pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0271501**
Facility Type	**Municipal**	APS ID	**1088845**
Major / Minor	**Minor**	Authorization ID	**1440419**

Applicant and Facility Information

Applicant Name	**Perry Township Mercer County**	Facility Name	**Hadley STP**
Applicant Address	PO Box 69	Facility Address	Fredonia Road
	Hadley, PA 16130		Hadley, PA 16130
Applicant Contact	Bonnie McCartney	Facility Contact	Bonnie McCartney
Applicant Phone	(724) 253-4300	Facility Phone	(724) 253-4300
Client ID	89762	Site ID	829427
Ch 94 Load Status	Not Overloaded	Municipality	Perry Township
Connection Status	No Limitations	County	Mercer
Date Application Received	May 5, 2023	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: NPDES Renewal of a municipal minor sewage facility discharge.

Summary of Review

This is a renewal of an existing discharge for a municipal minor sewage facility.

The WQM permit was amended during the previous permit term to add 5,500LF of low-pressure sanitary sewer

There are currently no open violations for this client (89762) as of 8/28/2024.

WQM modeling was redone from previous permit cycle due to updated modeling calculations for Ammonia-Nitrogen limits.

Annual monitoring for E. Coli has been added per Chapter 92.

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 28, 2024
X		Vacant / Environmental Engineer Manager	Okay to Draft JCD 9/4/2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.047
Latitude	41º 24' 45.98"	Longitude	-80º 14' 0.70"
Quad Name	Hadley	Quad Code	41080D2
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Little Shenango River (TSF)	Stream Code	36167
NHD Com ID	130028372	RMI	0.9600
Drainage Area	29.5	Yield (cfs/mi^2)	0.053
Q_{7-10} Flow (cfs)	1.56	Q_{7-10} Basis	L. Shenango River @ Greenville Gage
Elevation (ft)	1043	Slope (ft/ft)	---
Watershed No.	20-A	Chapter 93 Class.	TSF
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)	7.41	WQN 913 (2000-2015)
Temperature (°F)	25	Default
Hardness (mg/L)		
Other:	0.046	WQN 913 (2000-2015)

Nearest Downstream Public Water Supply Intake		Greenville Municipal Authority	
PWS Waters	Shenango River	Flow at Intake (cfs)	10.6
PWS RMI	8.0	Distance from Outfall (mi)	16.5

Changes Since Last Permit Issuance: A permit amendment was issued in February 2023 for the addition of 5,500LF of 3" low-pressure sanitary sewers.

Other Comments: None.

Treatment Facility Summary

Treatment Facility Name: Hadley STP

WQM Permit No.	Issuance Date
4318410 A-1	February 21, 2023
4318410	October 24, 2018

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Ultraviolet	0.04625

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.04625		Not Overloaded		

Changes Since Last Permit Issuance: A permit amendment was issued in February 2023 for the addition of 5,500LF of 3" low-pressure sanitary sewers.

Other Comments: None.

Compliance History

DMR Data for Outfall 001 (from July 1, 2023 to June 30, 2024)

Parameter	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23
Flow (MGD) Average Monthly	0.011	0.011	0.018	0.014	0.013	0.013	0.009	0.006	0.003			
Flow (MGD) Daily Maximum	0.022	0.015	0.048	0.031	0.020	0.027	0.016	0.012	0.007			
pH (S.U.) Daily Minimum	7.2	7.0	6.9	7.2	7.3	7.3	7.4	7.3	7.3			
pH (S.U.) Instantaneous Maximum	7.6	7.7	7.6	7.6	7.7	7.8	7.9	8.1	8.8			
DO (mg/L) Daily Minimum	7.1	6.8	8.3	8.6	9.4	9.1	9.3	5.9	4.4			
CBOD5 (lbs/day) Average Monthly	0.4	0.5	< 1.1	0.8	1.0	0.4	0.2	0.7	0.4			
CBOD5 (lbs/day) Weekly Average	0.5	0.7	2.0	0.9	1.3	0.6	0.2	1.0	0.5			
CBOD5 (mg/L) Average Monthly	4.1	5.6	< 3.8	6.5	8.2	4.5	3.1	10.4	17.4			
CBOD5 (mg/L) Weekly Average	5.3	8.8	5.6	8.0	10.9	6.2	3.6	10.9	18.3			
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	30	19	32	24	27	17	13	14	4			
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	35	21	51	27	35	17	13	22	7			
BOD5 (mg/L) Raw Sewage Influent Average Monthly	264	229	144	182	208	176	209	186	129			
TSS (lbs/day) Average Monthly	0.8	0.9	3.6	1.6	1.8	1.0	0.6	1.6	0.6			
TSS (lbs/day) Raw Sewage Influent Average Monthly	7	7	15	8	5	5	3	4	4			

