Pennsylvania Department of Environmental Protection

Northeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0070491**
Facility Type	**Non-Municipal**	APS ID	**616944**
Major / Minor	**Minor**	Authorization ID	**1449174**

Applicant and Facility Information

Applicant Name	**Mahoning Valley Nursing and Rehabilitation Center**	Facility Name	**Mahoning Valley Nursing & Rehabilitation Center WWTF**
Applicant Address	397 Hemlock Drive Lehighton, PA 18235-9712	Facility Address	397 Hemlock Drive Lehighton, PA 18235
Applicant Contact	Michael A. Mickey, President & C.E.O.	Facility Contact	Kristopher A. Rodgers, Maintenance Supervisor
Applicant Phone	(570) 386-5522	Facility Phone	(570) 386-5522
Client ID	33354	Site ID	445340
Ch 94 Load Status	Not Overloaded	Municipality	Mahoning Township
Connection Status	-	County	Carbon
Date Application Received	July 31, 2023	EPA Waived?	Yes
Date Application Accepted	August 16, 2023	If No, Reason	-
Purpose of Application	Renewal of NPDES permit for discharge of treated sewage.		

Summary of Review

The applicant is requesting the renewal of an NPDES permit to discharge up to 0.02 MGD of treated sewage into Stewart Creek, a Cold-Water Fishery, Migratory Fish (CWF, MF) receiving stream in State Water Plan Basin 2-B (Middle Lehigh River). As per the Department's current existing use list, the receiving stream has an existing use classification that is more protective than its designated use. The existing use classification is Exceptional Value, Migratory Fish (EV, MF).

DEP has evaluated information indicating that the existing use of the receiving waters is different than the designated use under 25 Pa. Code § 93.9. In developing the draft NPDES permit, DEP is proposing to protect the existing use of the receiving waters. Following DEP's notice of the receipt of the application and the draft permit in the Pennsylvania Bulletin, DEP will accept written comments during the public comment period regarding DEP's tentative determination to protect the existing use. DEP will make a final determination on existing use protection for the receiving waters as part of the final permit action.

Limitations for pH, $CBOD_5$, Total Suspended Solids (TSS), and Fecal Coliform are technology-based and carried over from the previous permit.

Limitations for Ammonia-Nitrogen are water quality-based and carried over from the previous permit. WQM 7.0 modeling did not recommend stricter limits.

A BPJ-based limitation of 5.0 mg/L for Dissolved Oxygen (DO) has been added to the permit. The new limit will come into effect three years after the permit effective date. Monitoring and reporting for DO is required for the first three years.

The Total Residual Chlorine (TRC) Calculation Spreadsheet did not recommend stricter limitations than the previous permit. The TRC limits from the previous permit have been maintained in this permit renewal.

Approve	Deny	Signatures	Date
X		/s/ Allison S. Zukosky / Project Manager	October 22, 2024
X		/s/ Amy M. Bellanca, P.E. / Program Manager	10-28-24

Summary of Review

The annual monitoring and reporting for Total Nitrogen, Total Phosphorous, Total Kjeldahl Nitrogen, and Nitrate-Nitrite as N has been maintained in this permit.

Sewage discharges now require monitoring and reporting for E. Coli. A monitoring frequency of 1/month for design flows >= 1 MGD, 1/quarter for design flows >= 0.05 and < 1 MGD, 1/year for design flows of 0.002 – 0.05 MGD will be utilized.

There are no representative stream gages in the vicinity of the outfall and the drainage area at Outfall 001 is too small for USGS StreamStats to estimate accurate low flow values. Previous modeling utilized data from USGS gage 01449200 on Mahoning Creek to develop a low flow yield (LFY) of 0.063 cfs/mi^2. This stream gage no longer has data available. The same LFY that was previously used has been carried over for modeling during this permit cycle. RMI values were obtained using the "PA Historic Streams" feature of eMapPA, drainage areas were delineated using USGS's StreamStats Interactive Map, and elevations were obtained using the elevation profile feature of StreamStats.

No antidegradation analysis is required since the WWTP is not changing or expanding its permitted discharge. None of the existing effluent limitations have been made less stringent, therefore, the antibacksliding requirement has been met. There is no DRBC docket for this facility.

The existing permit expired on May 31, 2024 and the application for renewal was received on time.

