Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0023582**
Facility Type	**Municipal**	APS ID	**1087631**
Major / Minor	**Minor**	Authorization ID	**1438199**

Applicant and Facility Information

Applicant Name	**Freeburg Borough**	Facility Name	**Freeburg Borough WWTP**
Applicant Address	11 East Church Street	Facility Address	313 East Front Street
	Freeburg, PA 17827-7705		Freeburg, PA 17842
Applicant Contact	Tabbetha Vanhorn-Price	Facility Contact	Joshua Owens
Applicant Phone	570-374-7314	Facility Phone	570-274-1755
Client ID	142906	Site ID	246667
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	Freeburg Borough
Connection Status	Department Imposed Connection Prohibitions	County	Snyder
Date Application Received	April 25, 2023	EPA Waived?	Yes
Date Application Accepted	June 21, 2023	If No, Reason	Not Applicable
Purpose of Application	Renewal of NPDES Permit		

Summary of Review

INTRODUCTION

Freeburg Borough has proposed the renewal of the existing National Pollution Discharge Elimination System (NPDES) authorizing the discharge from the Freeburg Borough Wastewater Treatment Plant (WWTP) in Freeburg Borough, Snyder County.

APPLICATION

Tabbetha Vanhorn-Price, Council President, submitted the NPDES Application for Individual Permit to Discharge Sewage Effluent from Minor Sewage Facilities (DEP #3800-PM-BCW0342b). This application was received by the Department on April 25, 2023, and considered administratively complete on June 21, 2023. Mrs. Vanhorn-Price is the client contact for the application. Her additional contact information is (email) pattab@ptd.net. The site contact is Joshua C. Owens, PE, Director of Engineering with PA Environmental Solutions, Inc. (PESI) of Dalmatia, PA. His additional contact information is (email) jowens@pesiservices.com. The certified operator is Todd Mace of PESI.

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. The case file, permit application package and the draft permit will be available for public review at the Department's Northcentral Regional Office. The address is 208 West Third Street, Suite 101, Williamsport, PA 17701. An appointment can be made to review these materials during the comment period by calling the file coordinator at 570-327-3636.

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Approve	Return	Deny	Signatures	Date
X			Jeffrey J. Gocek, EIT Project Manager	03/24/2025
X			Nicholas W. Hartranft, PE Environmental Engineer Manager	03/24/2025

DISCHARGE, RECEIVING WATERS AND WATER SUPPLY INFORMATION

Outfall No.	001	Design Flow (MGD)	0.11
Latitude	40º 45' 44.75"	Longitude	-76º 56' 3.97"
Quad Name	Freeburg, PA	Quad Code	40076
Wastewater Description:	Sewage Effluent		
Receiving Waters	Susquehecka Creek	Stream Code	17718
NHD Com ID	54967263	RMI	2.02
Drainage Area	7.480	Yield (cfs/mi^2)	0.051
Q_{7-10} Flow (cfs)	0.934	Q_{7-10} Basis	USGS Gage #01555000
Elevation (ft)	502	Slope (ft/ft)	Not Applicable
Watershed No.	6-A1	Chapter 93 Class.	CWF
Existing Use	None	Existing Use Qualifier	Not Applicable
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation		
Source(s) of Impairment	Grazing in Riparian or Shoreline Zones		
TMDL Status	Approved (2020)	Name	Susquehecka Creek Watershed Sediment TMDL
Nearest Downstream Public Water Supply Intake	Duncannon Municipal Authority Water System		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	N/A
PWS RMI	85.0	Distance from Outfall (mi)	38.0

$Q_{7,10}$ DETERMINATION

The $Q_{7,10}$ is the lowest seven consecutive days of flow in a 10-year period and is used for modeling wastewater treatment plant discharges. 25 PA § 96.1 defines $Q_{7,10}$ as *the actual or estimated lowest seven consecutive day average flow that occurs once in 10 years for a stream with unregulated flow or the estimated minimum flow for a stream with regulated flow*.

Basin characteristics, for a watershed based on the discharge location, were obtained from the USGS StreamStats webpage. A nearby stream gage was selected as a reference. The selected gage is USGS #01555000 (Penns Creek at Penns Creek, PA). A $Q_{7,10}$ and drainage area for this gage were obtained from *Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania* (USGS Open Files Report 2011-1070). The drainage area at the discharge (7.48 mi^2) was determined by the *USGS Pennsylvania StreamStats* application. Knowing the drainage area at the discharge (7.48 mi^2) and both the drainage area (301 mi^2) and $Q_{7,10}$ (37.6 CFS) at the reference gage, the $Q_{7,10}$ at the discharge was calculated to be 0.934 CFS.

See Attachment 01 for the $Q_{7,10}$ determination.

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TREATMENT FACILITY SUMMARY

The Borough of Freeburg (Freeburg) operates a WWTF which serves the Borough of Freeburg. This WWTF consists of a comminutor, a bar screen, a wet well, raw sewage pumps, a flow meter, a splitter box, two bioreactors (aeration tanks), two final clarifiers, sodium hypochlorite disinfection, a chlorine contact tank and an aerobic digester.

See Attachment 02 for a map of the WWTP location. See Attachment 03 for the process flow diagram.

WWTP characteristics are as follows.

Waste Type	Degree of Treatment	Process Type	Disinfection	Average Annual Design Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.11
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.22	168.0	Not Overloaded	Aerobic Digestion	Landfill

The original permits for this facility were issued by the Sanitary Water Board in 1947 (#6766) and 1950 (#7427). A new plant was constructed in 1965 and was authorized by permit #665S33, issued on September 17, 1965. Secondary treatment upgrades were later authorized by permit #667S032, issued September 18, 1967.

