.49	6.0	S.U.	Daily Minimum
3/1/2022	Late DMR Submission					
4/1/2022	Violation of permit condition	Carbonaceous Biochemical Oxygen Demand (CBOD5)	43.0	25.0	mg/L	Average Monthly
4/1/2022	Violation of permit condition	Carbonaceous Biochemical Oxygen Demand (CBOD5)	81.0	40.0	mg/L	Weekly Average
4/1/2022	Violation of permit condition	Total Suspended Solids	46.0	45.0	mg/L	Weekly Average
5/1/2022	Violation of permit condition	Ammonia-Nitrogen	32.0	14.0	mg/L	Average Monthly
5/1/2022	Violation of permit condition	Ammonia-Nitrogen	40	35	lbs/day	Average Monthly
6/1/2022	Violation of permit condition	Ammonia-Nitrogen	23.0	14.0	mg/L	Average Monthly
6/14/2022	Violation of permit condition					
7/1/2022	Violation of permit condition	Ammonia-Nitrogen	18.1	14.0	mg/L	Average Monthly
7/1/2022	Violation of permit condition	Carbonaceous Biochemical Oxygen Demand (CBOD5)	60.0	40.0	mg/L	Weekly Average
12/1/2022	Violation of permit condition	Total Suspended Solids	88.0	45.0	mg/L	Weekly Average
4/1/2023	Late DMR Submission					
8/1/2023	Late DMR Submission					
8/1/2023	Violation of permit condition	pH	3.82	6.0	S.U.	Daily Minimum
10/1/2023	Violation of permit condition	Ammonia-Nitrogen	17.0	14.0	mg/L	Average Monthly
10/3/2023	Violation of permit condition					
2/1/2024	Use of NODI Code E or FF					
2/1/2024	Violation of permit condition	Fecal Coliform	> 2420	10000	No./100 ml	Instantaneous Maximum
2/1/2024	Violation of permit condition					

Existing Effluent Limits and Monitoring Requirements

The table below summarizes effluent limitations and monitoring requirements specified in the current NPDES permit renewal.

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 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	62	100	XXX	25.0	40.0	50	1/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	75	112	XXX	30.0	45.0	60	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Nitrate-Nitrite as N	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite
Total Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	Calculation
Ammonia-Nitrogen Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	35	XXX	XXX	14.0	XXX	28	1/week	24-Hr Composite
Total Kjeldahl Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite
Total Phosphorus	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .3
Latitude 39º 47' 9.00" **Longitude** -77º 34' 43.00"
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)

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen (DO)
WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's technical guidance no. 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. The model output indicates that all existing limits are still adequate. No change is therefore recommended for the upcoming permit renewal.

Toxics
The application submitted for this permit renewal did not require sampling of toxics pollutants. No industrial or commercial establishments that contribute wastewater to the sewer system were reported in the application.

Best Professional Judgment (BPJ) Limitations

Dissolved Oxygen
A minimum of 5.0 mg/L for DO is an existing effluent limit derived directly from state water quality criteria found in 25 Pa Code §93.7(a). This effluent limit will remain unchanged in the permit to ensure that the facility continues to achieve compliance with water quality standards. This approach is recommended by DEP's SOP no. BPNPSM-PMT-033 and therefore has been applied to other sewage facilities throughout the state.

Additional Considerations

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

Mass Loading Limitations
All applicable effluent mass loading limits will be based on the formula: design flow x concentration limit x conversion factor of 8.34.

Influent BOD & TSS Monitoring
The existing influent monitoring reporting requirement for TSS will be maintained in the permit. The facility has been monitoring CBOD5 influent; however, it is DEP's standard practice to assign BOD5 influent unless the facility requests otherwise. Therefore, influent CBOD5 monitoring requirement has changed to influent BOD5 monitoring requirement. This requirement has been consistently assigned to all municipal wastewater treatment facilities as a result of negotiation with U.S. EPA.

E. Coli Monitoring Requirement
DEP's SOP no. BPNPSM-PMT-033 recommends a quarterly routine monitoring of E. Coli for all sewage facilities that have design flow less than 0.1 MGD but greater than 0.05 MGD. A quarterly monitoring for E. Coli will therefore be included in the permit.

Ultraviolet Output Monitoring
DEP's SOP no. BPNPSM-PMT-033 recommends a routine monitoring of UV output when the UV system is used for disinfection in lieu of chlorine. The current system is not capable of monitoring for UV output; therefore the following Part C condition will be included in the permit in lieu of UV output monitoring requirement:

The permittee shall report operation of the ultraviolet (UV) disinfection system on a daily basis using the Daily Effluent Monitoring Form (3800-FM-BCW0435) and the parameter named "UV Functional" The permittee shall report values of "1" for Yes (i.e., the UV system is functional) and "< 1" for No (i.e., the UV system is not functional). The UV system shall be considered functional when all components that are necessary for disinfection to achieve effluent limitations in Part A of this permit are operating properly.

