pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0111414**
Facility Type	**Non-Municipal**	APS ID	**1088501**
Major / Minor	**Minor**	Authorization ID	**1439705**

Applicant and Facility Information

Applicant Name	**PA American Water Co.**	Facility Name	**McEwensville STP**
Applicant Address	852 Wesley Drive Mechanicsburg, PA 17055-4436	Facility Address	166 Mill Street McEwensville, PA 17834
Applicant Contact	Scott Armbrust	Facility Contact	Laura Walter
Applicant Phone	(717) 550-1501	Facility Phone	(717) 742-4612
Client ID	87712	Site ID	254899
Ch 94 Load Status	Not Overloaded	Municipality	Delaware Township
Connection Status	No Limitations	County	Northumberland
Date Application Received	May 11, 2023	EPA Waived?	No
Date Application Accepted	May 15, 2023	If No, Reason	Discharge Subject to EPA Approved TMDL

Purpose of Application: Renewal of a NPDES Permit for a minor sewage treatment discharge

Summary of Review

The subject facility is a sewage treatment plant serving McEwensville Borough and a neighboring portion of Delaware Township in Northumberland County. A map of the discharge location is attached (see Attachment A).

Sludge use and disposal description and location(s): The application indicates that no sludge was removed in the preceding year. Should sludge be removed it would be transferred to other WWTPs for further processing.

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		Keith C. Allison Keith C. Allison / Project Manager	October 18, 2023
X		N. W. H. Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	October 19, 2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.045
Latitude	41º 4' 28.04"	Longitude	-76º 49' 30.97"
Quad Name	Milton, PA	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Warrior Run (WWF, MF)	Stream Code	19148 – UNT 19144 – Warrior Run
NHD Com ID	66918661	RMI	0.04 – UNT, 1.69 – Warrior Run
Drainage Area	0.62 – UNT, 19.9 – Warrior Run	Yield (cfs/mi^2)	0.212
Q_{7-10} Flow (cfs)	1.00 – Warrior Run	Q_{7-10} Basis	Gage No. 1553700, Chillisquaque Creek at Washingtonville, PA (1981-2008)
Elevation (ft)	468.7 – UNT 466.6 – Warrior Run	Slope (ft/ft)	0.00223 – Warrior Run
Watershed No.	10-D	Chapter 93 Class.	WWF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	FLOW REGIME MODIFICATION, SILTATION		
Source(s) of Impairment	AGRICULTURE, HIGHWAY/ROAD/BRIDGE RUNOFF (NON-CONSTRUCTION RELATED)		
TMDL Status	Final	Name	Warrior Run TMDL
Nearest Downstream Public Water Supply Intake	PA American Water Company at Milton, PA		
PWS Waters	West Branch Susquehanna River	Flow at Intake (cfs)	9.28
PWS RMI	10.8	Distance from Outfall (mi)	Approximately 6 miles

Changes Since Last Permit Issuance: None

Other Comments:
The McEwensville facility received daily wasteload allocations for Sediment and Phosphorus of 11.2658 lb/day and 0.3151 lb/day, respectively and annual loadings of 115.0 lb/yr and 4,112.0 lb/yr, respectively, in the Warrior Run TMDL. The WLA for Phosphorus is included as a monthly average effluent limitation in this NPDES permit. Page 15 of the TMDL document is attached (Attachment B).

Discharge is to a dry tributary of Warrior Run. The first point of aquatic use has been assumed to be at Warrior Run. Inspections have not noted any impacts to the receiving stream.

No downstream water supply is expected to be affected by this discharge at this time with the limitations and monitoring proposed.

Treatment Facility Summary

Treatment Facility Name: PA American Water Co. McEwensville

WQM Permit No.	Issuance Date	Permit Covered:
4982204	Original-2/25/83 Transfer-2/8/16	Lagoon System and conveyance
4905403	Original-10/25/05 Transfer-2/8/16 Amendment – 11/5/20	Upgrades to treatment plant including modifications to aeration system, floating attached growth bioreactors, chlorine contact tank baffles and removal of sand filter Addition of tablet dechlorinator
4988415	Original-12/22/88 Transfer-2/8/16	Country Hills Development Sewer Extension
4973404	Original-6/15/73 Transfer-2/8/16	Sewers and two pump stations and original treatment facility
4992404	Original-11/4/92 Transfer-2/8/16	Sewer and Pump station with 2.5” force main

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Aerated Lagoon	Hypochlorite	0.045

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.045	90	Not Overloaded		

Changes Since Last Permit Issuance: A new tablet feed dechlorinator was added under WQM No. 4905403 Amendment No. 2.

