Pennsylvania Department of Environmental Protection

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0093408**
Facility Type	**Municipal**	APS ID	**1136666**
Major / Minor	**Minor**	Authorization ID	**1526086**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Cumberland Township Greene County**	Facility Name	**Crucible WPCF**
Applicant Address	100 Municipal Road	Facility Address	Sr 1017 Crucible Road
	Carmichaels, PA 15320-1051		Carmichaels, PA 15320
Applicant Contact	Sam Hastings	Facility Contact	Eric Harris
Applicant Phone	(724) 966-5805	Facility Phone	724-966-2278
Client ID	7829	Site ID	247667
Ch 94 Load Status	Not Overloaded	Municipality	Cumberland Township
Connection Status	No Limitations	County	Greene
Date Application Received	April 11, 2025	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: NPDES Permit Renewal

Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0093408 on April 11, 2025. NPDES Permit No. PA0093408 was previously issued by the PA Department of Environmental Protection (DEP) on July 1, 2019 and expired on June 30, 2024.

The applicant is currently enrolled in and will continue to use eDMR.

The applicant has complied with Act 14 Notifications and no comments were received.

Draft Permit issuance is recommended.

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		Jordan T Coldsmith Jordan Coldsmith / Environmental Engineering Specialist	January 20, 2026
X		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	February 4, 2026

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.0995
Latitude	39º 57' 4.00"	Longitude	-79º 59' 6.00"
Quad Name	Carmichaels	Quad Code	39079H8
Wastewater Description:	Sewage Effluent		

Receiving Waters	Monongahela River (WWF)	Stream Code	37185
NHD Com ID	99413942	RMI	69.8
Drainage Area	4602	Yield (cfs/mi^2)	0.115
Q_{7-10} Flow (cfs)	530	Q_{7-10} Basis	Army Corp of Engineers
Elevation (ft)	1932.8	Slope (ft/ft)	
Watershed No.	19-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	Final	Name	Monongahela River TMDL

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	TRI CNTY JT MUNI AUTH		
PWS Waters	Monongahela River (WWF)	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	4.4

Changes Since Last Permit Issuance: N/A

Other Comments: The STP discharges to the Monongahela River which has an EPA Approved TMDL and is impaired by PCBs & Chlordane. No WLAs have been developed for this sewage discharge as neither PCBs nor Chlordane is typically found in sewage but instead found in legacy sediments. No additional monitoring requirements for these pollutants will be placed on this facility at this time.

Treatment Facility Summary

Treatment Facility Name: Crucible WPCF

WQM Permit No.	Issuance Date

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Activated Sludge With Solids Removal	Gas Chlorine	0.054

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0995	74	Not Overloaded		

Changes Since Last Permit Issuance: None

Other Comments:

Compliance History

Operations Compliance Check Summary Report

Facility: CRUCIBLE WPCF

NPDES Permit No.: PA0093408

Compliance Review Period: 1/1/21-1/27/26

Inspection Summary:

INSPECTED DATE	INSP TYPE	INSPECTION RESULT DESC
07/10/2025	Chapter 94 Inspection	Administratively Closed
02/13/2025	Administrative/File Review	Violation(s) Noted
09/19/2021	Compliance Evaluation	No Violations Noted
09/17/2021	Administrative/File Review	No Violations Noted
09/17/2021	Administrative/File Review	No Violations Noted

Violation Summary:

VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
02/13/2025	92A.75(A)	NPDES - Failure to submit NPDES renewal application at least 180 days prior to expiration or later approved date	1/27/2026

Open Violations by Client ID:

No open violations for Client ID 7829

Enforcement Summary:

ENF TYPE	ENF TYPE DESC	EXECUTED DATE	VIOLATIONS	ENF FINAL STATUS	ENF CLOSED DATE
NOV	Notice of Violation	02/13/2025	92A.75(A)	Comply/Closed	1/27/2026

Effluent Violation Summary:

No effluent exceedances reported during review period

Unauthorized Discharges:

No unauthorized discharges reported in eDMR during review period

Compliance Status: Facility is now in general compliance since an NPDES renewal application has been submitted for review.

