Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	DEP-Initiated Major Amendment	Application No.	PA0253227A-1
Facility Type	Municipal	APS ID	1088167
Major / Minor	Minor	Authorization ID	1517621

Applicant and Facility Information

Applicant Name	East Franklin Township Armstrong County	Facility Name	Adrian STP
Applicant Address	106 Cherry Orchard Avenue	Facility Address	Sr 4023
	Kittanning, PA 16201-3310		Adrian, PA 16210
Applicant Contact	Barry Peters	Facility Contact	
Applicant Phone	(724) 548-2310	Facility Phone	
Client ID	77287	Site ID	665636
Ch 94 Load Status		Municipality	East Franklin Township
Connection Status		County	Armstrong
Date Application Received	NA	EPA Waived?	Yes
Date Application Accepted	NA	If No, Reason	

Purpose of Application: This was originally intended to be a DEP Initiated Minor Amendment for the Weekly Average Limit of Dissolved Oxygen but after further investigation multiple, more significant, typographical errors were found which will cause this to be a DEP Initiated Major Amendment.

Summary of Review

This DEP Initiated Major Amendment will change several typographical errors that the current permit holds. The first major change to the permit will be the elimination of the Dissolved Oxygen Weekly Average Limit, this was originally intended to be a Minimum Weekly Average limit and pulled from the Chapter 93 Water Quality Standards. This amendment will remove the D.O. weekly average limit. The Dissolved Oxygen limit of 5.0 mg/L will back-slide to the 4.0 mg/L that the facility originally had. Again, the intentions were that the Water Quality Standards set forth in 25 PA Code Chapter 93 were meant to be imposed as limits. Modeling performed at the facility suggested a 4.0 mg/L daily minimum limit and this amendment will change the limit to conform to the modeling.

The above issues were the main reason for the DEP Initiated Amendment; however, upon further investigation additional typographical errors were discovered. Originally, during the last renewal an Average Monthly Limit of 11.5 mg/L was proposed for Ammonia-Nitrogen during the draft permit based on modeling in WQM 7.0. However, the changes must have been missed in WMS as the final permit gave the facility a Report Average Monthly limit for Ammonia-Nitrogen but also gave them an instantaneous maximum limit of 23 mg/L. The instantaneous maximum limit will stay the same, however the 11.5 mg/L Average Monthly limit will be implemented to conform with the modeling. Additionally, the winter-time limits for Ammonia-Nitrogen will be adjusted to match minimum treatment standards of 25 mg/l Monthly Average and 30 mg/l Instantaneous maximum limits.

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 / Application Manager	March 3, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	March 5, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.018
Latitude	40º 53' 3.89"	Longitude	-79º 32' 11.32"
Quad Name	East Brady	Quad Code	40079H5
Wastewater Description:	Sewage Effluent		

Receiving Waters	Limestone Run (WWF)	Stream Code	47105
NHD Com ID	123857513	RMI	3.31
Drainage Area	3.98	Yield (cfs/mi^2)	0.03
Q_{7-10} Flow (cfs)	0.121	Q_{7-10} Basis	USGS – StreamStats
Elevation (ft)	988	Slope (ft/ft)	---
Watershed No.	17-E	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	**Final**	Name	**Limestone Run**

Background/Ambient Data		Data Source
pH (SU)	8.2	Sample ID 1534327 from 9/7/2010
Temperature (°F)	77	Default WWF
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake		Kitanning Suburban Joint Water Authority	
PWS Waters	Allegheny River	Flow at Intake (cfs)	987
PWS RMI	45.6	Distance from Outfall (mi)	4.07

Changes Since Last Permit Issuance: None

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .018
Latitude 40º 53' 3.00" **Longitude** -79º 32' 12.00"
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)

