pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0209996**
Facility Type	**Non-Municipal**	APS ID	**1058074**
Major / Minor	**Minor**	Authorization ID	**1387216**

Applicant and Facility Information

Applicant Name	**Salvation Army**	Facility Name	**Camp Allegheny**
Applicant Address	700 North Bell Avenue P O Box 742	Facility Address	140 Jenkins Circle
	Carnegie, PA 15106		Ellwood City, PA 16117-7068
Applicant Contact	Philip Lloyd	Facility Contact	Chad Henry
Applicant Phone	(412) 446-1513	Facility Phone	(207) 730-9830
Client ID	130925	Site ID	445265
Ch 94 Load Status	Not Overloaded	Municipality	Wayne Township
Connection Status	No Limitations	County	Lawrence
Date Application Received	February 28, 2022	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Renewal of an NPDES permit for an existing discharge of treated sewage.

Summary of Review

No changes in discharge quality or quantity were proposed as part of this renewal.

The permittee is currently registered for and using eDMR for reporting.

There are currently no open violations listed in EFACTS for the permittee (8/10/2023). *8/16/2023 CWY*

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 A. Frey, E.I.T. Jordan A. Frey, E.I.T. / Project Manager	August 10, 2023
X		Chad W. Yurisic Chad W. Yurisic, P.E. / Environmental Engineer Manager	8/16/2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.06
Latitude	40º 53' 5.60"	Longitude	-80º 13' 52.28"
Quad Name	Portersville	Quad Code	40080H2
Wastewater Description:	Sewage Effluent		

Receiving Waters	Slippery Rock Creek (CWF)	Stream Code	34032
NHD Com ID	126216865	RMI	3.07
Drainage Area	400	Yield (cfs/mi^2)	0.119
Q_{7-10} Flow (cfs)	47.6	Q_{7-10} Basis	USGS# 03106500 ('71-'08)
Elevation (ft)	837	Slope (ft/ft)	0.208
Watershed No.	20-C	Chapter 93 Class.	CWF
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		Name	

Background/Ambient Data		Data Source
pH (SU)	8.1	WQN 922 ('05-'16) (July-Sept) (Geo. Mean)
Temperature (°F)	20	Default for CWF
Hardness (mg/L)	104.6	WQN 922 ('05-'08) (July-Sept) (Median)
Other:	0.02	WQN 922 ('05-'16) (July-Sept) (Median)

Nearest Downstream Public Water Supply Intake		Pennsylvania American Water Company – Ellwood City	
PWS Waters	Connoquenessing Creek	Flow at Intake (cfs)	67
PWS RMI	2.0	Distance from Outfall (mi)	8.28

Changes Since Last Permit Issuance:

Other Comments: Nearest downstream PWS surface water intake has been relocated from Slippery Rock Creek to the mouth of the Connoquenessing Creek since the previous permit renewal

Treatment Facility Summary

Treatment Facility Name: Camp Allegheny

WQM Permit No.	Issuance Date
3792401	2/28/1992

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.06

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.06	120	Not Overloaded	Aerobic Digestion	

Changes Since Last Permit Issuance: None

Other Comments: None

Compliance History

DMR Data for Outfall 001 (from January 1, 2022 to December 31, 2022)