Hydraulic rerates were authorized on December 04, 1986 (WQM #5586402) and January 11, 1996 (WQM #5595403).

The annual average flow of the year prior to application submission was 0.058 MGD. The highest monthly average flow for the year prior to the application submission was 0.254 MGD (May 2022).

Liquid sludge is stored in an aerated holding tank and is then usually hauled two to three times per year to the Kelly Township Municipal Authority for additional treatment/disposal.

COMPLIANCE HISTORY

The WMS Query *Open Violations for Client by Permit Number* revealed no open violations for Freeburg.

The most recent Department inspection, a compliance evaluation inspection (CEI), was conducted April 22, 2024. At the time of the inspection, all required treatment units were online and operational. This report documented both effluent violations and Sewage System Overflows (SSOs) in the year since the last inspection.

In a Department letter dated October 24, 2024, the Borough was issued a Notice of Violation for recent effluent violations and SSO events. The letter documented 31 effluent violations for Fecal Coliform, pH, Ammonia-Nitrogen, and Total Residual Chlorine in 2023 and 2024. The letter also documented SSO events from 2022 (1), 2023 (3) and 2024 (4).

In a Department letter dated July 03, 2024, it was explained that despite the WWTP not being organically or hydraulicly overloaded, the existing connection prohibition would be continued due to the ongoing SSO events (two events in 2023).

Recent Discharge Monitoring Report (DMR) data for Outfall 001 is presented in the table below.

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Parameter	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24
Flow (MGD) Average Monthly	0.032	0.046	0.035	0.036	0.056	0.068	0.049	0.049	0.055	0.078	0.094	0.069
Flow (MGD) Daily Maximum	0.042	0.133	0.081	0.058	0.088	0.167	0.068	0.089	0.125	0.182	0.233	0.208
pH (S.U.) Instantaneous Minimum	7.02	6.9	7.13	7.41	7.69	7.37	7.57	7.73	7.48	7.36	7.3	7.51
pH (S.U.) Instantaneous Maximum	7.89	7.78	7.89	7.98	7.95	7.9	8.06	8.15	8.01	8.03	7.76	8.57
DO (mg/L) Instantaneous Minimum	3.16	2.7	2.84	4.45	2.88	1.78	2.77	3.51	2.19	2.12	3.93	2.64
TRC (mg/L) Average Monthly	0.6	0.4	0.6	0.6	0.4	0.4	0.4	0.5	0.4	0.4	0.5	0.8
TRC (mg/L) Instantaneous Maximum	2.0	0.8	1.06	1.53	1.39	0.94	0.66	1.5	0.82	0.87	1.32	1.48
CBOD5 (lbs/day) Average Monthly	< 2.0	< 2.0	< 2.0	< 1.0	< 2.0	< 2.0	< 1.0	< 1.0	< 11	7.0	< 3.0	< 3.0
CBOD5 (lbs/day) Weekly Average	5.0	4.0	4.0	< 1.0	2.0	2.0	2.0	2.0	34	14	5.0	4.0
CBOD5 (mg/L) Average Monthly	< 7.7	< 4.5	< 6.9	< 3.8	< 3.9	< 3.8	< 3.1	< 3.9	< 15.9	10.7	< 4.4	< 6.3
CBOD5 (mg/L) Weekly Average	18.2	5.9	15.9	5.2	6.8	4.7	3.7	6.5	36.5	10.7	7.6	10.8
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	78	147	103	59	88	54	99	111	83	90	101	81
BOD5 (mg/L) Raw Sewage Influent Average Monthly	316	379	384	207	199	110	224	314	184	207	138	149
TSS (lbs/day) Average Monthly	< 11	3.0	8.0	5.0	4.0	3.0	2.0	2.0	6.0	10	2.0	4.0
TSS (lbs/day) Raw Sewage Influent Average Monthly	121	397	187	63	69	74	62	121	81	55	60	46
TSS (lbs/day) Weekly Average	31	8.0	22	9.0	5.0	5.0	3.0	4.0	12	32	2.0	6.0
TSS (mg/L) Average Monthly	< 48.9	7.8	29.8	18.8	8.3	7.1	4.2	5.1	9.5	11.2	2.3	7.8
TSS (mg/L) Raw Sewage Influent Average Monthly	485	953	688	228	165	152	149	343	179	129	89	72
TSS (mg/L) Weekly Average	145.0	12.4	82.8	34.8	14.8	9.2	5.2	11.6	18.8	21.2	2.8	9.0
Fecal Coliform (No./100 ml) Geometric Mean	> 1349	> 722	> 2025	< 19	423	> 371	187	122	> 8702	> 4632	107	< 13
Fecal Coliform (No./100 ml) Instantaneous Maximum	> 24196	> 9208	> 24196	41	2419.6	> 2419.6	1145	2064	> 24196	> 24196	2419.6	78.5
Total Nitrogen (lbs/day) Annual Average		< 9.1										
Total Nitrogen (mg/L) Annual Average		< 17.32										
Ammonia (lbs/day) Average Monthly	< 0.4	< 0.6	< 0.6	1.8	1.0	1.5	< 0.3	1.3	5.8	4.2	4.0	5.4
Ammonia (lbs/day) Weekly Average	1.0	0.8	1.0	4.0	2.0	4.0	0.7	2.0	10	5.0	7.0	7.0
Ammonia (mg/L) Average Monthly	< 1.6	< 1.9	< 2.3	5.8	2.3	3.0	< 0.7	3.8	11.0	8.9	7.4	12.4
Ammonia (mg/L) Weekly Average	5.0	3.4	3.8	11.7	3.5	7.3	1.9	5.1	19.0	9.1	15.6	17.9
Total Phosphorus (lbs/day) Annual Average		1.5										
Total Phosphorus (mg/L) Annual Average		2.79										

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Recent effluent limit violations are as follows.