Other Comments: The facility consists of two aerated lagoons in series with bio-blocks in the second, a plate settler, erosion chlorinator with chlorine contact tank, and dechlorination.

Trucked-in Waste

The applicant has indicated in the application that the facility has received no hauled-in wastes and does not expect to receive any hauled-in wastes over the next permit term.

Compliance History

DMR Data for Outfall 001 (from September 1, 2022 to August 31, 2023)

Parameter	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22
Flow (MGD) Average Monthly	0.019142	0.023	0.01899	0.013743	0.016201	0.01764	0.014227	0.017342	0.02522	0.020249	0.01860	0.019171
Flow (MGD) Daily Maximum	0.04381	0.0437	0.0935	0.045132	0.042116	0.03755	0.01836	0.028717	0.12127	0.042395	0.0346	0.052251
pH (S.U.) Instantaneous Minimum	6.65	6.6	6.91	6.86	6.85	6.95	6.87	6.74	6.81	6.94	7.04	7.12
pH (S.U.) Instantaneous Maximum	7.98	7.64	7.41	7.40	7.90	8.54	7.61	7.68	7.51	7.65	7.8	7.55
DO (mg/L) Instantaneous Minimum	3.25	2.34	5.17	4.08	3.6	7.74	4.47	4.31	7.01	5.36	7.99	6.31
TRC (mg/L) Average Monthly	< 0.11	0.07	0.08	0.10	0.08	0.16	0.19	0.23	0.05	0.11	0.10	< 0.09
TRC (mg/L) Instantaneous Maximum	0.47	0.25	0.24	0.37	0.3	0.67	1.0	1.39	0.18	0.88	0.60	0.72
CBOD5 (lbs/day) Average Monthly	< 0.4	< 0.6	< 0.3	< 0.3	< 0.3	2.0	< 0.6	< 0.8	< 3.0	< 0.4	0.7	< 0.05
CBOD5 (lbs/day) Weekly Average	< 0.7	< 0.8	< 0.4	< 0.3	< 0.4	3.0	0.8	1.0	5.0	0.5	0.9	< 0.6
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	18.0	< 5.0	< 6.0	< 11.0	< 3.0	5.0	< 3.0
CBOD5 (mg/L) Weekly Average	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	21.0	8.0	8.0	20.0	3.0	6.0	< 3.0
TSS (lbs/day) Average Monthly	< 0.4	< 0.3	0.5	< 0.5	0.9	2.0	0.7	0.8	2.0	0.6	0.4	< 0.4
TSS (lbs/day) Daily Maximum	< 0.6000	< 0.4000	0.9000	0.7000	1.0000	3.0000	0.9000	0.9000	4.0000	0.8000	0.5000	0.4000
TSS (mg/L) Average Monthly	< 2.0	< 2.0	6.0	< 6.0	8.0	14.0	6.0	6.0	11.0	4.0	3.0	< 2.0
TSS (mg/L) Weekly Average	< 3.0	< 2.0	10.0	8.0	10.0	24.0	9.0	7.0	13.0	6.0	4.0	3.0
Total Suspended Solids (lbs) Total Annual									404.0			

Fecal Coliform (No./100 ml) Geometric Mean	< 5.0	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	> 49	< 20	< 4.0	5	< 1.0	< 1.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	21.6	< 10.0	< 1.0	< 1.0	1	< 1.0	> 2419.6	410.6	14.6	8.6	< 1.0	1.0
Total Nitrogen (lbs/day) Daily Maximum									29			
Total Nitrogen (mg/L) Daily Maximum									9.357			
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.5	0.3	0.3	< 2.6	15.7	16.1	3.3	< 0.3	< 0.1	< 0.1
Ammonia (mg/L) Instantaneous Maximum	< 0.1	< 0.1	< 0.5	0.404	0.29	4.725	16.29	16.72	5.455	< 0.5	< 0.1	0.1
Total Phosphorus (lbs/day) Average Monthly	0.5	0.5	0.7	0.3	0.3	0.6	0.7	0.8	1.25	0.4	0.6	0.9
Total Phosphorus (lbs/day) Daily Maximum	1.0	0.9	0.7	0.3	0.4	0.8	0.7	0.8	1.76	0.7	0.6	1.16
Total Phosphorus (mg/L) Average Monthly	2.71	1.76	6.69	3.21	3.16	4.55	5.83	6.02	6.10	2.80	4.57	5.32
Total Phosphorus (mg/L) Daily Maximum	4.35	3.47	7.72	3.49	3.22	5.94	5.88	6.17	5.84	5.43	5.56	5.71
Total Phosphorus (lbs) Total Annual									299			