A Water Management System Inspection query indicated that on May 10, 2023 a Routine/Partial Inspection was performed.

There are currently no open violations for this client that warrant withholding issuance of this permit.

Sludge use and disposal description and location(s): As per the permittee's NPDES Renewal Application, sludge is hauled to the Lehigh Valley WWTF in Allentown, PA by George's Sewer & Drain Cleaning.

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)	0.02
Latitude	40º 49' 24.40"	Longitude	-75º 45' 40.67"
Quad Name	Nesquehoning	Quad Code	1239
Wastewater Description:	Sewage Effluent		
Receiving Waters	Stewart Creek (EV (existing use))	Stream Code	4040
NHD Com ID	26288383	RMI	1.41
Drainage Area	3.1	Yield (cfs/mi^2)	0.063
Q_{7-10} Flow (cfs)	0.194	Q_{7-10} Basis	Gage 01449200 from Previous modeling
Elevation (ft)	617.84	Slope (ft/ft)	-
Watershed No.	2-B	Chapter 93 Class.	CWF, MF
Existing Use	EV(EXCEPTIONAL VALUE)	Existing Use Qualifier	RBP - Antidegradation
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	-		
Source(s) of Impairment	-		
TMDL Status	-	Name	-
Nearest Downstream Public Water Supply Intake	Northampton Borough Municipal Authority		
PWS Waters	Lehigh River	Flow at Intake (cfs)	-
PWS RMI	24.8	Distance from Outfall (mi)	~ 22

Treatment Facility Summary

Treatment Facility Name: Mahoning Valley Nursing & Rehabilitation Center WWTF

WQM Permit No.	Issuance Date
1382402	8/16/1982

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondart	Extended Aeration	Chlorine	0.00935 (2020-2022)

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.02	40	Not Overloaded	Settled	Hauled

Compliance History

DMR Data for Outfall 001 (from September 1, 2023 to August 31, 2024)

Parameter	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23
Flow (MGD) Average Monthly	0.0068	0.0072	0.0069	0.0073	0.0065	0.0065	0.0069	0.0066	0.0065	0.0066	0.0065	0.0065
Flow (MGD) Daily Maximum	0.0082	0.0088	0.0109	0.0089	0.008	0.0078	0.0095	0.0081	0.0086	0.0077	0.0081	0.008
pH (S.U.) Instantaneous Minimum	6.71	6.61	6.39	6.53	6.47	6.31	6.39	6.55	6.41	6.58	6.51	6.61
pH (S.U.) Instantaneous Maximum	7.17	7.19	7.36	7.3	7.29	7.38	7.38	7.4	7.15	7.19	7.69	7.04
TRC (mg/L) Average Monthly	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.41	0.4
TRC (mg/L) Instantaneous Maximum	0.53	0.49	0.55	0.66	0.68	1.03	0.8	7.4	0.87	0.61	0.55	0.87
CBOD5 (mg/L) Average Monthly	3.8	6.7	6.9	7.2	7.4	2.1	4.2	4.1	3.1	2.3	1.9	3.3
TSS (mg/L) Average Monthly	4.0	4.0	4.5	4.0	7.4	4.0	4.0	4.5	5.0	4.0	4.5	4.0
Fecal Coliform (No./100 ml) Geometric Mean	2.0	3.0	3	< 1.0	< 1.0	2.0	3.0	< 1.0	< 3.0	1.0	< 1.0	8.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	4.1	4.1	10.9	< 1.0	2.0	5.2	6.3	< 1.0	7.4	1.0	< 1.0	15.5
Nitrate-Nitrite (mg/L) Annual Average									9.0			
Total Nitrogen (mg/L) Annual Average									10.3			
Ammonia (mg/L) Average Monthly	0.2	0.1	0.1	0.1	0.11	0.1	1.1	0.1	0.1	0.1	0.1	0.1
TKN (mg/L) Annual Average									1.3			
Total Phosphorus (mg/L) Annual Average									1.7			

Compliance History

Effluent Violations for Outfall 001, from: October 1, 2023 To: August 31, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TRC	01/31/24	IMAX	7.4	mg/L	1.6	mg/L
TRC	01/31/24	IMAX	7.4	mg/L	1.6	mg/L