Completed by: Amanda Illar **Completed date:** 1/27/26

Compliance History

DMR Data for Outfall 001 (from December 1, 2024 to November 30, 2025)

Parameter	NOV-25	OCT-25	SEP-25	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24
Flow (MGD) Average Monthly	0.02622	0.02181	0.01752	0.01622	0.02258	0.03927	0.03779	0.04660	0.02942	0.05986	0.02834	0.03362
pH (S.U.) Instantaneous Minimum	6.7	6.0	6.7	6.7	6.9	6.8	6.8	7.0	6.8	6.8	7.0	6.9
pH (S.U.) Instantaneous Maximum	7.6	7.0	7.1	7.1	7.2	7.1	7.2	7.2	7.1	7.1	7.2	7.2
DO (mg/L) Instantaneous Minimum	4.9	5.1	4.3	5.3	5.1	5.3	5.3	6.4	5.5	6.4	6.5	6.3
TRC (mg/L) Average Monthly	0.26	0.28	0.25	0.26	0.26	0.26	0.27	0.26	0.26	0.25	0.27	0.27
TRC (mg/L) Instantaneous Maximum	0.43	0.49	0.29	0.29	0.31	0.30	0.32	0.35	0.32	0.30	0.31	0.35
CBOD5 (lbs/day) Average Monthly	0.5	0.6	0.4	0.3	0.6	0.6	1.0	1.0	0.6	0.7	0.4	0.7
CBOD5 (lbs/day) Weekly Average	0.8	1.1	0.6	0.3	1.3	1.2	2.6	2.6	1.1	0.9	0.6	1.0
CBOD5 (mg/L) Average Monthly	3.4	2.5	3.1	2.0	2.1	2.2	2.5	3.3	2.6	2.0	2.0	2.1
CBOD5 (mg/L) Weekly Average	5.3	4.5	4.3	2.1	2.7	2.4	3.1	5.8	4.2	2.0	2.0	2.4
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	41.4	55.7	48.2	46.7	64.5	45.4	61.4	47.3	39.8	41.8	58	46.9
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	52.0	95.9	63.8	87.1	150.5	69.7	124.3	73.8	59.2	80.1	68.3	86.1
BOD5 (mg/L) Raw Sewage Influent Average Monthly	283.0	251.8	342.1	317.5	229.9	226.0	202.5	238.2	203.4	116.0	272.5	159.4

BOD5 (mg/L) Raw Sewage Influent Daily Maximum	350.0	307.5	450.0	530.0	410.0	360.0	315.0	390.0	355.0	179.2	337.5	317.5
TSS (lbs/day) Average Monthly	0.7	1.4	0.7	0.7	1.4	1.3	2.1	1.3	1.1	1.8	1.1	1.6
TSS (lbs/day) Raw Sewage Influent Average Monthly	66.0	364.2	30.5	105.2	75.6	35.1	61.9	42.1	60.6	39.5	47.2	44.0
TSS (lbs/day) Raw Sewage Influent Daily Maximum	119.2	1111.1	51.0	309.5	218.3	46.4	166.5	90.6	103.8	62.6	56.8	100.2
TSS (lbs/day) Weekly Average	0.9	3.3	0.7	0.8	3.2	2.4	4.8	2.6	1.3	2.2	1.4	2.5
TSS (mg/L) Average Monthly	5.0	5.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
TSS (mg/L) Raw Sewage Influent Average Monthly	442.0	1818.4	216.5	683.5	235.2	169.0	147.0	214.8	293.0	113.5	218.0	135.2
TSS (mg/L) Raw Sewage Influent Daily Maximum	812.0	5528.0	360.0	1884.0	376.0	240.0	172.0	440.0	440.0	140.0	300.0	208.0
TSS (mg/L) Weekly Average	5.0	6.4	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Fecal Coliform (No./100 ml) Geometric Mean	1	2	1	1	3	3	1	1	4	12	10	5
Fecal Coliform (No./100 ml) Instantaneous Maximum	2	8	1	1	297	153	1	2	102	186	136	173
Total Nitrogen (mg/L) Daily Maximum												10.5
Ammonia (mg/L) Average Monthly	0.2	0.2	1.2	0.3	4.8	4.1	1.6	0.2	1.9	0.3	0.2	0.3
Ammonia (mg/L) Weekly Average	0.3	0.3	4.0	0.6	10.3	12.5	5.5	0.4	3.3	0.8	0.4	0.8
Total Phosphorus (mg/L) Daily Maximum												8.7

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .0995
Latitude 39º 57' 10.00" **Longitude** -80º 58' 39.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Water Quality-Based Limitations

The discharge was evaluated using WQM7.0 to determine the $CBOD_5$, ammonia nitrogen, and dissolved oxygen parameters. The model results showed no change in CBOD5, DO and ammonia-nitrogen.

