Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0024970**
Facility Type	**Non-Municipal**	APS ID	**1070229**
Major / Minor	**Minor**	Authorization ID	**1407990**

Applicant and Facility Information

Applicant Name	**US Acoe Pittsburgh District**	Facility Name	**Shenango River Lake**
Applicant Address	Shenango Lake 2442 Kelly Road	Facility Address	2442 Kelly Road
	Hermitage, PA 16148		Hermitage, PA 16150
Applicant Contact	William Spring	Facility Contact	
Applicant Phone	(724) 962-7746	Facility Phone	
Client ID	5515	Site ID	453379
Ch 94 Load Status	Not Overloaded	Municipality	Pymatuning Township
Connection Status	No Limitations	County	Mercer
Date Application Received	August 30, 2022	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: This is an application to renew a Sewage Treatment Plant that serves a campground on Shenango River Lake.

Summary of Review

This facility has no known WQM Permit. Based on the previous renewal the NPDES Permit file shows that the regional engineer waived the EPA certification request in October 1974 due to discharge being considered not significant. Based on a January 2023 correspondence the permittee was urged to submit a WQM Permit and was provided with the necessary steps to submitting a complete application. A status update was requested on 3/11/25 to verify that the permittee still plans on applying for a WQM Permit.

Proposed changes on this renewal include E. Coli quarterly monitoring is being proposed to conform with the SOP for Establishing Effluent Limitations in Individual Sewage Permits.

There are currently 27 open violations in WMS for the subject Client ID (5515) as of 3/6/25. 22 of these open violations are for this facility through the Safe Drinking Water Program.

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		Dustin Hargenrater Dustin Hargenrater / Project Manager	March 11, 2025
		Adam Olesnanik, P.E. / Environmental Engineer Manager	Okay to Draft JCD 3/17/2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.052
Latitude	41º 17' 10.90"	Longitude	-80º 26' 10.75"
Quad Name	Sharpsville	Quad Code	41080C4
Wastewater Description:	Sewage Effluent		

Receiving Waters	Shenango River (WWF)	Stream Code	35482
NHD Com ID	130034347	RMI	0.2500
Drainage Area	399	Yield (cfs/mi^2)	0.032
Q_{7-10} Flow (cfs)	12.8	Q_{7-10} Basis	USGS - StreamStats
Elevation (ft)	893	Slope (ft/ft)	
Watershed No.	20-A	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		Name	

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°F)	68	Default - WWF
Hardness (mg/L)	100	Default
Other:		

Nearest Downstream Public Water Supply Intake		Aqua Pennsylvania Inc. – Shenango Valley WTP	
PWS Waters	Shenango River	Flow at Intake (cfs)	143.8
PWS RMI	28.88	Distance from Outfall (mi)	8.03

Changes Since Last Permit Issuance: None

Compliance History

There are currently 27 open violations for subject Client ID (5515) as of 3/11/25. The open violations consist of 5 violations not at this facility and then 22 open violations for this facility with the Safe Drinking Water Program. These violations were opened on 8/14/24. Three of the open violations at this facility are for Cross-Connections existing without proper backflow protection, 11 of the open violations are for Failure to Operate and Maintain the water system, 6 of the open violations are for Failure to Meet Design and Construction Standards, one open violation for Failure for a noncommunity water system to provide the level of treatment approved in its BDF or noncommunity water system approval, and one open violation for failure to prepare and/or maintain a system map. The Safe Drinking Water Program should be consulted as to whether these open violations will hold up permit issuance.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .052
Latitude 41º 17' 17.00" **Longitude** -80º 26' 10.00"
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: A 0.5 mg/l Average Monthly limit for TRC will be retained based on compliance and PA Code Chapter 92a.48(b)(2). Water quality modeling results show a 0.5 mg/l Average Monthly limit for TRC and a 1.5 mg/l Instantaneous Maximum limit. Due to anti-backsliding requirements the 1.2 mg/l Instantaneous Maximum limit will be retained.

Water Quality-Based Limitations

Comments: Proper dilution should be occurring at the discharge to eliminate any concerns for Human Health. Phosphorous limits requirements were deleted in a June 23, 1999 lake trophic study.

WQM 7.0 and TRC_CALC Modeling was done to see if the current limitations of the permit were sufficient. The models suggested a Monthly Average Limit of 25 mg/l for Ammonia-Nitrogen. Based on the SOP for Establishing Effluent Limitations in Individual Sewage Permits, “For existing discharges, if WQM modeling results for summer indicates that an average monthly limit of 25 mg/l is acceptable, the application manager will generally establish a year-round monitoring requirement for ammonia-nitrogen, at a minimum. A seasonal multiplier of 3 times the summertime average monthly limit should be established for the winter period.” Looking at the effluent data for Ammonia-Nitrogen, it will not be considered a pollutant of concern for the effluent and the facility will retain the quarterly monitoring requirement for Ammonia-Nitrogen.

Best Professional Judgment (BPJ) Limitations

Comments: None

Anti-Backsliding

The 1.2 mg/l Instantaneous Maximum limit will be retained due to anti-backsliding requirements.

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	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/day	Grab
DO	XXX	XXX	4.0	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	60	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	2000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Ammonia-Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite

Compliance Sampling Location: Outfall 001, after disinfection.

Other Comments: None

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
20A	35482	SHENANGO RIVER	**37.237**	893.00	399.00	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	12.80	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
SRL Camp STP	PA0024970	0.0520	0.0520	0.0520	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

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
20A	35482	SHENANGO RIVER	**36.798**	892.00	400.00	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	12.90	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
		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	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
20A	35482	SHENANGO 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												
37.237	12.80	0.00	12.80	.0804	0.00043	.925	72.53	78.44	0.19	0.140	20.00	7.00
Q1-10 Flow												
37.237	8.19	0.00	8.19	.0804	0.00043	NA	NA	NA	0.15	0.179	20.00	7.00
Q30-10 Flow												
37.237	17.41	0.00	17.41	.0804	0.00043	NA	NA	NA	0.23	0.118	20.00	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
20A	35482	SHENANGO 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
37.237	SRL Camp STP	16.76	50	16.76	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
37.237	SRL Camp STP	1.89	25	1.89	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)		
37.24	SRL Camp STP	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20A	35482	SHENANGO RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
37.237	0.052	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
72.529	0.925	78.441	0.192
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.14	0.099	0.16	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.216	0.565	Tsivoglou	5
Reach Travel Time (days)			
0.140			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.014	2.14	0.15	8.21
0.028	2.14	0.15	8.21
0.042	2.13	0.15	8.20
0.056	2.13	0.15	8.20
0.070	2.13	0.15	8.20
0.084	2.13	0.15	8.19
0.098	2.12	0.15	8.19
0.112	2.12	0.14	8.19
0.126	2.12	0.14	8.18
0.140	2.11	0.14	8.18

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20A	35482	SHENANGO 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)
37.237	SRL Camp STP	PA0024970	0.052	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

TRC_CALC Modeling Output Files

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

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

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	50.777	1.3.2.iii	WLA cfc =	49.496
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	18.921	5.1d	LTA_cfc =	28.775

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.326	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.518	

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)**