Pennsylvania Department of Environmental Protection

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0095621**
Facility Type	**Municipal**	APS ID	**1064587**
Major / Minor	**Minor**	Authorization ID	**1398279**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Ashville Borough**	Facility Name	**Ashville Borough STP**
Applicant Address	PO Box 165	Facility Address	1664 Liberty Street
	Ashville, PA 16613		Ashville, PA 16613
Applicant Contact	Borough President	Facility Contact	Same as Applicant
Applicant Phone	814.943.7140	Facility Phone	Same as Applicant
Client ID	64445	Site ID	251267
Ch 94 Load Status		Municipality	Ashville Borough
Connection Status		County	Cambria
Date Application Received	May 31, 2022	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Application for the Renewal of a NPDES permit for the discharge of treated Sewage.

Summary of Review

The Borough has applied for a renewal of NPDES Permit No. PA0095621, which was previously issued by the Department on November 8, 2017. That permit expired on November 30, 2022.

WQM Permit No. 1175401 was issued on May 22, 1975, authorizing the construction of an STP to treat an annual average design flow of 0.05 MGD with a design organic loading of 85 lbs/day.

The STP is an extended air two train facility consists of grit screen, comminutor, aeration tanks (3 per train), final clarifier (1 per train), and chlorine contact tank (liquid sodium hypochlorite).

The receiving stream, Clearfield Creek, is currently classified as a WWF, located in State Watershed No. 8-C. The STP indirectly discharges into the Chesapeake Bay Watershed (Phase 5 Sewage Facility).

Application data indicates that there are 2 commercial users in the system.

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

Changes since the last permit include:

- Addition of *E.Coli* monitoring

Approve	Deny	Signatures	Date
X		William C. Mitchell, E.I.T. / Environmental Engineering Specialist	December 5, 2024
X		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	December 6, 2024

Summary of Review

Sludge use and disposal description and location(s): Application data indicates that a total of 1.90 dry tons of sewage sludge/biosolids have been produced/wasted in the past year. They also indicated that the facility did not receive additional sludge from other sources and that none of sewage sludge/biosolids produced by this facility is not being managed under a beneficial use permit. Sewage Sludge is hauled to the Cambria Township WWTP for processing/disposal.

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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.05
Latitude	40º 33' 44.00"	Longitude	-78º 32' 51.00"
Quad Name	Ashville	Quad Code	1417
Wastewater Description:	Sewage Effluent		
Receiving Waters	Clearfield Creek (WWF)	Stream Code	26107
NHD Com ID	61838391	RMI	62.38
Drainage Area	42.5	Yield (cfs/mi^2)	0.08
Q_{7-10} Flow (cfs)	3.42	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1612	Slope (ft/ft)	0.00197
Watershed No.	8-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	METALS		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Clearfield Creek

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

Nearest Downstream Public Water Supply Intake	Shawville Power Plant		
PWS Waters	West Branch Susquehanna River	Flow at Intake (cfs)	
PWS RMI	164.31	Distance from Outfall (mi)	Greater Than 65 Miles

Changes Since Last Permit Issuance: Drainage Area, Q7/10 Flow, Elevation, RMI, Yield, and Slope were updated for modeling purposes.

Other Comments: The discharge is to Clearfield Creek, which is part of the Clearfield Creek Watershed that has a Final TMDL and It is impaired by metals.

No WLAs have been developed and this sewage discharge is not expected to contribute to the stream impairment for which abandoned mine drainage is source of such impairment.

Application data indicates that concentration values of Iron, Manganese, and Aluminum are below criteria and the TMS does not recommend WQBELs be established.

A 1/year monitor and report requirement for Iron, Manganese, and Aluminum is established in the permit to verify that the sewage discharge is not contributing to the impairment per 25 Pa. Code § 92a.061.