The TRC Spreadsheet was used to determine TRC parameters. The spreadsheet showed no change in TRC.

Parameter	Limit (mg/l)	SBC	Model
DO	4	Inst Min.	WQM 7
Ammonia-Nitrogen	25.0 50.0	Average Monthly IMAX	WQM 7
$CBOD_5$	25.0 50.0	Average Monthly IMAX	WQM 7
TRC	0.5 1.6	Average Monthly IMAX	TRC Calculation Spreadsheet

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee saeeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 (l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to

the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.

No permit limits and/or monitoring requirements have been relaxed in this permit cycle.

Mass Loading Limitations

Per Department SOP "Establishing Effluent Limitations for Individual Sewage Permits" (BCW-PMT-033), mass loading limits will be established for POTWs for $CBOD_5$, TSS, ammonia nitrogen. For non-municipal sewage facilities, and for toxic pollutants with effluent concentration limits, mass loading limits may be established at the application manager's discretion. Average monthly mass loading limits will be established for $CBOD_5$, TSS, and ammonia nitrogen. Average weekly mass loading limits will be established for $CBOD_5$ and TSS. Mass loading limits will be calculated according to the formula below:

$$average\ annual\ design\ flow\ (MGD) \times concentration\ limit\ \left(\frac{mg}{L}\right) \times 8.34\ (converstion\ factor)$$
$$= mass\ loading\ limit\ (\frac{lbs}{day})$$

The following mass loading limitations were calculated:

Parameter	Average Monthly (lbs/day)	Average Weekly (lbs/day)
$CBOD_5$	20.8	31.1
TSS	24.9	37.4

Additional Considerations

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Department's "Technical Guidance for the Development and Specification of Effluent Limitations".

Sewage discharges will include monitoring, at a minimum, for *E. Coli*, in new and reissued permits, with a monitoring frequency of 1/quarter for facilities with design flows of >= 0.05 and <1 MGD.

An annual sampling frequency for total phosphorus and total nitrogen will again be imposed per 25 PA Code §92a.61.

Per DEP SOP New and Reissuance Sewage Individual NPDES Permit Applications SOP No. BCW-PMT-002, that for POTWs with design flows greater than 2,000 GPD, non-municipal sewage facilities, and other non-municipal sewage facilities where justified influent BOD5 and TSS monitoring in the permit using the same frequency and sample type as is used for effluent will be established. The department finds it appropriate to again impose influent BOD5 and TSS monitoring for this facility,

The STP discharges to the Monongahela River which has an EPA Approved TMDL and is impaired by PCBs & Chlordane. No WLAs have been developed for this sewage discharge as neither PCBs nor Chlordane is typically found in sewage but instead found in legacy sediments. No additional monitoring requirements for these pollutants will be placed on this facility at this time.

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)	0.0995	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	20.8	31.1	XXX	25.0	38.0	50	1/week	Grab
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	Grab
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	Grab
TSS	24.9	37.4	XXX	30.0	45.0	60	1/week	Grab
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
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia	XXX	XXX	XXX	Report	Report	XXX	1/week	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