Compliance History

Effluent Violations for Outfall 001, from: September 1, 2022 To: August 31, 2023

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	02/28/23	Geo Mean	> 49	No./100 ml	2000	No./100 ml
Fecal Coliform	02/28/23	IMAX	> 2419.6	No./100 ml	10000	No./100 ml

Compliance History, Cont'd	
Summary of Inspections:	The facility has been inspected approximately annually by the Department over the past permit term. The most recent inspection on May 30, 2023 identified eDMR effluent violations but no operational violations at the time of inspection.
Other Comments:	A query in WMS found the open violations listed in the following table for PA American Water Co in eFACTS.

Compliance History – Open Violations

FACILITY	INSP PROGRAM	PROGRAM SPECIFIC ID	VIOLATION DATE	VIOLATION CODE	VIOLATION
PA AMERICAN COATESVILLE	Safe Drinking Water	1150106	4/20/2023	C4A	FAILURE TO OPERATE AND MAINTAIN THE WATER SYSTEM
PA AMERICAN WHITE DEER	Safe Drinking Water	4490023	12/9/2022	C3B	FAILURE OF A PUBLIC WATER SYSTEM TO PROVIDE THE LEVEL OF TREATMENT APPROVED IN ITS PERMIT
PA AMERICAN WHITE DEER	Safe Drinking Water	4490023	12/9/2022	C3B	FAILURE OF A PUBLIC WATER SYSTEM TO PROVIDE THE LEVEL OF TREATMENT APPROVED IN ITS PERMIT
PA AMERICAN WATER COMPANY SCRANTON WWTP	WPC NPDES	PA0026492	8/25/2023	92A.44	NPDES - Violation of effluent limits in Part A of permit
PA AMERICAN WATER COMPANY SCRANTON WWTP	WPC NPDES	PA0026492	8/25/2023	CSL201	CSL - Unauthorized, unpermitted discharge of sewage to waters of the Commonwealth
PA AMERICAN WATER COMPANY SCRANTON WWTP	WPC NPDES	PA0026492	8/25/2023	CSO-NMC8	NPDES CSO - 92A.47(B)NMC8 Failure to implement required NMC #8 (Public notification)
PA AMERICAN WATER COMPANY SCRANTON WWTP	WPC NPDES	PA0026492	9/20/2023	CSO-NMC8	NPDES CSO - 92A.47(B)NMC8 Failure to implement required NMC #8 (Public notification)
EXETER TWP STP	WPC NPDES	PA0026972	8/1/2023	92A.41(A)10C	NPDES - Failure to collect representative samples
UPPER POTTSGROVE SEWERS TO POTTSTOWN BORO STP	WPC State Water Pollution Control	WQG02460510	8/21/2023	92A.47(C)	NPDES - Illegal discharge to waters of the Commonwealth from a sanitary sewer overflow (SSO)

Existing Effluent Limitations and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	9.0	15	XXX	25.0	40.0	50	2/month	Grab
TSS	11	11.2658 Daily Max	XXX	30.0	45.0	60	2/month	Grab
Total Suspended Solids (lbs)	XXX	4112.0 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Total Nitrogen	XXX	Report Daily Max	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Ammonia	XXX	XXX	XXX	Report	XXX	Report	2/month	Grab
Total Phosphorus	Report	0.3151 Daily Max	XXX	Report	Report Daily Max	XXX	2/month	Grab
Total Phosphorus (lbs)	XXX	115.0 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.045
Latitude 41º 4' 28.00" **Longitude** -76º 49' 31.40"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

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

Water Quality-Based Limitations

CBOD5, DO, and NH3-N

The WQM7.0 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia nitrogen (NH_3-N) into free-flowing streams and rivers. To accomplish this, the model simulates two basic processes: the mixing and degradation of NH_3-N in the stream and the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and NH_3-N. WQM7.0 modeling was performed for the discharge to show that the existing secondary treatment limits listed above are adequate to protect the receiving stream. See the attached modeling inputs/outputs (Attachment C).