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.02
Latitude 40º 49' 22.00" **Longitude** -75º 45' 48.00"
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
$CBOD_5$	25.0	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	50.0	IMAX	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30.0	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	60.0	IMAX	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)
	1.6	IMAX		
E. Coli	Report	IMAX	-	92a.61
Dissolved Oxygen	5.0	Minimum	-	BPJ

Water Quality-Based Limitations

The following limitations were determined through water quality modeling:

Parameter	Limit (mg/l)	SBC	Model
Ammonia-Nitrogen (Nov 1 – Apr 30)	Report	Average Monthly	Previous modeling
Ammonia-Nitrogen (May 1 – Oct 31)	16.4	Average Monthly	
	32.8	IMAX	
Nitrate-Nitrite as N	Report	Annual Average	Previous permit
Total Nitrogen			
Total Kjeldahl Nitrogen			
Total Phosphorus			

Anti-Backsliding

No limitations were made less stringent.

Modeling Using USGS StreamStats:

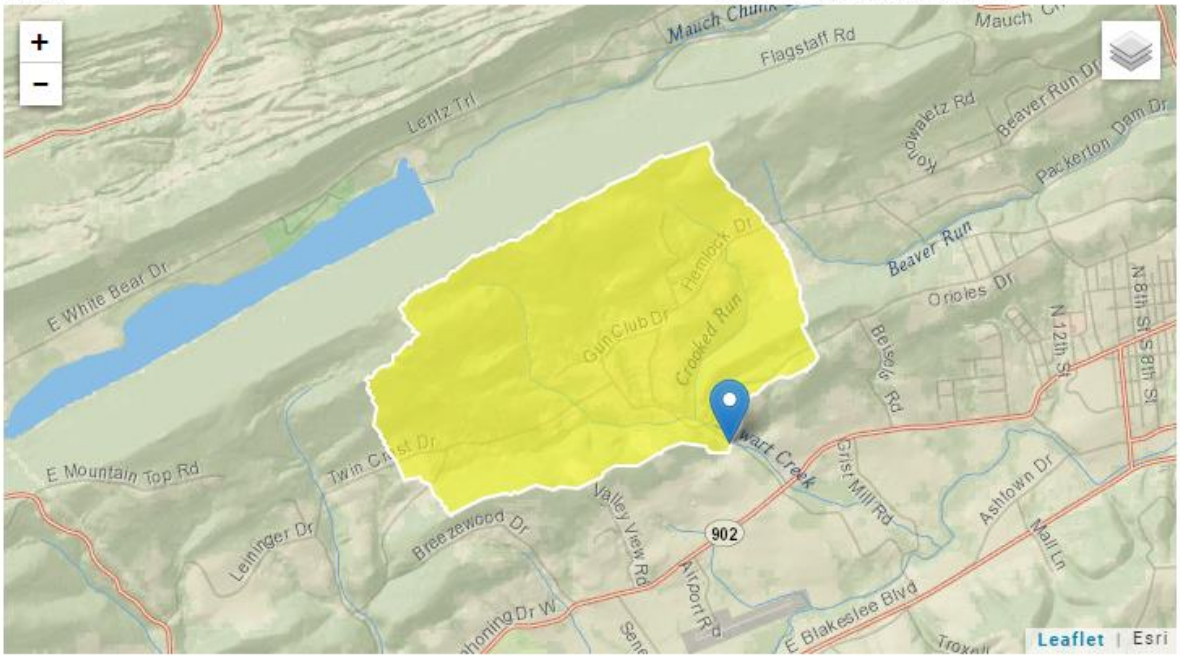
At Outfall 001 on Stewart Creek:

RMI	Elevation (ft)	Drainage Area (mi^2)	$Q_{7\text{-}10}$ Flow (cfs)
1.41	617.84	3.1	0.137

$$Low\ Flow\ Yield\ using\ StreamStats = \frac{0.137\ ft^3/sec}{3.1\ mi^2} = \mathbf{0.044}\ \frac{\boldsymbol{ft^3/sec}}{\boldsymbol{mi^2}}$$

StreamStats Report

Region ID:	PA
Workspace ID:	PA20241018123717463000
Clicked Point (Latitude, Longitude):	40.82363, -75.76307
Time:	2024-10-18 08:37:39 -0400