Treatment Facility Summary

Treatment Facility Name: Ashville Borough STP

WQM Permit No.	Issuance Date
1175401	05/22/1975

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Liquid Sodium Hypochlorite	0.05

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.05	85	Not Overloaded	Sludge Holding Tank	Hauled to Cambria TWP WWTP

Changes Since Last Permit Issuance: None

Other Comments: N/A

Compliance History

DMR Data for Outfall 001 (from November 1, 2023 to October 31, 2024)

Parameter	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23
Flow (MGD) Average Monthly	0.0116	0.0109	0.016	0.010	0.0126	0.0254	0.0428	0.0324	0.0204	0.0411	0.0198	0.0172
Flow (MGD) Daily Maximum	0.0292	0.0196	0.1315	0.0186	0.0286	0.0759	0.2171	0.0446	0.0491	0.1587	0.0371	0.0629
pH (S.U.) Minimum	7.3	7.7	7.6	7.6	7.5	7.3	7.3	7.0	7.5	7.2	7.0	7.9
pH (S.U.) Maximum	7.9	8.1	8.3	8.0	8.0	8.0	7.8	8.0	8.1	7.8	7.9	7.3
DO (mg/L) Minimum	5.1	6.0	5.3	5.5	5.0	6.0	8.0	6.0	7.0	4.1	5.1	6.4
TRC (mg/L) Average Monthly	0.41	0.46	0.44	0.44	0.47	0.41	0.41	0.44	0.43	0.34	0.28	0.35
TRC (mg/L) Instantaneous Maximum	0.68	0.68	0.66	0.71	0.71	0.62	0.73	0.67	0.69	0.60	0.59	0.65
CBOD5 (lbs/day) Average Monthly	0.4	0.3	0.3	0.3	0.2	0.7	2.0	0.8	2.0	6.0	2.0	0.4
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	8.3	< 3.0	13.6	31.2	16.8	< 3.0
CBOD5 (mg/L) Instantaneous Maximum	< 3.0	< 3.0	< 3.0	3.0	< 3.0	< 3.0	9.65	< 3.0	23.9	36.0	30.5	< 3.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	48	23	16	31	30	88	43	30	72	25	18	31
BOD5 (mg/L) Raw Sewage Influent Average Monthly	288	260	177	283	299	394	166	111	530	130	136	251
TSS (lbs/day) Average Monthly	1.0	1.0	0.5	0.3	0.2	1.0	3.0	4.0	2.0	5.0	2.0	1.0
TSS (lbs/day) Raw Sewage Influent Average Monthly	23	37	9.0	22	20	72	24	13	43	32	15	17
TSS (mg/L) Average Monthly	9.8	15.8	5.4	3.8	2.2	4.4	12.2	17.0	14.6	26.7	14.2	7.8

TSS (mg/L) Raw Sewage Influent Average Monthly	140	415	91	205	200	295	100	48	315	164	112	143
TSS (mg/L) Instantaneous Maximum	10.4	23.2	9.2	5.2	2.8	6.4	12.4	17.6	16.0	26.8	18.4	8.4
Fecal Coliform (No./100 ml) Geometric Mean	178	122	866	10.0	< 10.0	< 3.0	121	10.0	125	347	491	< 10.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	213	1483	24196	10.0	< 10.0	< 10.0	1467	10.0	1565.0	12033	12033	< 10.0
Total Nitrogen (mg/L) Daily Maximum											22.73	
Ammonia (lbs/day) Average Monthly	0.03	0.2	0.3	0.03	0.01	0.02	0.3	7.584	2.0	25.0	1.0	0.01
Ammonia (mg/L) Average Monthly	0.03	2.733	3.048	0.3599	< 0.1	< 0.1	1.180	7.584	15.19	18.6	11.2	< 0.1
Ammonia (mg/L) Instantaneous Maximum	0.2661	4.462	5.996	0.5057	< 0.1	< 0.1	2.271	9.106	19.99	130	22.2	< 0.1
Total Phosphorus (mg/L) Daily Maximum											1.61	
Total Aluminum (mg/L) Daily Maximum											< 0.1	
Total Iron (mg/L) Daily Maximum											< 0.2	
Total Manganese (mg/L) Daily Maximum											0.0809	

Compliance History

Operations Compliance Check Summary Report

Facility: Ashville Borough STP

NPDES Permit No.: PA0095621

Compliance Review Period: 12/1/19-12/5/24

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC	INSPECTION COMMENT
3767082	05/17/2024	Chapter 94 Inspection	PA Dept of Environmental Protection	No Violations Noted	
3520748	03/07/2023	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted	Administrative file review of 2 years of DMR's for in person CEI on 3/7/23.
3530189	03/07/2023	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted	

Violation Summary:

No violations noted during review period.