Parameter	Date	SBC	DMR Value	Units	Limit Value
TRC	01/31/25	Avg Mo	0.6	mg/L	0.5
TRC	11/30/24	Avg Mo	0.6	mg/L	0.5
TRC	10/31/24	Avg Mo	0.6	mg/L	0.5
TRC	01/31/25	IMAX	2.0	mg/L	1.6
TSS	01/31/25	Avg Mo	< 48.9	mg/L	30.0
TSS	01/31/25	Wkly Avg	145.0	mg/L	45.0
TSS	11/30/24	Wkly Avg	82.8	mg/L	45.0
Fecal Coliform	01/31/25	Geo Mean	> 1349	No./100 ml	2000
Fecal Coliform	12/31/24	Geo Mean	> 722	No./100 ml	2000
Fecal Coliform	11/30/24	Geo Mean	> 2025	No./100 ml	2000
Fecal Coliform	09/30/24	Geo Mean	423	No./100 ml	200
Fecal Coliform	08/31/24	Geo Mean	> 371	No./100 ml	200
Fecal Coliform	05/31/24	Geo Mean	> 8702	No./100 ml	200
Fecal Coliform	04/30/24	Geo Mean	> 4632	No./100 ml	2000
Fecal Coliform	01/31/25	IMAX	> 24196	No./100 ml	10000
Fecal Coliform	12/31/24	IMAX	> 9208	No./100 ml	10000
Fecal Coliform	11/30/24	IMAX	> 24196	No./100 ml	10000
Fecal Coliform	09/30/24	IMAX	2419.6	No./100 ml	1000
Fecal Coliform	08/31/24	IMAX	> 2419.6	No./100 ml	1000
Fecal Coliform	07/31/24	IMAX	1145	No./100 ml	1000
Fecal Coliform	06/30/24	IMAX	2064	No./100 ml	1000
Fecal Coliform	05/31/24	IMAX	> 24196	No./100 ml	1000
Fecal Coliform	04/30/24	IMAX	> 24196	No./100 ml	10000
Ammonia	05/31/24	Avg Mo	11.0	mg/L	9.5
Ammonia	05/31/24	Wkly Avg	19.0	mg/L	14.0
Ammonia	03/31/24	Wkly Avg	15.6	mg/L	14.0

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EXISTING PERMIT LIMITATIONS

The following limitations were established at the last renewal issuance which occurred August 21, 2018.

Discharge Parameter	Mass Limits (lb/day)		Concentration Limits (mg/L)				Monitoring Requirements	
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	IMAX	Minimum Measurement Frequency	Required Sample Type
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (SU)	XXX	XXX	6.0	XXX	XXX	9.0	1/Day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/Day	Grab
Total Residual Chlorine INTERIM	XXX	XXX	XXX	0.8	XXX	2.6	1/Day	Grab
Total Residual Chlorine FINAL	XXX	XXX	XXX	0.5	XXX	1.6	1/Day	Grab
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/Week	8 Hour Composite
$CBOD_5$	23	37	XXX	25	40	50	1/Week	8 Hour Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/Week	8 Hour Composite
Total Suspended Solids	28	41	XXX	30	45	60	1/Week	8 Hour Composite
Fecal Coliform (No./100mL) 05/01-09/30	XXX	XXX	XXX	200 Geo. Mean	XXX	1,000	1/Week	Grab
Fecal Coliform (No./100mL) 10/01-04/30	XXX	XXX	XXX	2,000 Geo. Mean	XXX	10,000	1/Week	Grab
Ammonia Nitrogen	9.0	13	XXX	9.5	14	19	1/Week	8 Hour Composite
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/Year	8-Hour Comp
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/Year	8-Hour Comp

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DEVELOPMENT OF EFFLUENT LIMITATIONS

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)

Total Residual Chlorine

The Department's *TRC_CALC spreadsheet* is a model used to evaluate Total Residual Chlorine (TRC) effluent limitations. This model determines applicable acute and chronic wasteload allocations (WLAs) for TRC based on the data supplied by the user and then compares the WLAs to the technology-based average monthly limit using the procedures described in the EPA Technical Support Document (for Water Quality-based Toxics Control).

Parameter	Effluent Limitations (mg/L)	
	Monthly Average	IMAX
Total Residual Chlorine	0.50	1.635

See Attachment 04 for the TRC_CALC output.

Water Quality-Based Limitations

$CBOD_5$, NH_3-N and DO

WQM 7.0 for Windows is a DEP computer model used to determine wasteload allocations and effluent limitations for $CBOD_5$, NH_3-N and DO for single and multiple point source discharge scenarios. This model simulates two basic processes. The NH_3-N module simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to the water quality criteria. The DO module simulates the mixing and consumption of DO in the stream due to degradation of $CBOD_5$ and NH_3-N and compares the calculated instream DO concentrations to the water quality criteria. The model then determines the highest pollutant loading the stream can assimilate and still meet water quality under design conditions.

This model recommended the following limitations.

Parameter	Effluent Limitations (mg/L)		
	30 Day Average	Maximum	Minimum
$CBOD_5$	25		
NH_3-N	15.55	31.1	
DO			3.0

See Attachment 05 for the WQM model output.

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Best Professional Judgment (BPJ) Limitations

In the absence of applicable effluent guidelines for the discharge or pollutant, permit writers must identify and/or develop needed technology-based effluent limitations (TBELs) TBELs on a case-by-case basis, in accordance with the statutory factors specified in the Clean Water Act.