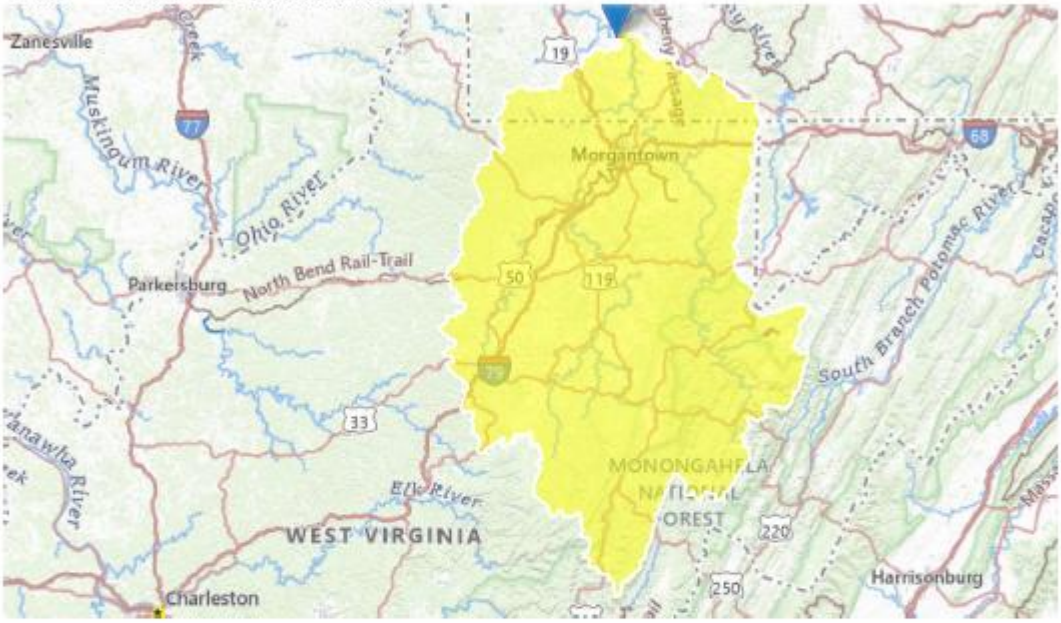
Compliance Sampling Location: Outfall 001

Other Comments:

Attachment 1
USGS Stream Discharge point

StreamStats Report

Region ID: PA
Clicked Point (Latitude, Longitude): 39.95118, -79.98517
Time: 2026-01-21 13:53:18 -0500



StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email streamstats@usgs.gov with any questions or concerns. A full list of changes can be found at **https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release (https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release)** .

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4602	square miles
ELEV	Mean Basin Elevation	1932.8	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4602	square miles	2.26	1400
ELEV	Mean Basin Elevation	1932.8	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	622	ft^3/s
30 Day 2 Year Low Flow	833	ft^3/s
7 Day 10 Year Low Flow	354	ft^3/s
30 Day 10 Year Low Flow	420	ft^3/s
90 Day 10 Year Low Flow	634	ft^3/s

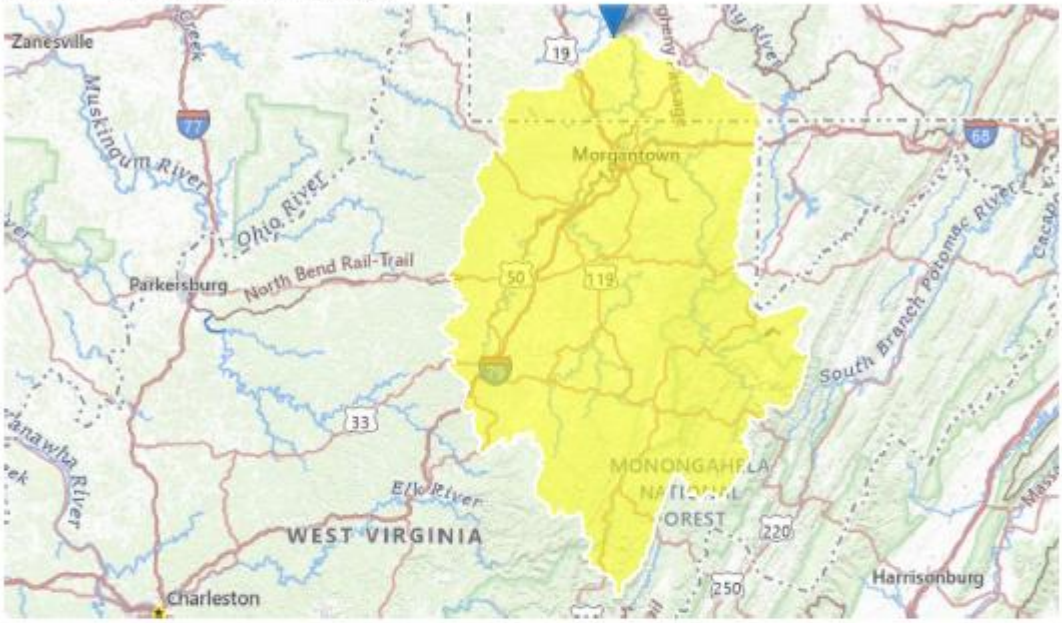
Low-Flow Statistics Citations

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/)