Open Violations by Client ID:

No open violations for Client ID 64445

Enforcement Summary:

No enforcements executed during review period.

Unauthorized Discharges:

Sep-21	Clearfield Creek overflowed due to Hurricane Ida and flooded sewage treatment plant covering plant with 2 feet of water. Lost most of my solids. Plant recovered the next day.

Effluent Violation Summary:

Mon_Pd	PARAMETER	SAMPLE	PERMIT	UNIT	STAT_BASE_CODE	FACILITY_COMMENTS
Sep-24	Fecal Coliform	1483	1000	No./100 ml	Instantaneous Maximum	Unknown reason why fecal count was high. Pace took sample at 12:05 and our TRC was tested at 14:40 and TRC was .48. There was no high flow event.
Aug-24	Fecal Coliform	24196	1000	No./100 ml	Instantaneous Maximum	
Aug-24	Fecal Coliform	866	200	No./100 ml	Geometric Mean	Pace Lab took samples at 12:15 our sample time was 9:40 that same day. Trc was .66. Unknown reason why fecal was so high. I was not present when Pace Lab took sample.
Jan-24	Carbonaceous Biochemical Oxygen Demand (CBOD5)	31.2	25	mg/L	Average Monthly	
Jan-24	Fecal Coliform	12033	10000	No./100 ml	Instantaneous Maximum	
Dec-23	Fecal Coliform	12033	10000	No./100 ml	Instantaneous Maximum	
Sep-23	Fecal Coliform	1076	1000	No./100 ml	Instantaneous Maximum	
Sep-23	Fecal Coliform	396	200	No./100 ml	Geometric Mean	
Jul-22	Fecal Coliform	3255	1000	No./100 ml	Instantaneous Maximum	
Aug-20	Fecal Coliform	2282	1000	No./100 ml	Instantaneous Maximum	
Aug-20	Fecal Coliform	306	200	No./100 ml	Geometric Mean	
Jul-20	Fecal Coliform	2603	1000	No./100 ml	Instantaneous Maximum	

Compliance Status: Facility is generally in compliance with no open violations or pending enforcements.

Completed by: Amanda Illar **Completed date:** 12/5/24

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.05
Latitude 40º 33' 44.00" **Longitude** -78º 32' 51.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Comments: The discharge was evaluated using WQM 7.0 Version 1.1 (Attachment 2) & TRC_CALC (Attachment 4) to evaluate $CBOD_5$, Ammonia Nitrogen, Dissolved Oxygen, and TRC. The modeling results show the above technology based effluent limitations are appropriate.

For existing discharges, if WQM modeling results for summer indicates that an average monthly limit of 25 mg/L (ammonia-nitrogen) is acceptable, the application manager will generally establish a year-round monitoring requirement for ammonia-nitrogen (Section I.A, Note 5, SOP No. BCW-PMT-033, Establishing Effluent Limitations for Individual Sewage Permits).

Water Quality-Based Limitations

Comments: Based upon module output files, WQM 7.0 & TMS. No WQBELs will be established at this time for this facility (Attachments 2 & 3).

Best Professional Judgment (BPJ) Limitations

Comments: A minimum Dissolved Oxygen (DO) limit of 4.0 mg/L will be established based on BPJ to ensure adequate operation and maintenance (Section I.A, Note 6, SOP No. BCW-PMT-033, Establishing Effluent Limitations for Individual Sewage Permits).

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 seeks 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.

The facility is not seeking to revise the previously permitted effluent limits.

Chesapeake Bay Watershed TMDL

The STP discharges directly to Clearfield Creek which is located in the Chesapeake Bay Watershed.