Parameter	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22
Flow (MGD) Average Monthly	0.0115	0.0126	0.0046	0.0023	0.001	0.0022	0.00259	0.0068	0.0079	0.0088	0.0152	0.0023
Flow (MGD) Daily Maximum	0.0369	0.0208	0.0163	0.0152	0.0075	0.0204	0.01345	0.0424	0.0243	0.0345	0.0734	0.0103
pH (S.U.) Minimum	6.92	6.41	7.11	6.51	6.98	6.25	6.7	6.65	6.53	6.06	6.0	6.11
pH (S.U.) Maximum	8.34	8.11	8.34	8.07	7.94	7.95	8.29	8.14	8.18	8.16	8.15	8.22
DO (mg/L) Minimum	9.2	10.1	11.2	8.7	6.50	6.7	6.2	4.5	5.3	17.2	17.6	18.9
TRC (mg/L) Average Monthly	0.5	0.5	0.5	0.5	0.4	0.4	0.40	0.30	0.3	0.4	0.38	0.44
TRC (mg/L) Instantaneous Maximum	1.01	1.19	1.02	1.0	0.76	1.09	1.02	1.0	1.1	1.03	0.75	0.86
CBOD5 (mg/L) Average Monthly	< 4.0	< 19.4	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	5.1
TSS (mg/L) Average Monthly	< 9.0	17.0	28.8	< 5.0	16.5	< 5.0	< 5.0	< 5.0	< 5.0	17.5	< 9.0	< 1.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 11	< 1	> 101	118	8	< 2	> 2420	20	< 45	> 1868	< 45	< 1.0
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	130	2	> 2420	196	36	5	> 2420	52	1986	> 2420	1986	< 1.0
Ammonia (mg/L) Average Monthly	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.3	< 0.30	< 0.30	< 0.3	< 0.09	< 0.30	< 0.3

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .06
Latitude 40º 53' 5.00" **Longitude** -80º 13' 52.00"
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: None

Water Quality-Based Limitations

No new parameters were found to be candidates for limitations by Reasonable Potential Analysis *during the last permit renewal (8/16/2023 CWY)*

~~No limitations were determined to be needed through WQM 7.0 or PENTOXSD Modeling.~~ Previous permit cycle's WQM 7.0 modeling was used due to the facility being small and no significant changes having occurred during the last permit cycle.

A Reasonable Potential Analysis was not performed in accordance with State practices using the Department's Toxics Management Spreadsheet because no sampling other than sewage-related parameters was performed for this facility with the renewal application (the facility design flow is less than 0.1 MGD, there are no industrial or commercial users, and the facility does not accept hauled in waste). (8/16/2023 CWY)

The modeling reach extended to the downstream public water supply to demonstrate human health criteria was being met.

Best Professional Judgment (BPJ) Limitations

Comments: A dissolved oxygen limit of a minimum of 4 mg/l and monitoring for ammonia nitrogen, total nitrogen, and total phosphorus were placed in the permit during the previous permit cycle in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits (BPNPSM-PMT-033)." Sampling data in the eDMRs for ammonia nitrogen, total nitrogen, and total phosphorus do not indicate a need for limits at this time.

The TRC spreadsheet calculated a less stringent TRC IMAX limit. The existing instantaneous maximum limit for TRC will be retained due to anti-backsliding provisions.

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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	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	1.2	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60	2/month	8-Hr Composite
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	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
Total Nitrogen	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall 001, after disinfection.

ATTACHMENT A

TOXICS SCREENING ANALYSIS
WATER QUALITY POLLUTANTS OF CONCERN
VERSION 2.3

Facility: **Camp Allegheny** NPDES Permit No.: **PA0209996** Outfall: **001**
Analysis Hardness (mg/L): **104.6** Discharge Flow (MGD): **0.06** Analysis pH (SU): **8.1**

Parameter		Maximum Concentration in Application or DMRs (µg/L)	Most Stringent Criterion (µg/L)	Candidate for PENTOXSD Modeling?	Most Stringent WQBEL (µg/L)	Screening Recommendation
Total Dissolved Solids		529000	500000	Yes	263480000	No Limits/Monitoring
Chloride		14500	250000	No		FALSE
Bromide		120	N/A	No		
Sulfate		76000	250000	No		FALSE
1,4-Dioxane			N/A			
Total Copper		40	9.69	Yes	835	No Limits/Monitoring
Total Lead	<	20	3.37	Yes	1727	No Limits/Monitoring
Total Zinc		290	124.5	Yes	7122	No Limits/Monitoring

Toxics Screening Analysis Spreadsheet (v 2.3), 2/23/2017

Figure 1 - Toxic Screening Analysis

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
20C	34032	SLIPPERY ROCK CREEK	**3.070**	835.49	397.90	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	0.119	47.50	0.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	20.00	8.10
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
Camp Allegheny	PA0209996	0.0600	0.0000	0.0000	0.000	20.00	6.70