TRC

The Department uses a modeling spreadsheet to determine necessary WQBELs for TRC toxicity based on instream dilution. The attached modeling results (See Attachment D) show that the BAT limit of 0.5 mg/l is adequate to protect the receiving stream.

Toxics Management

No further “Reasonable Potential Analysis” was performed to determine additional parameters as candidates for limitations for this 0.045 MGD sewage treatment facility receiving no industrial influent.

Chesapeake Bay/Nutrient Requirements

A portion of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the Water Pollution Control Act, 33 U.S.C. §1313(d). Total Nitrogen and Total Phosphorus cap loads have been established for significant dischargers in Pennsylvania in order to reduce the total nutrient load to the Bay and meet State of Maryland Water Quality Standards. The McEwensville treatment plant is considered an existing Phase 5, insignificant Chesapeake Bay discharger per the Phase III Watershed Implementation Plan (WIP) and thus has received no Cap Loads under the Chesapeake Bay TMDL. Based on eDMR data, Total Nitrogen and Total Phosphorus concentrations have averaged 11.8 mg/L and 4.9 mg/L, respectively, in the past two years. Because adequate data has been obtained for total nitrogen no further TN monitoring will be required at this time consistent with the Phase III WIP. Total Phosphorus is discussed further under the Warrior Run TMDL section below.

Warrior Run TMDL

The Sediment and Phosphorus loadings for the McEwensville facility from the Warrior Run TMDL are listed in the table below and are included in existing permit. Sediment loadings are included in the permit as Total Suspended Solids limitations.

TMDL Pollutant	Annual Wasteload Allocation (lb/yr)	Daily Wasteload Allocation (lb/day)
Total Phosphorus	115.0	0.3151
Sediment	4,112.0	11.2658

Dry Stream Discharge

Because the facility produces an acceptable effluent and no problems have been noted in the receiving waters, the advanced treatment requirements of the Department's dry stream guidance have not been required at this time. The discharge predates the current version of the Department's Dry Streams guidance (DEP Document ID 391-2000-014). The current version of the guidance recommends the limits below for a proposed new or expanded facility.

CBOD5 - 10 mg/L as a monthly average
TSS - 10 mg/L as a monthly average
Total N - 5 mg/L as a monthly average
Dissolved oxygen - minimum 6 mg/L at all times
Phosphorus – 0.5 mg/L as a monthly average

Best Professional Judgment (BPJ) Limitations

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

Anti-Backsliding

No proposed limitations were made less stringent consistent with the anti-backsliding requirements of 40 CFR 122.44(l).

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" (362-0400-001), 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	1/day	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	9.0	15	XXX	25.0	40.0	50	2/month	Grab
TSS	11	11.2658 Daily Max	XXX	30.0	45.0	60	2/month	Grab
Total Suspended Solids (lbs)	XXX	4112.0 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Ammonia	XXX	XXX	XXX	Report	XXX	Report	2/month	Grab
Total Phosphorus	Report	0.3151 Daily Max	XXX	Report	Report Daily Max	XXX	2/month	Grab
Total Phosphorus (lbs)	XXX	115.0 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