Dissolved Oxygen

Department policy requires that a minimum limit of 4.0 mg/L be established as BPJ to ensure adequate WWTF operation and maintenance.

Anti-Backsliding

To comply with 40 CFR § 122.44(l)(1) (anti-backsliding requirements), the Department must issue a renewed permit with limitations as stringent as that the of the previous permit.

Ammonia-Nitrogen

Parameter	Effluent Limitations				
	(lb/day)		(mg/L)		
	Average Monthly	Average Weekly	Average Monthly	Average Weekly	IMAX
Ammonia Nitrogen	9.0	13	9.5	14	19

DEVELOPMENT OF EFFLUENT MONITORING

Influent Sampling

In accordance with the Department's *SOP for New and Reissuance Sewage Individual NPDES Permit Applications* (unnumbered), influent sampling for BOD_5 and TSS is required for all POTWs with design flows greater than 2,000 gallons per day (gpd). The Department considers the 1/Week proposed minimum measurement frequency adequate for characterizing the influent.

E. Coli

The Department is requiring the monitoring of Eschericia coli (E.coli), a pathogenic bacterium normally found in the intestines of healthy people and animals which is used as a fecal contamination indicator in freshwater ecosystems. Section 303(c)(1) of the Clean Water Act requires that Pennsylvania periodically review and revise water quality standards, if necessary. The 2017 triennial review final form rulemaking, published in 2020, has revised the Chapter 93 water quality standards regulations for bacteria to include E. coli. To further characterize fecal contamination of surface waters during the swimming season, the Department is requiring the annual reporting of effluent E. coli effluent values. In accordance with 25 PA § 92a.61, the Department may impose reasonable monitoring requirements on pollutants which could have impact on the quality of the Commonwealth's waters or the quality of waters in other states.

REMOVAL OF EFFLUENT MONITORING

Chesapeake Bay TMDL

Despite 25 years of extensive restoration efforts, the Chesapeake Bay Total Maximum Daily Load (TMDL) was prompted by insufficient progress and continued poor water quality in the Chesapeake Bay and its tidal tributaries. This TMDL, required by the Clean Water Act, is the largest ever developed by the Environmental Protection Agency (EPA). This document identifies the necessary pollution reductions of nitrogen, phosphorus and sediment across Delaware, Maryland, New York, Virginia, West Virginia, District of Columbia and Pennsylvania. It also sets pollution limits necessary to meet applicable water quality standards in the Bay, tidal rivers and embayments.

Pennsylvania explains how and when it will meet its pollution allocations in its Watershed Implementation Plan (WIP), which is incorporated into the TMDL. Pennsylvania's permitting strategy for significant dischargers has been outlined in the Phase I WIP and incorporated in the Phase III WIP by reference and imposes Total Nitrogen (TN) and Total Phosphorus (TP) cap loads on the significant dischargers.

Because the design of this facility is less than 0.2 MGD, the Department considers this an existing Phase 5 sewage facility for the purposes of implementing the Chesapeake Bay TMDL. According to the Department's Wastewater Supplement to Phase III WIP (last revised July 2022), renewed Phase 5 facilities are required to contain monitoring and reporting for TN and TP throughout the permit term at a frequency of no less than annually unless the facility has already conducted at least two years of nutrient monitoring.

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Nutrient data was collected during the previous permit term. That data is summarized below.

Year	Parameter	Concentration (mg/L)	Mass (lb/day)
2019	Total Nitrogen	25.0	22.7
2019	Total Phosphorus	2.8	2.5
2020	Total Nitrogen	18.9	7.6
2020	Total Phosphorus	1.5	0.6
2021	Total Nitrogen	18.9	7.6
2021	Total Phosphorus	1.5	0.6
2022	Total Nitrogen	< 9.92	< 6.0
2022	Total Phosphorus	0.522	0.3
2023	Total Nitrogen	< 18.99	< 14.5
2023	Total Phosphorus	2.16	0.075
2024	Total Nitrogen	< 17.32	< 9.1
2024	Total Phosphorus	2.79	1.50

RECEIVING STREAM

Stream Characteristics

The receiving stream is Susquehecka Creek, tributary to Middle Creek, Penns Creek and the Susquehanna River. This stream, according to 25 PA § 93.9N, is protected for Cold Water Fishes (CWF) and Migratory Fishes (MF). These are the streams *Designated Uses*, which is defined in 25 PA § 93.1 as "those uses specified in §§ 93.9a – 93.9z for each waterbody or segment whether or not the use is being attained". Designated uses are regulations promulgated by the Environmental Quality Board (EQB) throughout the rulemaking process. This stream currently has no *Existing Use*. Existing Use is defined in 25 PA § 93.1 as "those uses actually attained in the waterbody on or after November 28, 1975 whether or not they are included in the water quality standards".

Susquehecka Creek is identified by Department stream code 17718. The stream is located in (Chapter 93) drainage list N and State Water Plan 6A (Middle and Penns Creeks).

Impairment

According to Department data, Susquehecka Creek is attaining its designated uses for Fish Consumption and Recreation but not attaining its designated uses for Aquatic Life. The impairment is siltation (cause) due to grazing in riparian or shoreline zones (source).

The Susquehecka Creek Sediment TMDL was approved by EPA on July 23, 2020. This TMDL calculated a needed reduction of 12% of the annual average sediment loading within the Susquehecka Creek watershed. This discharge, with its assigned TSS limitations, is not expected to contribute to the impairment.