In 2010, the Chesapeake Bay Total Maximum Daily Load (TMDL) was established by the U.S. Environmental Protection Agency (EPA). This historic clean-up plan provides a guide for reducing pollution and restoring clean water to the Chesapeake Bay and its local rivers and streams. To guide these efforts, Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia, and the District of Columbia (collectively referred to as the "Bay jurisdictions") created a series of roadmaps—known as Watershed Implementation Plans (WIPs)—describing how each will achieve the pollution reductions called for in the TMDL.

There are three phases of WIPs. Phase 1 and 2 WIPs were developed in 2010 and 2012, respectively, and describe actions to be implemented by 2017 and 2025 to achieve the goals of the TMDL. Phase 3 WIPs, under development in the 2017 to 2019 timeframe, describe actions that seven Chesapeake Bay jurisdictions intend to implement through 2025 to meet Chesapeake Bay restoration goals, based on the Chesapeake Bay Program Partnership's midpoint assessment of progress. This midpoint assessment was completed in 2017. The Phase 3 WIP builds on strengths and seeks to address the weaknesses of the Phase 1 and Phase 2 WIPs. Pennsylvania will continue to implement pollutant reduction activities identified in those earlier WIPs.

The Phase 3 WIP specifies the steps Pennsylvania will take through 2025 to meet local water pollution reduction goals in the Chesapeake Bay watershed.

The Ashville Borough STP has a design flow of 0.05 MGD and is a Phase 5 Non-Significant Sewage Facility. For Phase 5 sewage facilities with individual permits (average annual design flow on August 29, 2005 > 0.002 MGD and < 0.2 MGD), DEP will issue individual permits with monitoring and reporting for TN and TP throughout the permit term at a frequency no less than annually, as stated in PA DEPs Phase 3 Watershed Implementation Plan Wastewater Supplement Document, Revised, July 29, 2022.

Additional Considerations

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Departments Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits (Document No. 386-0400-001).

For POTWs, mass loading limits will be established for $CBOD_5$, TSS, NH_3-N, and where necessary Total P and Total N. In general, average monthly mass loading limits will be established for $CBOD_5$, TSS, NH_3-N, and where necessary Total P and Total N, and average weekly mass loading limits will be established for $CBOD_5$ and TSS (Section IV, SOP No. BCW-PMT-033, Establishing Effluent Limitations for Individual Sewage Permits).

For POTWs with design flows greater than 2,000 GPD and for non-municipal sewage facilities that service municipalities or portions thereof, the application manager will establish influent BOD_5 and TSS monitoring in the permit using the same frequency and sample type as is used for other effluent parameters (Section IV.E.8, SOP No BCW-PWT-002, New and Reissuance Sewage Individual NPDES Permit Applications).

Sewage discharges will include monitoring, at a minimum, for *E. Coli*, in new and reissued permits, with a monitoring frequency of 1/quarter for design flows >= 0.05 and < 1 MGD per 25 Pa. Code § 92a.061 and Section I.A, Note 12, SOP No. BCW-PMT-033, Establishing Effluent Limitations for Individual Sewage Permits.

Nutrient monitoring is required to establish the nutrient load from the wastewater treatment facility and the impacts that load may have on the quality of the receiving stream(s). The discharge is to waters not impaired for nutrients. A 1/year monitoring requirement for Total N & Total P has been added to the permit per Chapter 92a.61 and Section I.A, Note 7 & 8, SOP No. BCW-PMT-033, Establishing Effluent Limitations for Individual Sewage Permits.

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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	2/month	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	10.0	XXX	XXX	25.0	XXX	50.0	2/month	Grab
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	Report	2/month	Grab
TSS	12.0	XXX	XXX	30.0	XXX	60.0	2/month	Grab
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	Report	2/month	Grab
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
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-Nitrogen	Report	XXX	XXX	Report	XXX	Report	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Outfall 001, Continued (from 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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Aluminum	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Total Iron	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Total Manganese	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