Total Nitrogen & Total Phosphorus
The requirement to monitor for nutrients is recommended. This approach is consistent with DEP's SOP no. BPNPSM-PMT-033. Since the facility has performed nutrient monitoring previously and the stream segment where the discharge is located at is not impaired, a monthly sampling of nutrients will provide ample data for further evaluation. This monthly monitoring requirement is also consistent with DEP's current Chesapeake Bay TMDL Watershed Implementation Plan (WIP) Wastewater Supplement described in the Chesapeake Bay TMDL section of this fact sheet.

West Branch Antietam Creek Watershed TMDL
A Total Maximum Daily Load (TMDL) was developed in 2010 to address sediment and nutrient impairments just upstream of the discharge. Therefore, no TMDL wasteload allocation has been taken into consideration for this review. A monthly nutrient monitoring requirement mentioned above as well as historical nutrient monitoring data will be used to determine if the discharge from this facility additionally contributes to the nutrient impairment listed for the stream segments upstream of the discharge. In case the TMDL is revised to include any wasteload allocation for this facility, DEP may reopen this permit to include any requirements identified in the TMDL.

Chesapeake Bay TMDL
This facility is categorized as a Phase 4 non-significant discharger with design flows less than 0.4 MGD but greater than 0.2 MGD. No annual net nutrient effluent limits (i.e., Cap Loads) were therefore assigned to this facility. The facility has performed nutrient monitoring previously, however, further monitoring is necessary as specified in the current Chesapeake Bay TMDL WIP Wastewater Supplement.

Monitoring Frequency and Sample Type
Unless otherwise specified throughout this fact sheet, monitoring frequencies and sample types are derived from the "NPDES Permit Writer's Manual" (362-0400-001) and/or BPJ.

Antidegradation Requirements
All effluent limitations and monitoring requirements have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected.

Antibacksliding Requirements
Unless specified otherwise throughout this fact sheet, effluent limits for all pollutants of concern have been developed at least as stringent as effluent limits written in the existing permit renewal. This approach is consistent with 40 CFR §122.44(l)(1).

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.

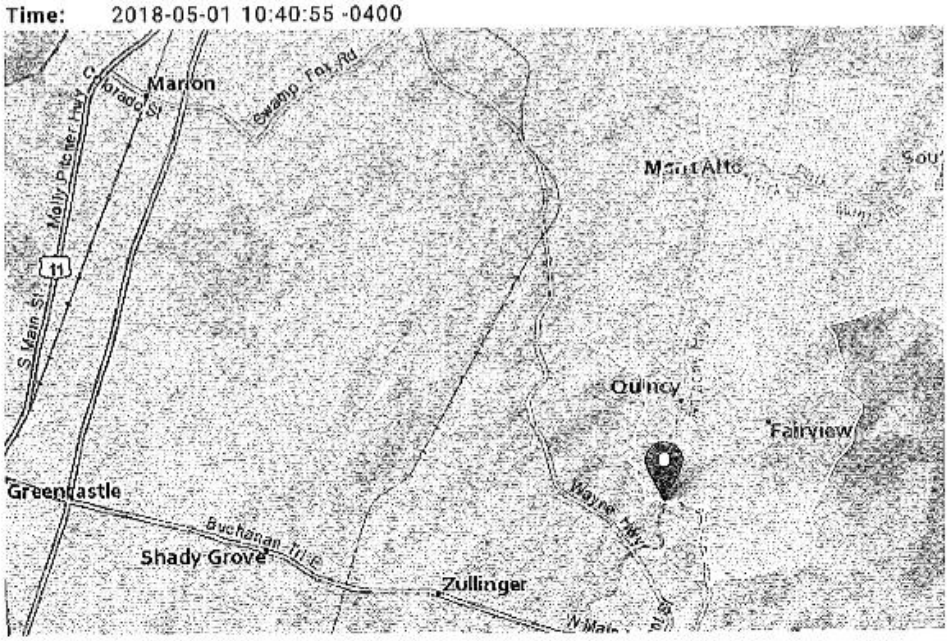
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
CBOD5	62	100	XXX	25.0	40.0	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	75	112	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Nitrate-Nitrite	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite
Total Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	35	XXX	XXX	14.0	XXX	28	1/week	24-Hr Composite
TKN	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite
Total Phosphorus	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite
E. Coli (no / 100 mL)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab

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:
☐	Other:

StreamStats Page 2 of 3

StreamStats Report

Region ID: PA
Workspace ID: PA20180501144040535000
Clicked Point (Latitude, Longitude): 39.78577, -77.57843
Time: 2018-05-01 10:40:55 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	16.9	square miles
PRECIP	Mean Annual Precipitation	42	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.46	miles per square mile
ROCKDEP	Depth to rock	5.4	feet
CARBON	Percentage of area of carbonate rock	54	percent

https://streamstats.usgs.gov/ss/ 5/1/2018

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.9	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	42	inches	35	50.4
STRDEN	Stream Density	1.46	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	5.4	feet	3.32	5.65
CARBON	Percent Carbonate	54	percent	0	99

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

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

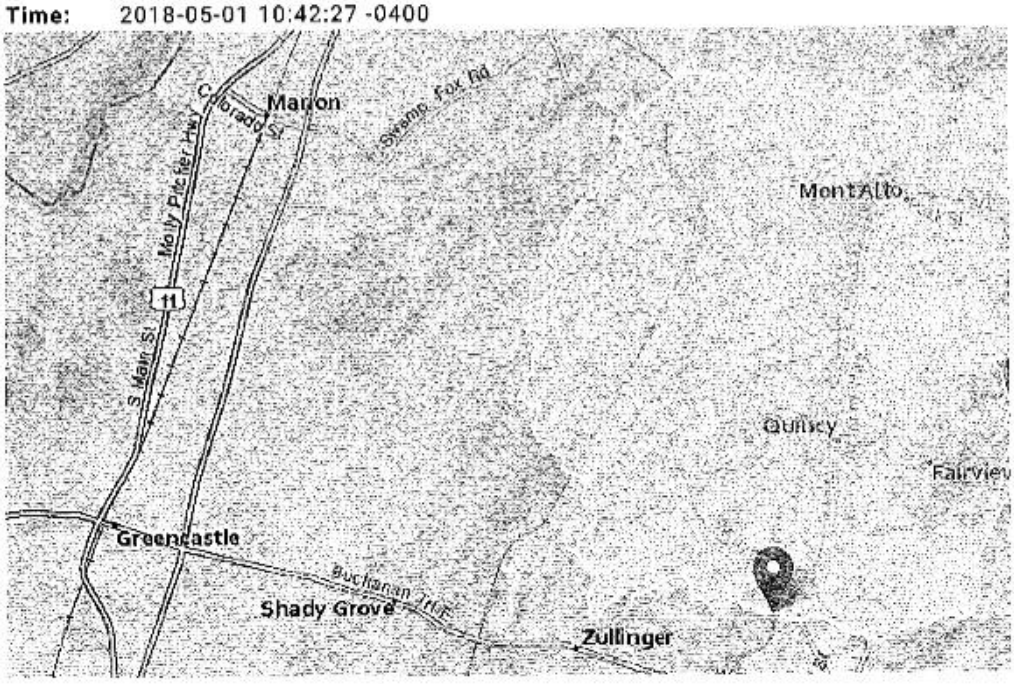
Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	6.22	ft^3/s	38	38
30 Day 2 Year Low Flow	6.93	ft^3/s	33	33
7 Day 10 Year Low Flow	4.34	ft^3/s	51	51
30 Day 10 Year Low Flow	4.71	ft^3/s	46	46
90 Day 10 Year Low Flow	5.28	ft^3/s	36	36

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

StreamStats Report

Region ID: PA
Workspace ID: PA20180501144212356000
Clicked Point (Latitude, Longitude): 39.77553, -77.58837
Time: 2018-05-01 10:42:27 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	32.8	square miles
PRECIP	Mean Annual Precipitation	41	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.37	miles per square mile
ROCKDEP	Depth to rock	5.6	feet
CARBON	Percentage of area of carbonate rock	74	percent

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	32.8	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	41	inches	35	50.4
STRDEN	Stream Density	1.37	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	5.6	feet	3.32	5.65
CARBON	Percent Carbonate	74	percent	0	99

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

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	15.9	ft^3/s	38	38
30 Day 2 Year Low Flow	16.8	ft^3/s	33	33
7 Day 10 Year Low Flow	12.6	ft^3/s	51	51
30 Day 10 Year Low Flow	12.9	ft^3/s	46	46
90 Day 10 Year Low Flow	13.2	ft^3/s	36	36