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ADDITIONAL CONSIDERATIONS

Hauled-In Wastes

According to the application materials, the Freeburg Boro WWTF has not received hauled-in wastes during the past three years and does not anticipate receiving hauled-in wastes in the next five years.

Whole Effluent Toxicity (WET) Testing

According to the application materials, the Freeburg Boro WWTF does accept wastewater from industrial or commercial users. Since none of the industrial or commercial users are considered significant, a WET test evaluation is not required.

Rounding of Limitations

Limitations have been rounded in accordance with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001).

Limit Multipliers

The instantaneous maximum limitations have been calculated using multipliers of 2.0 (for conventional pollutants) and 2.5 (for toxic pollutants) times the monthly average. This practice is in accordance with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001).

Sample Frequencies and Types

The sample type and minimum measurement frequencies are in accordance with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001).

Standard Operating Procedures (SOPs)

The review of this permit application was performed in accordance with the Department's *SOP for New and Reissuance Sewage Individual NPDES Permit Applications* (unnumbered) and *SOP for Establishing Effluent Limitations for Individual Sewage Permits* (SOP #BPNPSM-PMT-033).

Special Permit Conditions

Stormwater Prohibition
Approval Contingencies
Proper Waste Disposal
Municipal Treatment Availability
Solids Management (Non-Lagoon Systems)

Supplemental Discharge Monitoring Reports

Daily Effluent Monitoring
Non-Compliance Reporting
Biosolids Production and Disposal
Hauled-in Municipal Waste
Influent and Process Control
Lab Accreditation

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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.

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

Discharge Parameter	Mass Limits (lb/day)		Concentration Limits (mg/L)				Monitoring Requirements	
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	IMAX	Minimum Measurement Frequency	Required Sample Type
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (SU)	XXX	XXX	6.0 Instant Min	XXX	XXX	9.0	1/Day	Grab
Dissolved Oxygen	XXX	XXX	4.0 Instant Min	XXX	XXX	XXX	1/Day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/Day	Grab
BOD_5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/Week	8 Hour Composite
$CBOD_5$	23	37	XXX	25	40	50	1/Week	8 Hour Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/Week	8 Hour Composite
Total Suspended Solids	28	41	XXX	30	45	60	1/Week	8 Hour Composite
Fecal Coliform (No./100mL) 05/01-09/30	XXX	XXX	XXX	200 Geo. Mean	XXX	1,000	1/Week	Grab
Fecal Coliform (No./100mL) 10/01-04/30	XXX	XXX	XXX	2,000 Geo. Mean	XXX	10,000	1/Week	Grab
Ammonia Nitrogen	9.0	13	XXX	9.5	14	19	1/Week	8 Hour Composite
E. Coli (No./100mL)	XXX	XXX	XXX	XXX	XXX	Report	1/Year	Grab

END of Fact Sheet.

ATTACHMENT 01

Q_{7-10} Analysis	
Facility:	Freeburg MA
Outfall:	001

NPDES Permit No.:	PA0023582
RMI at 001:	2.10

Reference Stream Gage Information	
Stream Name	Susquehecka Creek
Reference Gage	01555000
Station Name	Penns Creek at Penns Creek, PA
Gage Drainage Area (sq. mi.)	301.00
Q_{7-10} at gage (cfs)	37.60
Yield Ratio (cfs/mi^2)	0.1249

Q7-10 at 001	
Drainage Area at 001 (sq. mi.)	7.48
Q7-10 at 001 (cfs)	0.934
Q7-10 at 001 (mgd)	0.6039

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi², square miles]

