Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0101389**
Facility Type	**Non-Municipal**	APS ID	**1096098**
Major / Minor	**Minor**	Authorization ID	**1453549**

Applicant and Facility Information

Applicant Name	**Penncrest School District**	Facility Name	**Maplewood Elementary School**
Applicant Address	18741 State Highway 198 PO Box 808	Facility Address	Us Route 408
	Saegertown, PA 16433-4304		Townville, PA 16360
Applicant Contact	David Dickson	Facility Contact	David Dickson
Applicant Phone	(814) 337-1600	Facility Phone	(814) 337-1628
Client ID	164165	Site ID	239607
Ch 94 Load Status	Not Overloaded	Municipality	Townville Borough
Connection Status	No Limitations	County	Crawford
Date Application Received	August 21, 2023	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

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

Summary of Review

This application is an NPDES permit renewal for an elementary school.

There are currently 5 open violations for this client as of 10/3/2024, but all under Safe Drinking Water.

Sludge use and disposal description and location(s): Permittee utilizes a contractor (Sterling Sanitation) for sludge disposal.

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	October 9, 2024
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	November 1, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.0469
Latitude	41º 40' 57.27"	Longitude	-79º 52' 45.46"
Quad Name	Townville	Quad Code	41079F8
Wastewater Description:	Sewage Effluent		

Receiving Waters	Muddy Creek (HQ-CWF)	Stream Code	53152
NHD Com ID	127353200	RMI	
Drainage Area	3.05	Yield (cfs/mi^2)	0.1
Q_{7-10} Flow (cfs)	0.305	Q_{7-10} Basis	Default
Elevation (ft)	1381	Slope (ft/ft)	---
Watershed No.	16-A	Chapter 93 Class.	HQ-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)	7.0	Default
Temperature (°F)	20	Default
Hardness (mg/L)	100	Default
Other:		

Nearest Downstream Public Water Supply Intake	Cambridge Springs Waterworks		
PWS Waters	French Creek	Flow at Intake (cfs)	51.45
PWS RMI	48.35	Distance from Outfall (mi)	15

Changes Since Last Permit Issuance: None.

Other Comments: The facility was constructed and operating prior to the stream being classified as a special protection watershed. Therefore, the discharge evaluation should be performed protecting the original, non-high-quality stream designation (i.e., a grandfathered analysis).

Treatment Facility Summary				
Treatment Facility Name: Maplewood Elementary School				
WQM Permit No.	**Issuance Date**			
9173-S-T1	5/31/13*			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Activated Sludge	Hypochlorite	0.0469
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.0469		Not Overloaded		

Changes Since Last Permit Issuance: None.

Other Comments: Treatment units: Comminutor, Aeration Tank, (2) Settling Tanks & Chlorination (tablet)

*Transferred from the Eastern Crawford County Jt. Sch. Auth. to the Penncrest School District. [The original permit issuance date could not be ascertained]

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .0469
Latitude 41º 40' 57.00" **Longitude** -79º 52' 46.00"
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)
E, Coli	Report	IMAX	-	92a.61

Comments: Weekly Average $CBOD_5$ & TSS limits are not applicable to non-POTW discharges.

E. Coli monitoring has been added per Chapter 92 requirements.

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached): None

Best Professional Judgment (BPJ) Limitations

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	4	Inst. Min.	WQM 7.0b/ Dept. SOP
Total Nitrogen	Monitor & Report	Semi-Annual Average	Dept. SOP
Total Phosphorus	Monitor & Report	Semi-Annual Average	Dept. SOP

Comments: A Dissolved Oxygen minimum limit of 4 mg/l is required per DEP's SOP to establish effluent limitations for individual sewage permits. Nitrogen and Phosphorus monitoring are required per DEP's SOP, and monitoring frequencies retained from the previous permit.

Anti-Backsliding

An Ammonia-Nitrogen monthly average limit of 3 mg/l was imposed on this facility since 1992, although the original modeling to justify this limit has not since been located or reproduced but the facility has been able to consistently meet this limit. It shall be retained due to anti-backsliding policy.

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	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	3/week	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	3/week	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	3/week	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	Grab
TSS	XXX	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
Total Nitrogen	XXX	XXX	XXX	Report SEMI AVG	XXX	XXX	1/6 months	Grab
Ammonia	XXX	XXX	XXX	3.0	XXX	6.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	Report SEMI AVG	XXX	XXX	1/6 months	Grab
E. Coli	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001, after disinfection.

Other Comments: None.

TRC Spreadsheet - Maplewood Elem

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.305	= Q stream (cfs)	0.5	= CV Daily
0.0469	= 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 =	1.360	1.3.2.iii	WLA cfc =	1.318
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.507	5.1d	LTA_cfc =	0.766

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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16A	53152	MUDDY 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
21.710	Maplewood Elem	8.77	32.36	8.77	32.36	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
21.710	Maplewood Elem	1.82	12.2	1.82	12.2	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)		
21.71	Maplewood Elem	25	25	12.2	12.2	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16A	53152	MUDDY CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
21.710	0.047	20.961	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
8.588	0.432	19.879	0.102
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
6.42	0.998	2.34	0.754
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.235	22.684	Owens	6
Reach Travel Time (days)			
0.504			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.050	6.09	2.26	7.91
0.101	5.78	2.17	8.10
0.151	5.48	2.09	8.10
0.202	5.20	2.01	8.10
0.252	4.94	1.94	8.10
0.303	4.68	1.87	8.10
0.353	4.44	1.80	8.10
0.404	4.22	1.73	8.10
0.454	4.00	1.67	8.10
0.504	3.79	1.60	8.10

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)
21.710	Maplewood Elem	PA0101389	0.004	CBOD5	25		
				NH3-N	12.2	24.4	
				Dissolved Oxygen			3

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
16A	53152	MUDDY CREEK	**21.710**	1381.00	3.05	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	0.00	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
Maplewood Elem	PA0101389	0.0043	0.0469	0.0469	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

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
16A	53152	MUDDY CREEK	**20.870**	1332.00	8.26	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	0.00	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	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
16A	53152	MUDDY 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												
21.710	0.31	0.00	0.31	.0726	0.01105	.432	8.59	19.88	0.10	0.504	20.96	7.00
Q1-10 Flow												
21.710	0.20	0.00	0.20	.0726	0.01105	NA	NA	NA	0.08	0.612	21.35	7.00
Q30-10 Flow												
21.710	0.41	0.00	0.41	.0726	0.01105	NA	NA	NA	0.12	0.437	20.74	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	6		