Parameter Code	Parameter Name	Value	Units
DRNAREA	Drainage Area	3.1	square miles

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

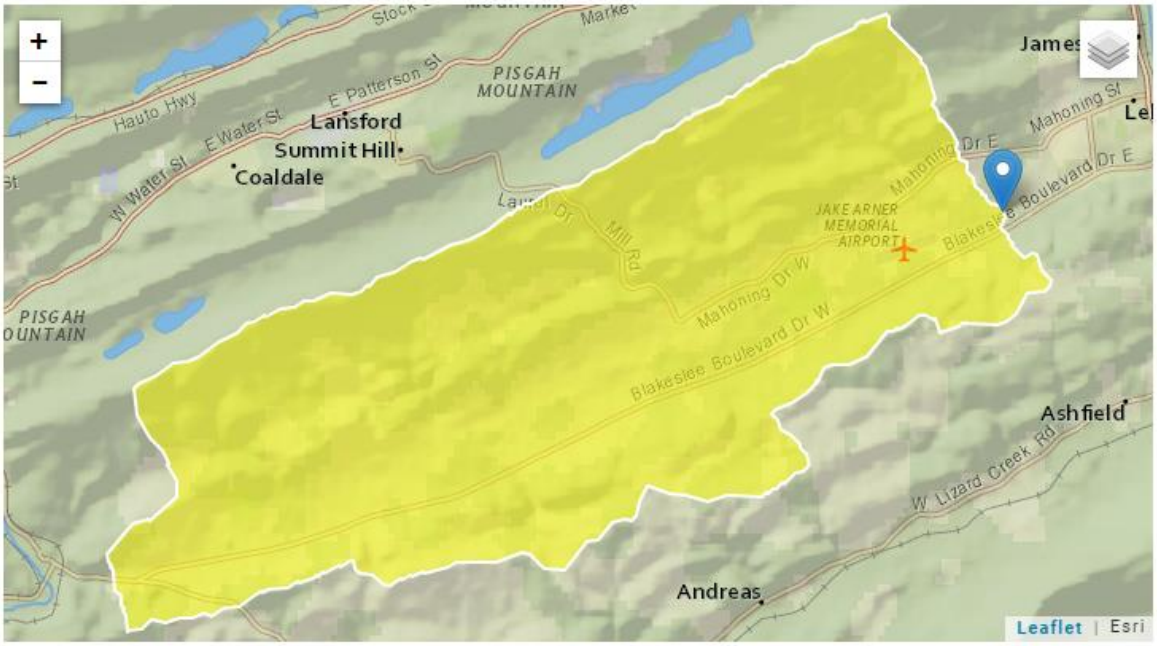
Statistic	Value	Unit
7 Day 2 Year Low Flow	0.366	ft^3/s
30 Day 2 Year Low Flow	0.524	ft^3/s
7 Day 10 Year Low Flow	0.137	ft^3/s

At confluence with Mahoning Creek (4033):

RMI	Elevation (ft)	Drainage Area (mi^2)
0.00	487.34	34.6

StreamStats Report

Region ID:	PA
Workspace ID:	PA20241018124413526000
Clicked Point (Latitude, Longitude):	40.81529, -75.74037
Time:	2024-10-18 08:44:37 -0400



Parameter Code	Parameter Name	Value	Units
DRNAREA	Drainage Area	34.6	square miles

Modeling using the state-wide Low-Flow Yield (LFY) of 0.1 cfs/mi^2:

$$\frac{0.1\ ft^3/sec}{mi^2} \times 3.1\ mi^2 = \frac{\mathbf{0.31\ ft^3}}{\mathbf{sec}}$$

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
02B	4040	STEWART 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)
1.410	MahoningNursing	PA0070491	0.020	CBOD5	25		
				NH3-N	17.69	35.38	
				Dissolved Oxygen			3

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.137	= Q stream (cfs)	0.5	= CV Daily
0.02	= 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 = 1.432	1.3.2.iii	WLA cfc = 1.388
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.533	5.1d	LTA_cfc = 0.807

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)

WQM 7.0.pdf

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Approve	Deny	Signatures	Date
X		/s/ Allison S. Zukosky / Project Manager	October 22, 2024
X		/s/ Amy M. Bellanca, P.E. / Program Manager	10-28-24