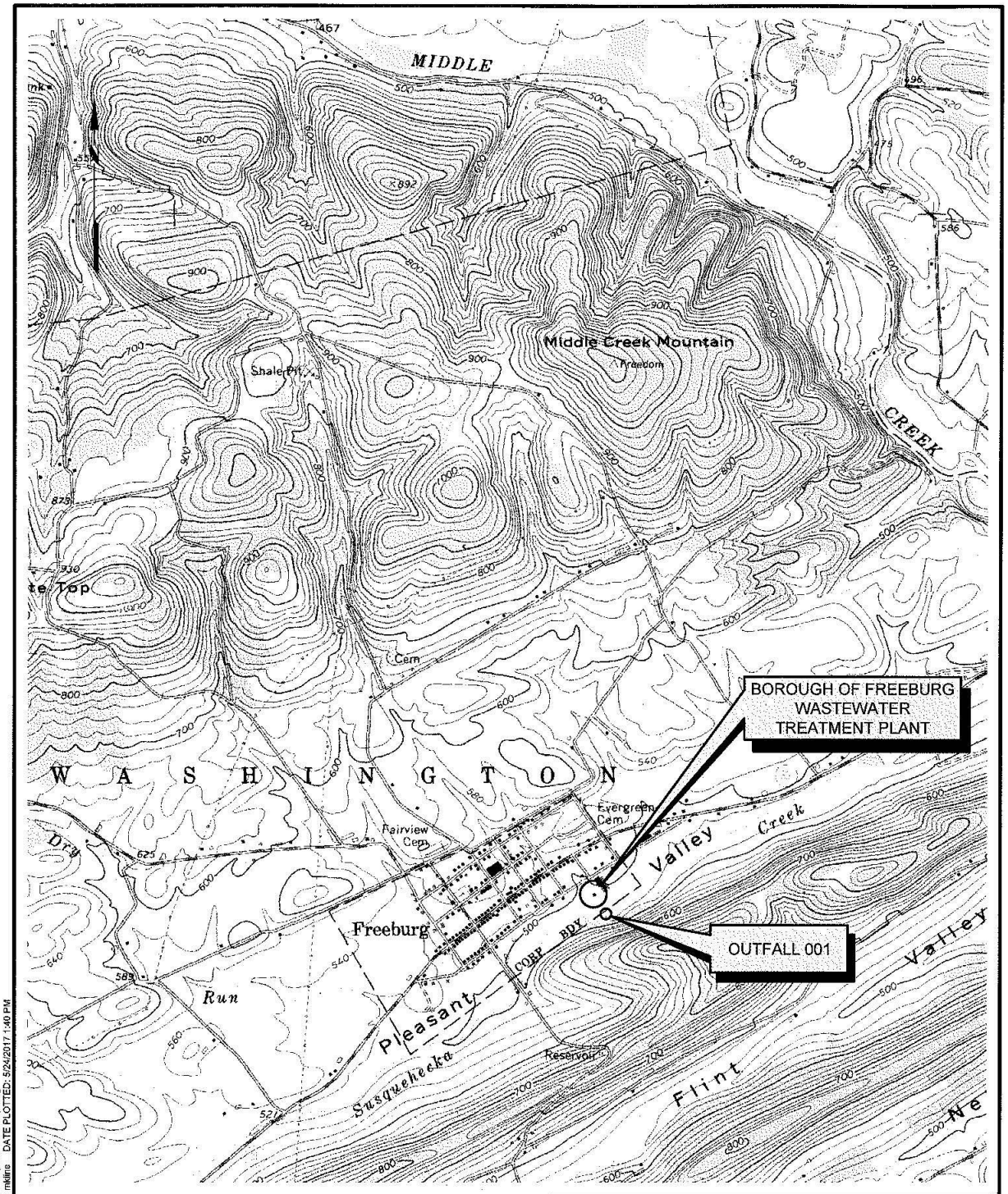
Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi²)	Regulated[1]
01541303	West Branch Susquehanna River at Hyde, Pa.	41.005	-78.457	474	Y
01541308	Bradley Run near Ashville, Pa.	40.509	-78.584	6.77	N
01541500	Clearfield Creek at Dimeling, Pa.	40.972	-78.406	371	Y
01542000	Moshannon Creek at Osceola Mills, Pa.	40.850	-78.268	68.8	N
01542500	WB Susquehanna River at Karthaus, Pa.	41.118	-78.109	1,462	Y
01542810	Waldy Run near Emporium, Pa.	41.579	-78.293	5.24	N
01543000	Driftwood Branch Sinnemahoning Creek at Sterling Run, Pa.	41.413	-78.197	272	N
01543500	Sinnemahoning Creek at Sinnemahoning, Pa.	41.317	-78.103	685	N
01544000	First Fork Sinnemahoning Creek near Sinnemahoning, Pa.	41.402	-78.024	245	Y
01544500	Kettle Creek at Cross Fork, Pa.	41.476	-77.826	136	N
01545000	Kettle Creek near Westport, Pa.	41.320	-77.874	233	Y
01545500	West Branch Susquehanna River at Renovo, Pa.	41.325	-77.751	2,975	Y
01545600	Young Womans Creek near Renovo, Pa.	41.390	-77.691	46.2	N
01546000	North Bald Eagle Creek at Milesburg, Pa.	40.942	-77.794	119	N
01546400	Spring Creek at Houserville, Pa.	40.834	-77.828	58.5	N
01546500	Spring Creek near Axemann, Pa.	40.890	-77.794	87.2	N
01547100	Spring Creek at Milesburg, Pa.	40.932	-77.786	142	N
01547200	Bald Eagle Creek below Spring Creek at Milesburg, Pa.	40.943	-77.786	265	N
01547500	Bald Eagle Creek at Blanchard, Pa.	41.052	-77.604	339	Y
01547700	Marsh Creek at Blanchard, Pa.	41.060	-77.606	44.1	N
01547800	South Fork Beech Creek near Snow Shoe, Pa.	41.024	-77.904	12.2	N
01547950	Beech Creek at Monument, Pa.	41.112	-77.702	152	N
01548005	Bald Eagle Creek near Beech Creek Station, Pa.	41.081	-77.549	562	Y
01548500	Pine Creek at Cedar Run, Pa.	41.522	-77.447	604	N
01549000	Pine Creek near Waterville, Pa.	41.313	-77.379	750	N
01549500	Blockhouse Creek near English Center, Pa.	41.474	-77.231	37.7	N
01549700	Pine Creek below Little Pine Creek near Waterville, Pa.	41.274	-77.324	944	Y
01550000	Lycoming Creek near Trout Run, Pa.	41.418	-77.033	173	N
01551500	WB Susquehanna River at Williamsport, Pa.	41.236	-76.997	5,682	Y
01552000	Loyalsock Creek at Loyalsockville, Pa.	41.325	-76.912	435	N
01552500	Muncy Creek near Sonestown, Pa.	41.357	-76.535	23.8	N
01553130	Sand Spring Run near White Deer, Pa.	41.059	-77.077	4.93	N
01553500	West Branch Susquehanna River at Lewisburg, Pa.	40.968	-76.876	6,847	Y
01553700	Chillisquaque Creek at Washingtonville, Pa.	41.062	-76.680	51.3	N
01554000	Susquehanna River at Sunbury, Pa.	40.835	-76.827	18,300	Y
01554500	Shamokin Creek near Shamokin, Pa.	40.810	-76.584	54.2	N
01555000	Penns Creek at Penns Creek, Pa.	40.867	-77.048	301	N
01555500	East Mahantango Creek near Dalmatia, Pa.	40.611	-76.912	162	N
01556000	Frankstown Branch Juniata River at Williamsburg, Pa.	40.463	-78.200	291	N
01557500	Bald Eagle Creek at Tyrone, Pa.	40.684	-78.234	44.1	N
01558000	Little Juniata River at Spruce Creek, Pa.	40.613	-78.141	220	N
01559000	Juniata River at Huntingdon, Pa.	40.485	-78.019	816	LF
01559500	Standing Stone Creek near Huntingdon, Pa.	40.524	-77.971	128	N
01559700	Sulphur Springs Creek near Manns Choice, Pa.	39.978	-78.619	5.28	N
01560000	Dunning Creek at Belden, Pa.	40.072	-78.493	172	N

Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

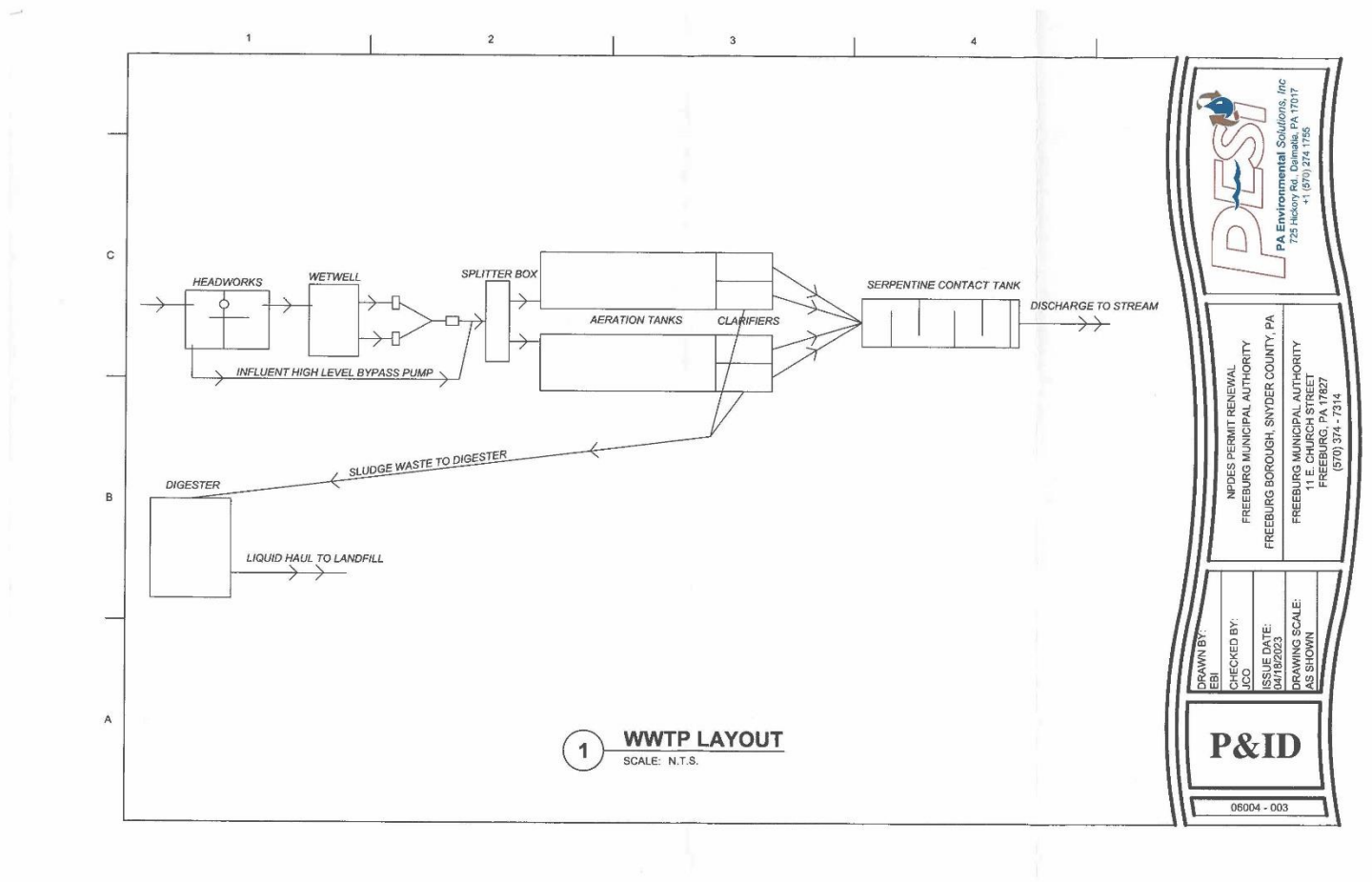
[ft³/s; cubic feet per second; —, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft³/s)	7-day, 10-year (ft³/s)	7-day, 2-year (ft³/s)	30-day, 10-year (ft³/s)	30-day, 2-year (ft³/s)	90-day, 10-year (ft³/s)
01546000	1912–1934	17	1.8	2.2	6.8	3.7	12.1	11.2
01546400	1986–2008	23	13.5	14.0	19.6	15.4	22.3	18.7
01546500	1942–2008	67	26.8	29.0	41.3	31.2	44.2	33.7
01547100	1969–2008	40	102	105	128	111	133	117
01547200	1957–2008	52	99.4	101	132	106	142	115
01547500	[2]1971–2008	38	28.2	109	151	131	172	153
01547500	[3]1956–1969	14	90.0	94.9	123	98.1	131	105
01547700	1957–2008	52	.5	.6	2.7	1.1	3.9	2.2
01547800	1971–1981	11	1.6	1.8	2.4	2.1	2.9	3.5
01547950	1970–2008	39	12.1	13.6	28.2	17.3	36.4	23.8
01548005	[2]1971–2000	25	142	151	206	178	241	223
01548005	[3]1912–1969	58	105	114	147	125	165	140
01548500	1920–2008	89	21.2	24.2	50.1	33.6	68.6	49.3
01549000	1910–1920	11	26.0	32.9	78.0	46.4	106	89.8
01549500	1942–2008	67	.6	.8	2.5	1.4	3.9	2.6
01549700	1959–2008	50	33.3	37.2	83.8	51.2	117	78.4
01550000	1915–2008	94	6.6	7.6	16.8	11.2	24.6	18.6
01551500	[2]1963–2008	46	520	578	1,020	678	1,330	919
01551500	[3]1901–1961	61	400	439	742	523	943	752
01552000	1927–2008	80	20.5	22.2	49.5	29.2	69.8	49.6
01552500	1942–2008	67	.9	1.2	3.1	1.7	4.4	3.3
01553130	1969–1981	13	1.0	1.1	1.5	1.3	1.8	1.7
01553500	[2]1968–2008	41	760	838	1,440	1,000	1,850	1,470
01553500	[3]1941–1966	26	562	619	880	690	1,090	881
01553700	1981–2008	28	9.1	10.9	15.0	12.6	17.1	15.2
01554000	[2]1981–2008	28	1,830	1,990	3,270	2,320	4,210	3,160
01554000	[3]1939–1979	41	1,560	1,630	2,870	1,880	3,620	2,570
01554500	1941–1993	53	16.2	22.0	31.2	25.9	35.7	31.4
01555000	1931–2008	78	33.5	37.6	58.8	43.4	69.6	54.6
01555500	1931–2008	78	4.9	6.5	18.0	9.4	24.3	16.6
01556000	1918–2008	91	43.3	47.8	66.0	55.1	75.0	63.7
01557500	1946–2008	63	2.8	3.2	6.3	4.2	8.1	5.8
01558000	1940–2008	69	56.3	59.0	79.8	65.7	86.2	73.7
01559000	1943–2008	66	104	177	249	198	279	227
01559500	1931–1958	28	9.3	10.5	15.0	12.4	17.8	15.8
01559700	1963–1978	16	.1	.1	.2	.1	.3	.2
01560000	1941–2008	68	8.5	9.4	15.6	12.0	20.2	16.2
01561000	1932–1958	27	.4	.5	1.6	.8	2.5	1.7
01562000	1913–2008	96	64.1	67.1	106	77.4	122	94.5
01562500	1931–1957	27	1.1	1.6	3.8	2.3	5.4	3.7
01563200	[2]1974–2008	35	—	—	—	112	266	129
01563200	[3]1948–1972	25	10.3	28.2	86.1	64.5	113	95.5
01563500	[2]1974–2008	35	384	415	519	441	580	493
01563500	[3]1939–1972	34	153	242	343	278	399	333
01564500	1940–2008	69	3.6	4.2	10.0	6.2	14.4	10.6