Water Quality-Based Limitations

The discharge was modeled using WQM 7.0 to evaluate the CBOD5, Ammonia-Nitrogen, and Dissolved Oxygen parameters. The modeling results show technology based effluent limitations for CBOD5 are appropriate. The modeling results also confirm that Ammonia-Nitrogen and Dissolved Oxygen limitations are necessary to meet in-stream water quality criterion. The modeling suggests a 11.58 mg/L monthly limit with a 23.16 mg/L IMAX concentration. Using the Round-Off Guidelines in the Technical Guidance for the Development and Specification of Effluent Limitations these values will translate to 11.5 mg/L monthly limit and 23.0 mg/L IMAX limit. The Ammonia-Nitrogen parameter will have twice per month testing frequency and limited to 1.70 lbs/month loading limit, and 11.5 mg/L monthly average concentration and a 23.0 mg/L instantaneous maximum concentration, for the months of May through September. Based on the SOP for Establishing Effluent Limitations in Sewage Permits, Ammonia-Nitrogen is subject to a seasonal multiplier of 3 times the summertime average monthly limit however these values will be above minimum treatment standards so the wintertime limit will be set to the Technology-Based treatment standards. This is consistent with the modeling to meet in-stream water quality criterion. A compliance schedule will not be issued for Ammonia-Nitrogen as the facility already meets this limit more than 75% of the time. The Total Suspended Solids, pH, Fecal Coliform, or Total Residual Chlorine parameters are not evaluated using WQM 7.0. The basis for the proposed technology-based limitations are listed in the above table. WQM 7.0 and TRC_CALC output files are attached to this Fact Sheet.

Anti-Backsliding

Per the Anti-Backsliding exemption found in 40 CFR 122.44.L.2.i.B.(2), the Department is proposing to relax the DO limitation due to a technical error when inputting the limits during the last renewal. Dissolved Oxygen Minimum limitations will be changed from 5.0 mg/l to 4.0 mg/l.

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	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0	XXX	5/week	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	5/week	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	5/week	Grab
CBOD5	3.8	XXX	XXX	25	XXX	50	2/month	Grab
TSS	4.5	XXX	XXX	30	XXX	60	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/year	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/month	Grab
Ammonia (lbs/mo) Oct 1 - Apr 30	3.75	XXX	XXX	25.0	XXX	30.0	2/month	Grab
Ammonia (lbs/mo) May 1 - Sep 30	1.7	XXX	XXX	11.5	XXX	23.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	2/month	Grab

Compliance Sampling Location: Outfall 001, after disinfection.

Modeling Output Files – WQM 7.0

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
17E	47105	LIMESTONE RUN	**3.115**	990.00	5.90	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	0.030	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.30	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
Adrian STP	PA0253327	0.0180	0.0180	0.0180	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	0.00	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
17E	47105	LIMESTONE RUN	**0.000**	790.00	10.30	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	0.030	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.93	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	7.30

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	7.54	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
17E	47105	LIMESTONE RUN

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												
3.115	0.18	0.00	0.18	.0278	0.01216	.402	8.09	20.14	0.06	3.023	24.32	7.32
Q1-10 Flow												
3.115	0.11	0.00	0.11	.0278	0.01216	NA	NA	NA	0.05	3.724	24.01	7.33
Q30-10 Flow												
3.115	0.24	0.00	0.24	.0278	0.01216	NA	NA	NA	0.07	2.597	24.48	7.32

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
17E	47105	LIMESTONE RUN

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
3.115	Adrian STP	8.37	42.42	8.37	42.42	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
3.115	Adrian STP	1.2	11.58	1.2	11.58	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)		
3.12	Adrian STP	25	25	11.58	11.58	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
17E	47105	LIMESTONE RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.115	0.018	24.320	7.322
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
8.092	0.402	20.137	0.063
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.13	0.255	1.57	0.976
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.059	20.366	Owens	5
Reach Travel Time (days)			
3.023			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.302	4.67	1.17	7.54
0.605	4.25	0.87	7.54
0.907	3.87	0.65	7.54
1.209	3.52	0.48	7.54
1.511	3.20	0.36	7.54
1.814	2.91	0.27	7.54
2.116	2.65	0.20	7.54
2.418	2.41	0.15	7.54
2.720	2.20	0.11	7.54
3.023	2.00	0.08	7.54

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
17E	47105	LIMESTONE RUN

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)
3.115	Adrian STP	PA0253327	0.018	CBOD5	25		
				NH3-N	11.58	23.16	
				Dissolved Oxygen			4