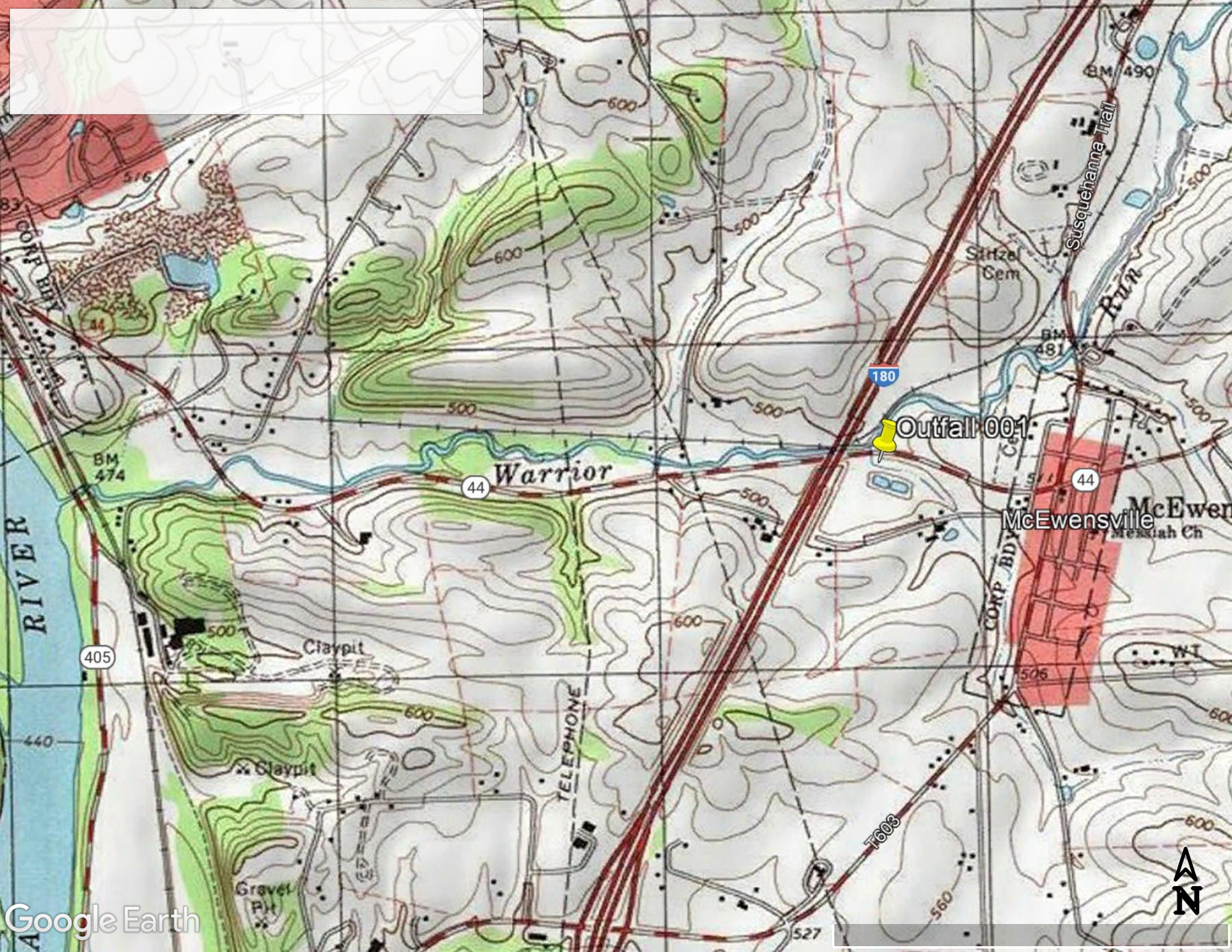
Compliance Sampling Location: Outfall 001

Other Comments: Total Nitrogen monitoring has been removed as mentioned above. E. coli monitoring is new consistent with Department policy and changes in Chapter 93 of the Department's regulations.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **C**)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **D**)
☐	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, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☒	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
☒	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing Effluent Limitations for Individual Sewage Permits, rev. 03/24/2021
☐	Other:

Attachment:

A. Discharge Location Map
B. TMDL Excerpt
C. WQM Model
D. TRC Model


Outfall 001
McEwensville
Warrior
RIVER
Claypit
Claypit
Gravel Pit
TELEPHONE
T603
Susquehanna Trail
Run
Stitzel Cem
BM 490
BM 481
BM 474
180
44
405
CORP BDY
Google Earth
N

an additional level of protection to the designated uses of Warrior Run Watershed. The MOS used for the sediment and phosphorus TMDL is shown below.