ATTACHMENT 02



ATTACHMENT 03



ATTACHMENT 04

TRC EVALUATION					
Client	Borough of Freeburg WWTF		Date	06/06/2018	
0.934	**= Q stream (cfs)**		**0.5**	**= CV Daily**	
0.11	**= 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)**		**0**	**=Decay Coefficient (K)**	
Source	Reference	AFC Calculations		Reference	CFC Calculations
TRC	**1.3.2.iii**	WLA afc =	1.770	**1.3.2.iii**	WLA cfc = 1.718
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc = 0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	0.659	**5.1d**	LTA_cfc = 0.999
		WQBEL_afc=	**0.812**		WQBEL_cfc= 1.229

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)**

TRC Evalutation

ATTACHMENT 05

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
06A	17718	SUSQUEHECKA 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)
2.020	Freeburg Boro	PA0023582	0.000	CBOD5	25		
				NH3-N	15.55	31.1	
				Dissolved Oxygen			3

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
06A	17718	SUSQUEHECKA CREEK	**2.020**	502.00	7.48	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	0.93	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
Freeburg Boro	PA0023582	0.0000	0.1100	0.0000	0.000	25.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
06A	17718	SUSQUEHECKA CREEK	**0.100**	434.00	9.35	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	1.17	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
06A	17718	SUSQUEHECKA 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												
2.020	0.93	0.00	0.93	.1702	0.00671	.515	14.66	28.44	0.15	0.803	20.77	7.00
Q1-10 Flow												
2.020	0.60	0.00	0.60	.1702	0.00671	NA	NA	NA	0.12	0.984	21.11	7.00
Q30-10 Flow												
2.020	1.27	0.00	1.27	.1702	0.00671	NA	NA	NA	0.17	0.692	20.59	7.00

WQM 7.0 Modeling Specifications

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

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
06A	17718	SUSQUEHECKA 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
2.020	Freeburg Boro	8.93	40.28	8.93	40.28	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
2.020	Freeburg Boro	1.84	15.55	1.84	15.55	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)		
2.02	Freeburg Boro	25	25	15.55	15.55	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
06A	17718	SUSQUEHECKA CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.020	0.110	20.771	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
14.658	0.515	28.440	0.146
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.54	0.822	2.40	0.743
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.435	9.488	Tsivoglou	6
Reach Travel Time (days)			
0.803			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.080	5.18	2.26	7.46
0.161	4.84	2.13	7.52
0.241	4.52	2.00	7.60
0.321	4.22	1.89	7.68
0.401	3.94	1.78	7.76
0.482	3.68	1.68	7.84
0.562	3.44	1.58	7.91
0.642	3.21	1.49	7.98
0.722	3.00	1.40	8.04
0.803	2.80	1.32	8.10