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	0.02	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
20C	34032	SLIPPERY ROCK CREEK	**0.250**	818.00	409.00	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	0.119	0.00	0.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	20.00	8.10
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
20C	34032	SLIPPERY ROCK 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												
3.070	47.50	0.00	47.50	.0928	0.00117	.986	111.22	112.85	0.43	0.397	20.00	8.08
Q1-10 Flow												
3.070	30.40	0.00	30.40	.0928	0.00117	NA	NA	NA	0.34	0.509	20.00	8.07
Q30-10 Flow												
3.070	64.60	0.00	64.60	.0928	0.00117	NA	NA	NA	0.52	0.334	20.00	8.09

WQM 7.0 Modeling Specifications

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

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34032	SLIPPERY ROCK CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.070	0.060	20.000	8.080
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
111.221	0.986	112.851	0.434
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.04	0.027	0.07	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.235	2.379	Tsivoglou	6
Reach Travel Time (days)			
0.397			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.040	2.04	0.07	8.24
0.079	2.04	0.07	8.24
0.119	2.04	0.06	8.24
0.159	2.04	0.06	8.24
0.198	2.03	0.06	8.24
0.238	2.03	0.06	8.24
0.278	2.03	0.06	8.24
0.318	2.03	0.06	8.24
0.357	2.03	0.05	8.24
0.397	2.02	0.05	8.24

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34032	SLIPPERY ROCK 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
3.070	Camp Allegheny	2.31	50	2.31	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
3.070	Camp Allegheny	.54	25	.54	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)		
3.07	Camp Allegheny	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34032	SLIPPERY ROCK 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)
3.070	Camp Allegheny	PA0209996	0.060	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

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Figure 2 – WQM 7.0 Modeling

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
34032	3.07	835.49	397.90	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.119	47.5	0	0	0	0	0	0	0	0	104.6	8.1	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard (mg/L)	Disc pH
Camp Allegheny	PA0209996	0.06	0	0	0	0	0	0	0	100	6.7

Parameter Data

Parameter Name	Disc Conc (µg/L)	Trib Conc (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Conc (µg/L)	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc (µg/L)
COPPER	40	0	0.5	0.5	0	0	0	0	1	0
LEAD	20	0	0.5	0.5	0	0	0	0	1	0
TOTAL DISSOLVED SOLIDS (PWS)	529000	0	0.5	0.5	0	0	0	0	1	0
ZINC	290	0	0.5	0.5	0	0	0	0	1	0

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
34032	0.25	818.00	409.00	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.119	0	0	0	0	0	0	0	0	0	104.6	8.1	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard (mg/L)	Disc pH
		0	0	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc (µg/L)	Trib Conc (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Conc (µg/L)	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc (µg/L)
COPPER	0	0	0.5	0.5	0	0	0	0	1	0
LEAD	0	0	0.5	0.5	0	0	0	0	1	0
TOTAL DISSOLVED SOLIDS (PWS)	0	0	0.5	0.5	0	0	0	0	1	0
ZINC	0	0	0.5	0.5	0	0	0	0	1	0

PENTOXSD Analysis Results

Hydrodynamics

SWP Basin	Stream Code:	Stream Name:
20C	34032	SLIPPERY ROCK CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	CMT (min)
Q7-10 Hydrodynamics											
3.070	47.5	0	47.5	0.09281	0.0012	0.9856	111.22	112.85	0.4342	0.3969	503.653
0.250	48.821	0.0015	48.819	NA	0	0	0	0	0	0	NA
Qh Hydrodynamics											
3.070	216.98	0	216.98	0.09281	0.0012	1.9216	111.22	57.879	1.0157	0.1697	185.555
0.250	222.24	0.0015	222.24	NA	0	0	0	0	0	0	NA

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
3.07	**Camp Allegheny**	**PA0209996**

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
COPPER	0	0	0	0	NA	NA	NA
LEAD	0	0	0	0	NA	NA	NA
ZINC	0	0	0	0	NA	NA	NA
TOTAL DISSOLVED SOLIDS (PWS)	0	0	0	0	NA	NA	NA

