Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0228508**
Facility Type	**Municipal**	APS ID	**1098883**
Major / Minor	**Minor**	Authorization ID	**1458370**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Huston Township Authority**	Facility Name	**Village of Julian WWTP**
Applicant Address	PO Box 40	Facility Address	970 Railroad Avenue
	Julian, PA 16844-0040		Julian, PA 16844-9702
Applicant Contact	Christopher Miller	Facility Contact	Christopher Miller
Applicant Phone	(814) 699-1189	Facility Phone	(814) 699-1189
Client ID	160681	Site ID	527504
Ch 94 Load Status	Not Overloaded	Municipality	Huston Township
Connection Status	No Limitations	County	Centre
Date Application Received	October 10, 2023	EPA Waived?	Yes
Date Application Accepted	October 23, 2023	If No, Reason	

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

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		Derek S. Garner / Project Manager	October 3, 2024
X		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	October 16, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.04
Latitude	40º 51' 51.49"	Longitude	-77º 56' 4.75"
Quad Name	Julian	Quad Code	1222
Wastewater Description:	Sewage Effluent		

Receiving Waters	Bald Eagle Creek	Stream Code	22412
NHD Com ID	67179648	RMI	33
Drainage Area	61.6	Yield (cfs/mi^2)	0.073
Q_{7-10} Flow (cfs)	4.47	Q_{7-10} Basis	Streamgage No. 01557500
Elevation (ft)	831	Slope (ft/ft)	0.0025
Watershed No.	9-C	Chapter 93 Class.	TSF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Impaired		
Cause(s) of Impairment	Pathogens		
Source(s) of Impairment	Unknown		

Nearest Downstream Public Water Supply Intake	PA American Water – White Deer		
PWS Waters	West Branch Susquehanna River	Flow at Intake (cfs)	682
PWS RMI	10.5	Distance from Outfall (mi)	90

Treatment Facility Summary

The Village of Julian Wastewater Treatment Plant was constructed in 2003 under WQM Permit No. 1402404. The facility is a PureStream dual-train extended aeration package plant. The design flow is 0.04 MGD and the organic capacity is 80 lbs/day. Specifically, treatment is as follows:

- One (1) influent comminutor/bar screen
- One (1) influent EQ tank
- Two (2) aeration tanks
- Two (2) clarifiers
- One (1) erosion tablet chlorinator
- One (1) chlorine contact tank
- One (1) erosion tablet dechlorinator

- One (1) sludge digester – sludge is hauled to UAJA

Treated effluent is discharged via Outfall 001 to Bald Eagle Creek.

Compliance Review

The facility was most recently inspected by DEP on January 17, 2024. No violations were noted.

The following violations occurred during the existing permit's term:

Noncompliance Date	Description	Category	Parameter	Sample Value	Violation Condition	Permit Value	Units	SBC
10/28/2019 (1)	Violation of permit condition	Effluent	Fecal Coliform	2420	>	1000	No./100 ml	IMAX
1/29/2020	Late DMR Submission	Other Violations						
6/29/2020	Late DMR Submission	Other Violations						
8/29/2020	Late DMR Submission	Other Violations						
9/30/2020	Late DMR Submission	Other Violations						
9/30/2020 (2)	Violation of permit condition	Effluent	Fecal Coliform	2420	>	1000	No./100 ml	IMAX
6/28/2021 (3)	Violation of permit condition	Effluent	Fecal Coliform	2420	>	1000	No./100 ml	IMAX
9/2/2021	Late DMR Submission	Other Violations						
10/28/2021 (4)	Violation of permit condition	Effluent	Fecal Coliform	2420	>	1000	No./100 ml	IMAX
12/2/2021	Late DMR Submission	Other Violations						
7/31/2022	Late DMR Submission	Other Violations						
9/3/2023	Late DMR Submission	Other Violations						
1/30/2024	Late DMR Submission	Other Violations						
8/28/2024 (5)	Violation of permit condition	Effluent	Fecal Coliform	1741	>	1000	No./100 ml	IMAX

(1) Tubing failure on peristaltic hypochlorite disinfection pump. Tubing was replaced and pump recalibrated.
(2) Failure of contact tank mixer motor.
(3) Increased hypochlorite dosage.
(4) Effluent flow meter failed causing improper flow-paced hypochlorite dosage. Recalibrated hypochlorite pump to obtain proper dosage.
(5) Verified chlorine residual. Replaced chlorine pump tubing and verified pump operation.