TSS (lbs/day) Raw Sewage Influent Daily Maximum	10	10	22	11	8	6	3	6	7			
TSS (lbs/day) Weekly Average	1.1	1.0	6.7	1.7	1.8	1.0	0.7	2.3	0.6			
TSS (mg/L) Average Monthly	7.0	10.5	12.5	12.0	14.0	10.5	10.5	22.5	19.0			
TSS (mg/L) Raw Sewage Influent Average Monthly	55	84	76	55	40	52	52	55	130			
TSS (mg/L) Weekly Average	8.0	12.0	19.0	15.0	15.0	11.0	14.0	23.0	20.0			
Fecal Coliform (No./100 ml) Geometric Mean	17	8	< 2	47	486	175	< 2	314	132			
Fecal Coliform (No./100 ml) Instantaneous Maximum	22	15	4	278	1414	201	< 5	1454	866			
UV Intensity (mW/cm²) Daily Maximum	3.2	3.0	2.8	3.4	0.9	1.1	1.8	3.3	4.3			
Total Nitrogen (lbs/day) Annual Average							3					
Total Nitrogen (mg/L) Annual Average							63.9					
Ammonia (lbs/day) Average Monthly	0.1	0.7	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.1	1.4			
Ammonia (mg/L) Average Monthly	0.2	8.9	< 0.9	< 0.4	< 0.4	< 0.4	< 0.4	0.6	0.1			
Total Phosphorus (lbs/day) Annual Average							0.2					
Total Phosphorus (mg/L) Annual Average							4.2					

Facility start-up was around October 2023. Therefore, there is no DMR date for the months prior to October 2023.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .047
Latitude 41º 24' 45.79" **Longitude** -80º 14' 0.81"
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: TRC limits are not needed because this facility uses UV disinfection, not chlorine.

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
N/A	N/A	N/A	N/A

Comments: WQM 7.0b was run, and modeling did not justify any water quality-based limits.

Best Professional Judgment (BPJ) Limitations

Comments: A dissolved oxygen limit of a minimum of 4.0 mg/l, an ammonia nitrogen average monthly limit of 25 mg/l, and monitoring for total nitrogen, total phosphorus, UV intensity, influent BOD_5 and influent TSS.

Anti-Backsliding

N/A

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)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
CBOD5	9.5	15.0	XXX	25.0	40.0	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	11.0	17.0	XXX	30.0	45.0	60	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	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
UV Intensity (mW/cm^2)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/day	Measured
Total Nitrogen	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Ammonia	9.5	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
Total Phosphorus	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
E. Coli (No./100ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

Compliance Sampling Location: Outfall 001, after disinfection.

Other Comments: Effluent limits are technology-based limits derived from Chapter 92a and Chapter 95.2, except for Dissolved Oxygen (DO) and Ammonia-Nitrogen (Ammonia), which are Best Professional Judgment standards.

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20A	36167	LITTLE 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
16.130	Hadley STP	4.68	50	4.68	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
16.130	Hadley STP	1.07	25	1.07	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)		
16.13	Hadley STP	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20A	36167	LITTLE SHENANGO RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
16.130	0.046	24.781	7.414
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
22.727	0.587	38.704	0.123
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.01	0.152	1.14	1.011
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.385	2.801	Tsivoglou	6
Reach Travel Time (days)			
2.155			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.215	2.89	0.92	6.95
0.431	2.77	0.74	6.87
0.646	2.66	0.59	6.95
0.862	2.55	0.48	7.10
1.077	2.45	0.38	7.26
1.293	2.35	0.31	7.41
1.508	2.26	0.25	7.54
1.724	2.17	0.20	7.54
1.939	2.08	0.16	7.54
2.155	2.00	0.13	7.54

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)
16.130	Hadley STP	PA0271501	0.046	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

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	36167	LITTLE SHENANGO RIVER	**16.130**	1043.00	29.50	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	0.053	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.41	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
Hadley STP	PA0271501	0.0463	0.0000	0.0000	0.000	20.00	7.50

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	7.54	0.00	0.00
NH3-N	25.00	0.05	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	36167	LITTLE SHENANGO RIVER	**11.810**	994.00	40.00	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	0.053	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.41	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
20A	36167	LITTLE 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												
16.130	1.56	0.00	1.56	.0715	0.00215	.587	22.73	38.7	0.12	2.155	24.78	7.41
Q1-10 Flow												
16.130	1.00	0.00	1.00	.0715	0.00215	NA	NA	NA	0.10	2.729	24.67	7.42
Q30-10 Flow												
16.130	2.13	0.00	2.13	.0715	0.00215	NA	NA	NA	0.14	1.826	24.84	7.41

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		