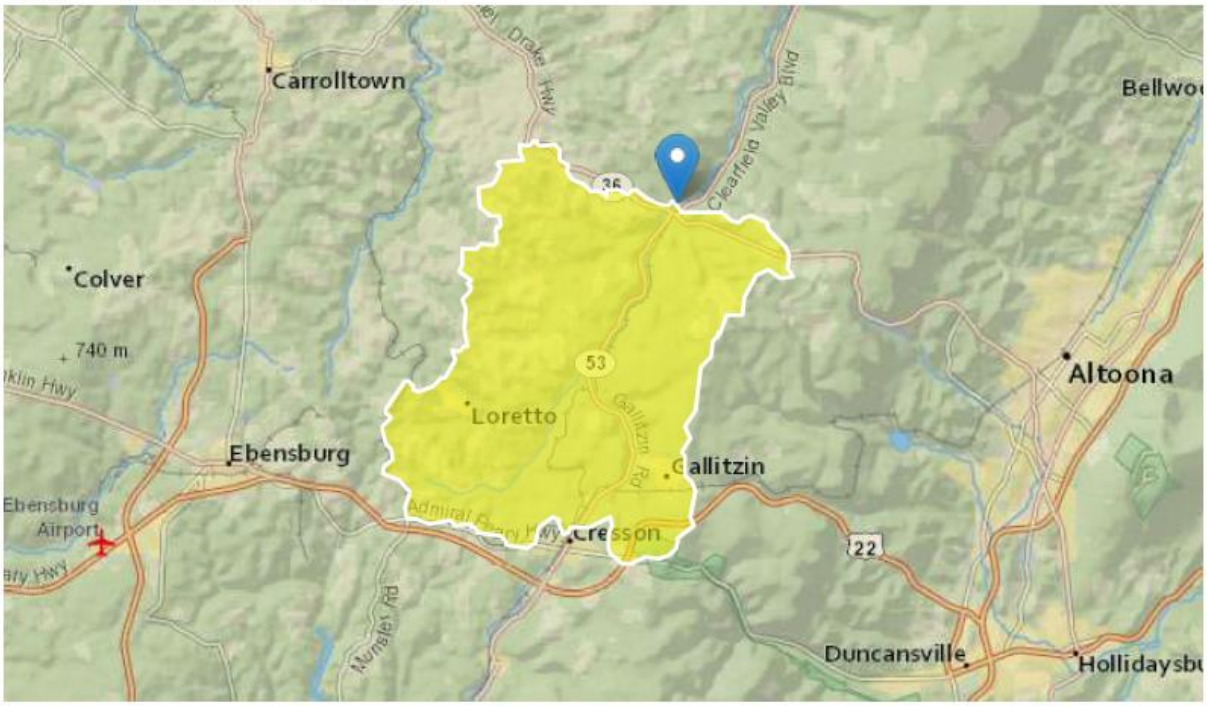
Compliance Sampling Location: Outfall 001

Other Comments: N/A

Attachment 1 – USGS StreamStats Report

StreamStats Report - PA0095621

Region ID: PA
Workspace ID: PA20241203163150359000
Clicked Point (Latitude, Longitude): 40.56302, -78.54830
Time: 2024-12-03 11:32:15 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	42.5	square miles
ELEV	Mean Basin Elevation	1968	feet
PRECIP	Mean Annual Precipitation	46	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	42.5	square miles	2.33	1720
ELEV	Mean Basin Elevation	1968	feet	898	2700
PRECIP	Mean Annual Precipitation	46	inches	38.7	47.9

Low-Flow Statistics Flow Report [Low Flow Region 3]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	6.45	ft^3/s	43	43
30 Day 2 Year Low Flow	8.98	ft^3/s	38	38
7 Day 10 Year Low Flow	3.42	ft^3/s	54	54
30 Day 10 Year Low Flow	4.37	ft^3/s	49	49
90 Day 10 Year Low Flow	6.2	ft^3/s	41	41

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/)

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.24.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment 2 – WQM 7.0 Version 1.1 – Summer Period

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
08C	26107	CLEARFIELD CREEK	**62.380**	1612.00	42.50	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	0.080	0.00	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
Ashville STP	PA0095621	0.0500	0.0000	0.0000	0.000	20.00	7.15