There are no open violations associated with the permittee.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.04
Latitude 40º 51' 52.00" **Longitude** -77º 56' 6.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations (TBELs)

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 (WQBELs)

DEP models in-stream conditions to determine if WQBELs are appropriate. A model was created using WQM 7.0 v1.1 to evaluate possible WQBELs for CBOD5, ammonia-N, and dissolved oxygen.

The water quality model WQM 7.0 v1.1 is used to determine the WQBELs for dissolved oxygen, CBOD5 and ammonia-n (NH3-N) based on a multiple-discharge analysis, if applicable. The model assumes complete and instantaneous mixing with the receiving surface water. The reach chosen to model the in-stream characteristics is appropriate as a recovery in dissolved oxygen levels is demonstrated. The modeling output is as follows:

Parameter	Discharge Conc. (mg/l)	Effluent Limitations		
		30 Day Average (mg/l)	Maximum (mg/l)	Minimum (mg/l)
CBOD5	25	25	--	--
NH3-N	25	25	50	--
Dissolved Oxygen	3	--	--	3

The input concentration for CBOD5 is the current average monthly technology-based concentration limitation in the existing permit. The ammonia-N and dissolved oxygen input concentrations of 25 and 3 mg/l, respectively, are typical concentrations contained within treated effluent. Based on the model output (attached), no WQBELs are recommended for CBOD5, ammonia-n and dissolved oxygen.

Total residual chlorine ("TRC") limitations were evaluated using the TRC_CALC spreadsheet (attached). The spreadsheet indicates the existing BAT effluent limitations are protective of the receiving water.

25 PA Code § 95.6 provided a method for protecting lakes and impoundments and for restoring those lakes and impoundments that are in various states of water quality degradation due to excessive nutrient input (eutrophication). DEP's point source phosphorus control strategy relies on empirical lake models to estimate phosphorus loadings which will result in an appropriate level of protection or water quality improvement, considering both point and non-point sources of phosphorus. It is applicable to discharges to watersheds and their tributaries that flow into lakes, ponds, and impoundments that have a hydraulic residence time of 14 days or more, based on average annual flow conditions and considers sources from streams within 3 days travel time (approximately 60 miles) of the above listed impoundments.

Foster Joseph Sayers Reservoir is located approximately 13.8 river miles downstream of the Julian Wastewater Treatment plant. It was determined through attached calculations that the retention time of the reservoir is approximately 32 days using average annual flow and the reservoir volume and therefore, the "Lake Model" must be used to determine water quality standards. All discharges upstream of the impoundment were entered into the model along with the data obtained from the latest TSI study. Most of the dischargers have dissolved phosphorus limits and no total phosphorus limits other than the Chesapeake Bay limits based on 0.8 mg/l. Therefore, 0.8 mg/l was input into the model for the discharges and the current discharge data from Village of Julian Wastewater Treatment Plant was utilized. The attached results of the model indicate that the existing discharge concentrations and limits are protective of the reservoir.

Best Professional Judgment (BPJ) Limitations

DEP proposes to retain effluent monitoring requirements for ammonia-n and dissolved oxygen, as well as influent monitoring for BOD5 and TSS to continue to characterize the wastewater.

An annual reporting requirement for E. Coli is proposed per the 2017 Triennial Review of Water Quality Standards, published in the PA Bulletin on July 11, 2020.