Attachment 2
USGS Downstream Point

StreamStats Report

Region ID: PA
Clicked Point (Latitude, Longitude): 39.95373, -80.00315
Time: 2026-01-21 14:19:10 -0500



StreamStats Update

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Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4609	square miles
ELEV	Mean Basin Elevation	1931.4	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4609	square miles	2.26	1400
ELEV	Mean Basin Elevation	1931.4	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	623	ft^3/s
30 Day 2 Year Low Flow	834	ft^3/s
7 Day 10 Year Low Flow	354	ft^3/s
30 Day 10 Year Low Flow	420	ft^3/s
90 Day 10 Year Low Flow	635	ft^3/s

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/)

Attachment 3
WQM 7.0 Summer Results

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
19A	37185	MONONGAHELA RIVER	**69.800**	1932.80	4602.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	530.00	0.00	0.000	0.000	10.0	0.00	0.00	25.00	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
Crucible WPCF	PA0093408	0.0995	0.0000	0.0000	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	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
19A	37185	MONONGAHELA RIVER

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												
69.800	530.00	0.00	530.00	.1539	0.00027	1.195	459.1	384.28	0.97	0.063	25.00	7.00
Q1-10 Flow												
69.800	339.20	0.00	339.20	.1539	0.00027	NA	NA	NA	0.75	0.081	25.00	7.00
Q30-10 Flow												
69.800	720.80	0.00	720.80	.1539	0.00027	NA	NA	NA	1.15	0.053	25.00	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
19A	37185	MONONGAHELA RIVER

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
69.800	Crucible WPCF	11.08	50	11.08	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
69.800	Crucible WPCF	1.37	25	1.37	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)		
69.80	Crucible WPCF	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
69.800	0.100	24.999	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
459.104	1.195	384.279	0.967
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.01	0.005	0.01	1.028
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.242	1.346	Tsivoglou	5
Reach Travel Time (days)			
0.063			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.006	2.01	0.01	7.54
0.013	2.01	0.01	7.54
0.019	2.01	0.01	7.54
0.025	2.01	0.01	7.54
0.032	2.01	0.01	7.54
0.038	2.01	0.01	7.54
0.044	2.01	0.01	7.54
0.051	2.01	0.01	7.54
0.057	2.01	0.01	7.54
0.063	2.01	0.01	7.54

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

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)
69.800	Crucible WPCF	PA0093408	0.100	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Attachment 4
WQM 7.0 Winter Results

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
19A	37185	MONONGAHELA RIVER	**69.800**	1932.80	4602.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.200	530.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	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
Crucible WPCF	PA0093408	0.0995	0.0000	0.0000	0.000	15.00	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	4.00	12.51	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
19A	37185	MONONGAHELA RIVER

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												
69.800	530.00	0.00	530.00	.1539	0.00027	1.195	459.1	384.28	0.97	0.063	5.00	7.00
Q1-10 Flow												
69.800	339.20	0.00	339.20	.1539	0.00027	NA	NA	NA	0.75	0.081	5.00	7.00
Q30-10 Flow												
69.800	720.80	0.00	720.80	.1539	0.00027	NA	NA	NA	1.15	0.053	5.00	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
19A	37185	MONONGAHELA RIVER

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
69.800	Crucible WPCF	24.1	50	24.1	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
69.800	Crucible WPCF	4.36	25	4.36	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)		
69.80	Crucible WPCF	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
69.800	0.100	5.003	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
459.104	1.195	384.279	0.967
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.01	0.005	0.01	0.221
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
12.508	0.838	Tsivoglou	5
Reach Travel Time (days)			
0.063			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.006	2.01	0.01	11.45
0.013	2.01	0.01	11.45
0.019	2.01	0.01	11.45
0.025	2.01	0.01	11.45
0.032	2.01	0.01	11.45
0.038	2.01	0.01	11.45
0.044	2.01	0.01	11.45
0.051	2.01	0.01	11.45
0.057	2.01	0.01	11.45
0.063	2.01	0.01	11.45

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

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)
69.800	Crucible WPCF	PA0093408	0.100	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Attachment 5
TRC Spreadsheet

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

530	= Q stream (cfs)	0.5	= CV Daily
0.0995	= 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 =	1098.400	1.3.2.iii	WLA cfc =	1070.847
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	409.290	5.1d	LTA_cfc =	622.540

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)