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	8.38	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
08C	26107	CLEARFIELD CREEK	**61.900**	1607.00	48.20	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	0.080	0.00	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
		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
08C	26107	CLEARFIELD 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												
62.380	3.40	0.00	3.40	.0773	0.00197	.658	30.87	46.94	0.17	0.171	24.89	7.00
Q1-10 Flow												
62.380	2.18	0.00	2.18	.0773	0.00197	NA	NA	NA	0.13	0.218	24.83	7.00
Q30-10 Flow												
62.380	4.62	0.00	4.62	.0773	0.00197	NA	NA	NA	0.20	0.145	24.92	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
08C	26107	CLEARFIELD 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
62.380	Ashville STP	11.19	50	11.19	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
62.380	Ashville STP	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)		
62.38	Ashville STP	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
08C	26107	CLEARFIELD CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
62.380	0.050	24.889	7.003
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
30.869	0.658	46.939	0.171
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.51	0.293	0.56	1.020
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.260	3.606	Tsivoglou	5
Reach Travel Time (days)			
0.171			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.017	2.50	0.55	7.55
0.034	2.48	0.54	7.55
0.051	2.46	0.53	7.55
0.068	2.45	0.52	7.55
0.086	2.43	0.51	7.55
0.103	2.42	0.50	7.55
0.120	2.40	0.49	7.55
0.137	2.39	0.48	7.55
0.154	2.37	0.48	7.55
0.171	2.36	0.47	7.55

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
08C	26107	CLEARFIELD 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)
62.380	Ashville STP	PA0095621	0.050	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

Attachment 3 – TMS Version 1.4

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Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Ashville Borough STP** NPDES Permit No.: **PA0095621** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Treated Effluent**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.05	100	7.15						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc		0.5 if left blank: Daily CV	Hourly CV	0 if left blank: Stream CV	Fate Coeff	FOS	1 if left blank: Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L	<	100									
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L	<	13									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L	<	200									
	Total Lead	µg/L	<	8									
	Total Manganese	µg/L		76.5									
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	µg/L	<	43									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Group 3	Carbon Tetrachloride	µg/L	<										
	Chlorobenzene	µg/L											
	Chlorodibromomethane	µg/L	<										
	Chloroethane	µg/L	<										
	2-Chloroethyl Vinyl Ether	µg/L	<										
	Chloroform	µg/L	<										
	Dichlorobromomethane	µg/L	<										
	1,1-Dichloroethane	µg/L	<										
	1,2-Dichloroethane	µg/L	<										
	1,1-Dichloroethylene	µg/L	<										
	1,2-Dichloropropane	µg/L	<										
	1,3-Dichloropropylene	µg/L	<										
	1,4-Dioxane	µg/L	<										
	Ethylbenzene	µg/L	<										
	Methyl Bromide	µg/L	<										
	Methyl Chloride	µg/L	<										
	Methylene Chloride	µg/L	<										
	1,1,2,2-Tetrachloroethane	µg/L	<										
	Tetrachloroethylene	µg/L	<										
	Toluene	µg/L	<										
	1,2-trans-Dichloroethylene	µg/L	<										
	1,1,1-Trichloroethane	µg/L	<										
	1,1,2-Trichloroethane	µg/L	<										
	Trichloroethylene	µg/L	<										
	Vinyl Chloride	µg/L	<										
Group 4	2-Chlorophenol	µg/L	<										
	2,4-Dichlorophenol	µg/L	<										
	2,4-Dimethylphenol	µg/L	<										
	4,6-Dinitro-o-Cresol	µg/L	<										
	2,4-Dinitrophenol	µg/L	<										
	2-Nitrophenol	µg/L	<										
	4-Nitrophenol	µg/L	<										
	p-Chloro-m-Cresol	µg/L	<										
	Pentachlorophenol	µg/L	<										
	Phenol	µg/L	<										
	2,4,6-Trichlorophenol	µg/L	<										
Group 5	Acenaphthene	µg/L	<										
	Acenaphthylene	µg/L	<										
	Anthracene	µg/L	<										
	Benzidine	µg/L	<										
	Benzo(a)Anthracene	µg/L	<										
	Benzo(a)Pyrene	µg/L	<										
	3,4-Benzofluoranthene	µg/L	<										
	Benzo(ghi)Perylene	µg/L	<										
	Benzo(k)Fluoranthene	µg/L	<										
	Bis(2-Chloroethoxy)Methane	µg/L	<										
	Bis(2-Chloroethyl)Ether	µg/L	<										
	Bis(2-Chloroisopropyl)Ether	µg/L	<										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<										
	4-Bromophenyl Phenyl Ether	µg/L	<										
	Butyl Benzyl Phthalate	µg/L	<										
	2-Chloronaphthalene	µg/L	<										
	4-Chlorophenyl Phenyl Ether	µg/L	<										
	Chrysene	µg/L	<										
	Dibenzo(a,h)Anthrancene	µg/L	<										
	1,2-Dichlorobenzene	µg/L	<										
	1,3-Dichlorobenzene	µg/L	<										
	1,4-Dichlorobenzene	µg/L	<										
	3,3-Dichlorobenzidine	µg/L	<										
	Diethyl Phthalate	µg/L	<										
	Dimethyl Phthalate	µg/L	<										
	Di-n-Butyl Phthalate	µg/L	<										
	2,4-Dinitrotoluene	µg/L	<										