Chesapeake Bay

Pennsylvania's Phase 3 Watershed Implementation Plan ("WIP") Wastewater Supplement (Revised, September 13, 2021) identifies the Village of Julian WWTP as a Phase 5 facility. Phase 5 facilities are required to report total nitrogen and total phosphorus on an annual basis unless the facility has already completed at least two years of nutrient monitoring. The facility monitored for nutrients from 2007 to 2011. The results were summarized in the previous renewal's fact sheet as follows:

Discharge Parameters	Mass (lb/day)	Concentration (mg/L)
Ammonia-Nitrogen	38.08	13.81
Kjeldahl-Nitrogen	48.23	17.49
Nitrate-Nitrite as N	12.33	4.47
Total Nitrogen	60.87	22.08
Total Phosphorous	7.65	2.77

Since the facility has already surpassed the WIP's nutrient monitoring requirements, DEP does not propose to establish requirements for total nitrogen or total phosphorus.

Anti-Backsliding

In accordance with 40 CFR 122.44(l)(1) and (2), this permit does not propose any effluent limitations, standards, or conditions that are less stringent than the previous permit.

Existing Effluent Limitations and Monitoring Requirements

The existing effluent limitations and monitoring requirements are as follows:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report Daily Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	8.0	13.0	XXX	25.0	40.0	50	2/month	Grab
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
Total Suspended Solids	8.0	13.0	XXX	25.0	40.0	50	2/month	Grab
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	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
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab

Compliance Sampling Location: Outfall 001

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)		Concentrations (mg/L)				Minimum 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	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	8.0	13.0	XXX	25.0	40.0	50	2/month	Grab
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
TSS	8.0	13.0	XXX	25.0	40.0	50	2/month	Grab
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	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
Ammonia	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab

Compliance Sampling Location: Outfall 001

USGS
science for a changing world

Prepared in cooperation with the Pennsylvania Department of Environmental Protection

Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania

Open-File Report 2011-1070

U.S. Department of the Interior
U.S. Geological Survey

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

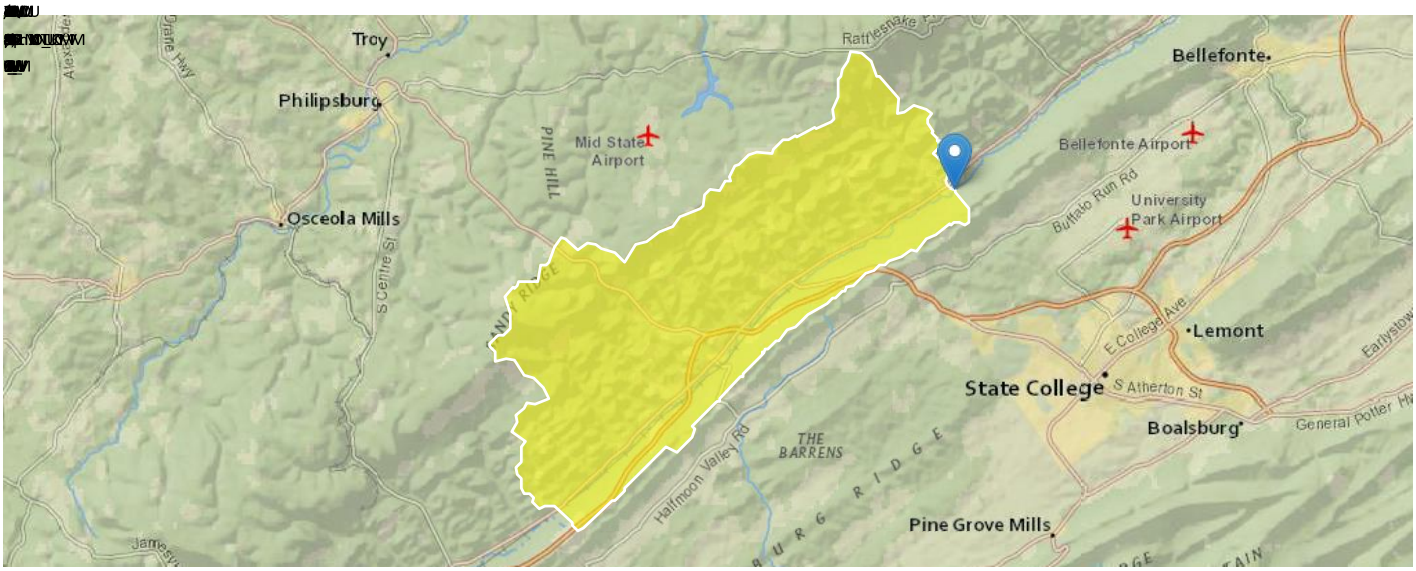
[Latitude and Longitude in decimal degrees; mi^2, square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi^2)	Regulated[1]
01541303	West Branch Susquehanna River at Hyde, Pa.	41.005	-78.457	474	Y
01541308	Bradley Run near Ashville, Pa.	40.509	-78.584	6.77	N
01541500	Clearfield Creek at Dimeling, Pa.	40.972	-78.406	371	Y
01542000	Moshannon Creek at Osceola Mills, Pa.	40.850	-78.268	68.8	N
01542500	WB Susquehanna River at Karthaus, Pa.	41.118	-78.109	1,462	Y
01542810	Waldy Run near Emporium, Pa.	41.579	-78.293	5.24	N
01543000	Driftwood Branch Sinnemahoning Creek at Sterling Run, Pa.	41.413	-78.197	272	N
01543500	Sinnemahoning Creek at Sinnemahoning, Pa.	41.317	-78.103	685	N
01544000	First Fork Sinnemahoning Creek near Sinnemahoning, Pa.	41.402	-78.024	245	Y
01544500	Kettle Creek at Cross Fork, Pa.	41.476	-77.826	136	N
01545000	Kettle Creek near Westport, Pa.	41.320	-77.874	233	Y
01545500	West Branch Susquehanna River at Renovo, Pa.	41.325	-77.751	2,975	Y
01545600	Young Womans Creek near Renovo, Pa.	41.390	-77.691	46.2	N
01546000	North Bald Eagle Creek at Milesburg, Pa.	40.942	-77.794	119	N
01546400	Spring Creek at Houserville, Pa.	40.834	-77.828	58.5	N
01546500	Spring Creek near Axemann, Pa.	40.890	-77.794	87.2	N
01547100	Spring Creek at Milesburg, Pa.	40.932	-77.786	142	N
01547200	Bald Eagle Creek below Spring Creek at Milesburg, Pa.	40.943	-77.786	265	N
01547500	Bald Eagle Creek at Blanchard, Pa.	41.052	-77.604	339	Y
01547700	Marsh Creek at Blanchard, Pa.	41.060	-77.606	44.1	N
01547800	South Fork Beech Creek near Snow Shoe, Pa.	41.024	-77.904	12.2	N
01547950	Beech Creek at Monument, Pa.	41.112	-77.702	152	N
01548005	Bald Eagle Creek near Beech Creek Station, Pa.	41.081	-77.549	562	Y
01548500	Pine Creek at Cedar Run, Pa.	41.522	-77.447	604	N
01549000	Pine Creek near Waterville, Pa.	41.313	-77.379	750	N
01549500	Blockhouse Creek near English Center, Pa.	41.474	-77.231	37.7	N
01549700	Pine Creek below Little Pine Creek near Waterville, Pa.	41.274	-77.324	944	Y
01550000	Lycoming Creek near Trout Run, Pa.	41.418	-77.033	173	N
01551500	WB Susquehanna River at Williamsport, Pa.	41.236	-76.997	5,682	Y
01552000	Loyalsock Creek at Loyalsockville, Pa.	41.325	-76.912	435	N
01552500	Muncy Creek near Sonestown, Pa.	41.357	-76.535	23.8	N
01553130	Sand Spring Run near White Deer, Pa.	41.059	-77.077	4.93	N
01553500	West Branch Susquehanna River at Lewisburg, Pa.	40.968	-76.876	6,847	Y
01553700	Chillisquaque Creek at Washingtonville, Pa.	41.062	-76.680	51.3	N
01554000	Susquehanna River at Sunbury, Pa.	40.835	-76.827	18,300	Y
01554500	Shamokin Creek near Shamokin, Pa.	40.810	-76.584	54.2	N
01555000	Penns Creek at Penns Creek, Pa.	40.867	-77.048	301	N
01555500	East Mahantango Creek near Dalmatia, Pa.	40.611	-76.912	162	N
01556000	Frankstown Branch Juniata River at Williamsburg, Pa.	40.463	-78.200	291	N
01557500	Bald Eagle Creek at Tyrone, Pa.	40.684	-78.234	44.1	N
01558000	Little Juniata River at Spruce Creek, Pa.	40.613	-78.141	220	N
01559000	Juniata River at Huntingdon, Pa.	40.485	-78.019	816	LF
01559500	Standing Stone Creek near Huntingdon, Pa.	40.524	-77.971	128	N
01559700	Sulphur Springs Creek near Manns Choice, Pa.	39.978	-78.619	5.28	N
01560000	Dunning Creek at Belden, Pa.	40.072	-78.493	172	N

Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft^3/s; cubic feet per second; —, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft^3/s)	7-day, 10-year (ft^3/s)	7-day, 2-year (ft^3/s)	30-day, 10-year (ft^3/s)	30-day, 2-year (ft^3/s)	90-day, 10-year (ft^3/s)
01546000	1912–1934	17	1.8	2.2	6.8	3.7	12.1	11.2
01546400	1986–2008	23	13.5	14.0	19.6	15.4	22.3	18.7
01546500	1942–2008	67	26.8	29.0	41.3	31.2	44.2	33.7
01547100	1969–2008	40	102	105	128	111	133	117
01547200	1957–2008	52	99.4	101	132	106	142	115
01547500	[2]1971–2008	38	28.2	109	151	131	172	153
01547500	[3]1956–1969	14	90.0	94.9	123	98.1	131	105
01547700	1957–2008	52	.5	.6	2.7	1.1	3.9	2.2
01547800	1971–1981	11	1.6	1.8	2.4	2.1	2.9	3.5
01547950	1970–2008	39	12.1	13.6	28.2	17.3	36.4	23.8
01548005	[2]1971–2000	25	142	151	206	178	241	223
01548005	[3]1912–1969	58	105	114	147	125	165	140
01548500	1920–2008	89	21.2	24.2	50.1	33.6	68.6	49.3
01549000	1910–1920	11	26.0	32.9	78.0	46.4	106	89.8
01549500	1942–2008	67	.6	.8	2.5	1.4	3.9	2.6
01549700	1959–2008	50	33.3	37.2	83.8	51.2	117	78.4
01550000	1915–2008	94	6.6	7.6	16.8	11.2	24.6	18.6
01551500	[2]1963–2008	46	520	578	1,020	678	1,330	919
01551500	[3]1901–1961	61	400	439	742	523	943	752
01552000	1927–2008	80	20.5	22.2	49.5	29.2	69.8	49.6
01552500	1942–2008	67	.9	1.2	3.1	1.7	4.4	3.3
01553130	1969–1981	13	1.0	1.1	1.5	1.3	1.8	1.7
01553500	[2]1968–2008	41	760	838	1,440	1,000	1,850	1,470
01553500	[3]1941–1966	26	562	619	880	690	1,090	881
01553700	1981–2008	28	9.1	10.9	15.0	12.6	17.1	15.2
01554000	[2]1981–2008	28	1,830	1,990	3,270	2,320	4,210	3,160
01554000	[3]1939–1979	41	1,560	1,630	2,870	1,880	3,620	2,570
01554500	1941–1993	53	16.2	22.0	31.2	25.9	35.7	31.4
01555000	1931–2008	78	33.5	37.6	58.8	43.4	69.6	54.6
01555500	1931–2008	78	4.9	6.5	18.0	9.4	24.3	16.6
01556000	1918–2008	91	43.3	47.8	66.0	55.1	75.0	63.7
01557500	1946–2008	63	2.8	3.2	6.3	4.2	8.1	5.8
01558000	1940–2008	69	56.3	59.0	79.8	65.7	86.2	73.7
01559000	1943–2008	66	104	177	249	198	279	227
01559500	1931–1958	28	9.3	10.5	15.0	12.4	17.8	15.8
01559700	1963–1978	16	.1	.1	.2	.1	.3	.2
01560000	1941–2008	68	8.5	9.4	15.6	12.0	20.2	16.2
01561000	1932–1958	27	.4	.5	1.6	.8	2.5	1.7
01562000	1913–2008	96	64.1	67.1	106	77.4	122	94.5
01562500	1931–1957	27	1.1	1.6	3.8	2.3	5.4	3.7
01563200	[2]1974–2008	35	—	—	—	112	266	129
01563200	[3]1948–1972	25	10.3	28.2	86.1	64.5	113	95.5
01563500	[2]1974–2008	35	384	415	519	441	580	493
01563500	[3]1939–1972	34	153	242	343	278	399	333
01564500	1940–2008	69	3.6	4.2	10.0	6.2	14.4	10.6