Warrior Run Watershed:

MOS (sediment)= 12,631.3957 lbs/day (TMDL) x 0.1 = 1,263.1396 lbs/day
MOS (phosphorus)= 8.2983 lbs/day (TMDL) x 0.1 = 0.8298 lbs/day

Waste Load Allocation

The WLA portion of the TMDL equation is the total loading of a pollutant that is assigned to point sources. Reviewing the PADEP' s permitting files identified two point source discharges for sediment and phosphorus in the watershed.

The McEwensville Boro Municipal Authority discharges treated sewage effluent into the streams covered by this TMDL, permit number PA0028100. The monthly average for suspended solids is 30.0 mg/L and ~0.8390 mg/L for phosphorus, which was included in the AVGWLF modeling runs for determining existing conditions. The design flow for the McEwensville Boro Municipal Authority is 0.045 million gallons per day (mgd). Based on the monthly average for this facility, the potential for sediment and phosphorus loads if the McEwensville Boro Municipal Authority capacities were fully utilized is 34.0476 lbs/day and 0.3151 lbs/day, respectively. This loading rate based on the design capacities of the plant is used in the final TMDL allocations (WLA).

The Turbotville Boro discharges treated sewage effluent into the streams covered by this TMDL, permit number PA0l 11414. The monthly average for suspended solids is 30.0 mg/L and ~2.6096 mg/L for phosphorus, which was included in the AVGWLF modeling runs for determining existing conditions. The design flow for the Turbotville Boro is 0.136 mgd. Based on the monthly average for this facility, the potential for sediment and phosphorus loads if the Turbotville Boro capacities were fully utilized is 11.2658 lbs/day and 2.9617 lbs/day, respectively. This loading rate based on the design capacities of the plant is used in the final TMDL allocations (WLA).

The bulk reserve is explicit and is calculated as one percent of the targeted TMDL. This bulk reserve enables the TMDL to account for the dynamic nature of permit activity (Table 6).

Table 6. Waste Load Allocations for the Warrior Run Watershed

Name	NPDES Permit#	Phosphorus WLA /lb/vrl	Phosphorus WLA /lb/davl	Sediment WLA /lb/vrl	Sediment WLA/lb/dav)
McEwensville Municioal Authoritv	PA0028100	115.0	0.3151	4,112.0	I1.2658
Turbotville Municipal Authority	PAO!11414	1,081.0	2.9617	12,427.4	34.0476
Bulk Reserve		30.3	0.0830	46,104.6	126.3140
Total		**1,226.3**	**3.3598**	**62,644.0**	**171.6274**

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
10D	19144	WARRIOR RUN	**1.690**	466.60	19.90	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	0.212	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
McEwensville	PA0111414	0.0450	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
10D	19144	WARRIOR RUN	**0.001**	440.50	23.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.212	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 (ºC)	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 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 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
10D	19144	WARRIOR RUN

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (ºC)	Analysis pH
Q7-10 Flow												
1.690	4.22	0.00	4.22	.0696	0.00293	.644	28.32	43.99	0.24	0.439	20.08	7.00
Q1-10 Flow												
1.690	2.70	0.00	2.70	.0696	0.00293	NA	NA	NA	0.18	0.561	20.13	7.00
Q30-10 Flow												
1.690	5.74	0.00	5.74	.0696	0.00293	NA	NA	NA	0.28	0.370	20.06	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
10D	19144	WARRIOR RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
1.690	0.045	20.081	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
28.319	0.644	43.985	0.235
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.37	0.196	0.41	0.704
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.158	6.553	Tsivoglou	5
Reach Travel Time (days)			
0.439			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.044	2.35	0.39	8.23
0.088	2.33	0.38	8.23
0.132	2.31	0.37	8.23
0.176	2.29	0.36	8.23
0.219	2.27	0.35	8.23
0.263	2.25	0.34	8.23
0.307	2.23	0.33	8.23
0.351	2.22	0.32	8.23
0.395	2.20	0.31	8.23
0.439	2.18	0.30	8.23

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
10D	19144	WARRIOR RUN

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
1.690	McEwensville	16.59	50	16.59	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
1.690	McEwensville	1.88	25	1.88	25	0	0

Dissolved Oxygen Allocations

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

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
10D	19144	WARRIOR RUN

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)
1.690	McEwensville	PA0111414	0.045	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

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

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 4.601	1.3.2.iii	WLA cfc = 4.478
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 1.715	5.1d	LTA_cfc = 2.604

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)