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

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
13C	59258	WEST BRANCH ANTIETAM CREEK	6.380	653.00	16.90	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	0.100	0.00	4.34	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
Quincy TWP STP	PA0088269	0.3000	0.3000	0.3000	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	5.00	8.24	0.00	0.00
NH3-N	14.00	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
13C	59258	WEST BRANCH ANTIETAM CREEK	**5.270**	621.00	32.80	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	0.100	0.00	12.60	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
13C	59258	WEST BRANCH ANTIETAM 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												
6.380	4.34	0.00	4.34	.4641	0.00546	.644	27.27	42.34	0.27	0.248	20.48	7.00
Q1-10 Flow												
6.380	2.78	0.00	2.78	.4641	0.00546	NA	NA	NA	0.22	0.309	20.72	7.00
Q30-10 Flow												
6.380	5.90	0.00	5.90	.4641	0.00546	NA	NA	NA	0.32	0.212	20.36	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	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
13C	59258	WEST BRANCH ANTIETAM 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
6.380	Quincy TWP STP	15.79	28	15.79	28	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
6.380	Quincy TWP STP	1.84	14	1.84	14	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)		
6.38	Quincy TWP STP	25	25	14	14	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
13C	59258	WEST BRANCH ANTIETAM CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.380	0.300	20.483	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
27.266	0.644	42.343	0.274
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.22	0.787	1.35	0.727
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.930	14.359	Tsivoglou	5
Reach Travel Time (days)			
0.248			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.025	4.14	1.33	8.08
0.050	4.06	1.30	8.17
0.074	3.98	1.28	8.17
0.099	3.90	1.26	8.17
0.124	3.82	1.24	8.17
0.149	3.75	1.21	8.17
0.174	3.67	1.19	8.17
0.198	3.60	1.17	8.17
0.223	3.53	1.15	8.17
0.248	3.46	1.13	8.17

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
13C	59258	WEST BRANCH ANTIETAM 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)
6.380	Quincy TWP STP	PA0088269	0.300	CBOD5	25		
				NH3-N	14	28	
				Dissolved Oxygen			5

West Branch Antietam Creek Watershed TMDL

Franklin County, Pennsylvania

Prepared by:

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

December, 2010

Table 10. TMDL Values for the Impaired West Branch Antietam Creek Subsheds

Subshed	Pollutant	Loading Rate in Reference (lb/ac-yr)	Total Area in West Branch Antietam Creek Subshed (ac)	Target TMDL Value (lb/yr)	Target TMDL Value (lb/day)
UNT 59260	Sediment	171	1,090	186,740*	512
UNT 59260	Nutrients	0.3	1,090	360*	1
UNT 59264	Sediment	171	1,724	295,464*	809
UNT 59264	Nutrients	0.3	1,724	569*	2
UNT 59267	Sediment	338	9,692	3,278,107*	8,981
UNT 59267	Nutrients	0.2	9,692	1,855*	5
UNT 59281	Sediment	176	6,207	1,254,754*	3,438

* takes into account rounding in previous calculations

The target TMDL values were then used as the basis for load allocations and reductions in the West Branch Antietam Creek Subsheds, using the following two equations:

1. TMDL = WLA + LA + MOS
2. LA = ALA + LNR

where:

TMDL = Total Maximum Daily Load
WLA = Waste Load Allocation (Point Sources)
LA = Load Allocation (Nonpoint Sources)
MOS = Margin of Safety
ALA = Adjusted Load Allocation
LNR = Loads Not Reduced

Waste Load Allocation

The waste load allocation (WLA) portion of the TMDL equation is the total loading of a pollutant that is assigned to point sources. There is one permitted discharge in the West Branch Antietam Creek Watershed, found in the UNT 59281 Subshed, that has effluent limits. The permit limit for the Mont Alto Sewage Treatment Plant, NPDES permit number PA0038130, for total suspended solids (TSS) is derived from a concentration of 30 mg/L (monthly average) with a design flow of 0.30 million gallons per day (mgd) and equals 27,397 pounds per year, 75 lbs/day.

WLA = 0.30 mgd Flow * 30 mg/L monthly average concentration* 8.34* 365= 27,397 TSS lbs./yr 75 TSS lbs/day.

Margin of Safety

The margin of safety (MOS) is that portion of the pollutant loading that is reserved to account for any uncertainty in the data and computational methodology used for the analysis. For this analysis, the MOS is explicit. Ten percent of the targeted TMDL for sediment was reserved as the MOS. Using 10% of the TMDL load is based on professional judgment and will provide an additional level of protection to the designated uses of West Branch Antietam Creek. An example of the MOS

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