	2,6-Dinitrotoluene	µg/L	<										
	Di-n-Octyl Phthalate	µg/L	<										
	1,2-Diphenylhydrazine	µg/L	<										
	Fluoranthene	µg/L	<										
	Fluorene	µg/L	<										
	Hexachlorobenzene	µg/L	<										
	Hexachlorobutadiene	µg/L	<										
	Hexachlorocyclopentadiene	µg/L	<										
	Hexachloroethane	µg/L	<										
	Indeno(1,2,3-cd)Pyrene	µg/L	<										
	Isophorone	µg/L	<										
	Naphthalene	µg/L	<										
	Nitrobenzene	µg/L	<										
	n-Nitrosodimethylamine	µg/L	<										
	n-Nitrosodi-n-Propylamine	µg/L	<										
	n-Nitrosodiphenylamine	µg/L	<										
	Phenanthrene	µg/L	<										
	Pyrene	µg/L	<										
	1,2,4-Trichlorobenzene	µg/L	<										
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Ashville Borough STP, NPDES Permit No. PA0095621, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Clearfield Creek**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	026107	62.38	1612	42.5			Yes
End of Reach 1	026107	61.9	1607	48.2			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	62.38	0.08										82.5	7		
End of Reach 1	61.9	0.08													

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	62.38														
End of Reach 1	61.9														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Ashville Borough STP, NPDES Permit No. PA0095621, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Hydrodynamics***

Q_{7-10}

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
62.38	3.40		3.40	0.077	0.002	0.658	30.869	46.939	0.171	0.171	52.711
61.9	3.86		3.856								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
62.38	21.65		21.65	0.077	0.002	1.473	30.869	20.96	0.478	0.061	16.335
61.9	24.17		24.17								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.533 Analysis Hardness (mg/l): 83.216 Analysis pH: 7.01

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	750	750	18,336	
Total Copper	0	0		0	11.303	11.8	288	Chem Translator of 0.96 applied
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	52.843	64.6	1,580	Chem Translator of 0.818 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	100.287	103	2,507	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 52.711 PMF: 1 Analysis Hardness (mg/l): 82.889 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	7.629	7.95	357	Chem Translator of 0.96 applied

Total Iron	0	0		0	1,500	1,500	67,434	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.050	2.51	113	Chem Translator of 0.818 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	100.771	102	4,595	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 52.711 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	44,956	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 16.335 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

Pollutants	*Mass Limits*		*Concentration Limits*				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Aluminum	11,753	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	185	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	67,434	µg/L	Discharge Conc ≤ 10% WQBEL

Total Lead	113	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	44,956	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	1,607	µg/L	Discharge Conc ≤ 10% WQBEL

Attachment 4 – TRC_CALC

PA0095621_TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

3.42	= Q stream (cfs)	0.5	= CV Daily
0.05	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.533	= 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 =	7.537	1.3.2.iii	WLA cfc =	13.762
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	2.808	5.1d	LTA_cfc =	8.000

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)