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin	Stream Code:	Stream Name:
20C	34032	SLIPPERY ROCK CREEK

RMI	Name	Permit Number	Disc Flow (mgd)
3.07	Camp Allegheny	PA0209996	0.0600

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
COPPER	40	INPUT	62.406	835.705	AFC
LEAD	20	INPUT	31.203	1727.272	CFC
TOTAL DISSOLVED SOLIDS (PWS	529000	INPUT	825325.1	2.6348E+08	THH
ZINC	290	INPUT	452.447	7122.568	AFC

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
3.07	Camp Allegheny	PA0209996

AFC

Q7-10: **CCT (min)** 15 **PMF** 0.172 **Analysis pH** 7.996 **Analysis Hardness** 104.548

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
COPPER	0	0	0	0	14.014	14.598	1303.834
	Dissolved WQC. Chemical translator of 0.96 applied.						
LEAD	0	0	0	0	67.784	86.402	7716.907
	Dissolved WQC. Chemical translator of 0.785 applied.						
ZINC	0	0	0	0	121.681	124.418	11112.35
	Dissolved WQC. Chemical translator of 0.978 applied.						
TOTAL DISSOLVED SOLIDS (PWS)	0	0	0	0	NA	NA	NA

CFC

Q7-10: **CCT (min)** 503.653 **PMF** 1 **Analysis pH** 8.08 **Analysis Hardness** 104.591

Parameter	Stream Conc. (µg/L)	Stream CV	Trib Conc. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
COPPER	0	0	0	0	9.306	9.694	4970.37
	Dissolved WQC. Chemical translator of 0.96 applied.						
LEAD	0	0	0	0	2.643	3.369	1727.272
	Dissolved WQC. Chemical translator of 0.784 applied.						
ZINC	0	0	0	0	122.719	124.461	63816.63
	Dissolved WQC. Chemical translator of 0.986 applied.						
TOTAL DISSOLVED SOLIDS (PWS)	0	0	0	0	NA	NA	NA

THH

Q7-10: **CCT (min)** 503.653 **PMF** NA **Analysis pH** NA **Analysis Hardness** NA

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
COPPER	0	0	0	0	NA	NA	NA
LEAD	0	0	0	0	NA	NA	NA
ZINC	0	0	0	0	NA	NA	NA
TOTAL DISSOLVED SOLIDS (PWS)	0	0	0	0	500000	500000	2.6348E+08
	WQC applied at RMI .25 with a design stream flow of 48.8209.						

CRL

Qh: **CCT (min)** 185.555 **PMF** 1

Figure 3 - PENTOXSD Modeling

TRC Spreadsheet

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

47.6	= Q stream (cfs)	0.5	= CV Daily
0.06	= 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 = 163.609	1.3.2.iii	WLA cfc = 159.498
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 60.965	5.1d	LTA_cfc = 92.725

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
	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AML MULT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
AVG MON LIMIT	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)
INST MAX LIMIT	

Figure 4 - TRC Spreadsheet

Camp Allegheny
Wayne Township, Lawrence County
PA0209996 Discharge pH

Date	pH min	pH max	10^ -pH min	10^ -pH max	& pH max)	-Log (Ave pH)
Jul-14	6.15	7.61	7.08E-07	2.45E-08	3.66E-07	**6.4**
Sep-14	6.38	7.37	4.17E-07	4.27E-08	2.3E-07	**6.6**
Jul-15	6.2	6.8	6.31E-07	1.58E-07	3.95E-07	**6.4**
Aug-15	6.7	7	2E-07	1E-07	1.5E-07	**6.8**
Sep-15	7.2	8	6.31E-08	1E-08	3.65E-08	**7.4**
Jul-16	6.1	**7**	7.94E-07	1E-07	4.47E-07	**6.3**
Aug-16	7	7.6	1E-07	2.51E-08	6.26E-08	**7.2**
Sep-16	7.9	8.1	1.26E-08	7.94E-09	1.03E-08	**8.0**
					Median:	**6.7**

Figure 5 - Discharge pH