Troy
Philipsburg
Osceola Mills
Mid State Airport
PINE HILL
Rattlesnake
Bellefonte
Bellefonte Airport
Buffalo Run Rd
University Park Airport
E College Ave
Lemont
State College
S Atherton St
Boalsburg
General Potter
THE BARRENS
Halfmoon Valley Rd
Pine Grove Mills

Low-Flow (Q_{7-10}) Calculation

Facility: **Village of Julian WWTP**

NPDES Permit No. **PA0228508**

Gage Information

Drainage Area: **44.1** mi^2

Q_{7-10}: **3.2** cfs

LFY: **0.073** cfsm

Outfall Information

Drainage Area: **61.6** mi^2

Q_{7-10}: **4.47** cfs

Downstream Locations

RMI: **29.5**

Drainage Area: **76.1** mi^2

Q_{7-10}: **5.522** cfs

RMI: _____

Drainage Area: _____ mi^2

Q_{7-10}: _____ cfs

RMI: _____

Drainage Area: _____ mi^2

Q_{7-10}: _____ cfs

RMI: _____

Drainage Area: _____ mi^2

Q_{7-10}: _____ cfs

RMI: _____

Drainage Area: _____ mi^2

Q_{7-10}: _____ cfs

RMI: _____

Drainage Area: _____ mi^2

Q_{7-10}: _____ cfs

RMI: _____

Drainage Area: _____ mi^2

Q_{7-10}: _____ cfs

RMI: _____

Drainage Area: _____ mi^2

Q_{7-10}: _____ cfs

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
22412	BALD EAGLE CREEK	**33.000**	831.00	61.60	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.073	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 (ºC)	Disc pH
VJ WWTP	PA0228508	0.0400	0.0400	0.0400	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

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
22412	BALD EAGLE CREEK	**29.500**	784.00	76.10	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	0.073	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
09C	22412	BALD EAGLE 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 (ºC)	Analysis pH
Q7-10 Flow												
33.000	4.50	0.00	4.50	.0619	0.00254	.689	35.26	51.18	0.19	1.140	20.07	7.00
Q1-10 Flow												
33.000	3.93	0.00	3.93	.0619	0.00254	NA	NA	NA	0.17	1.227	20.08	7.00
Q30-10 Flow												
33.000	5.89	0.00	5.89	.0619	0.00254	NA	NA	NA	0.22	0.982	20.05	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	0.875	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.31	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
09C	22412	BALD EAGLE 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
33.000	VJ WWTP	16.65	50	16.65	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
33.000	VJ WWTP	1.88	25	1.88	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)		
33.00	VJ WWTP	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
09C	22412	BALD EAGLE CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
33.000	0.040	20.068	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
35.264	0.689	51.182	0.188
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.31	0.112	0.34	0.704
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.172	4.541	Tsivoglou	5
Reach Travel Time (days)			
1.140			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.114	2.28	0.31	8.23
0.228	2.25	0.29	8.23
0.342	2.22	0.27	8.23
0.456	2.20	0.25	8.23
0.570	2.17	0.23	8.23
0.684	2.14	0.21	8.23
0.798	2.11	0.19	8.23
0.912	2.09	0.18	8.23
1.026	2.06	0.16	8.23
1.140	2.03	0.15	8.23

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
09C	22412	BALD EAGLE 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)
33.000	VJ WWTP	PA0228508	0.040	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

TRC EVALUATION

Input appropriate values in B4:B8 and E4:E7

4.47	= Q stream (cfs)	0.5	= CV Daily
0.04	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.511	= 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 = 11.794	1.3.2.iii	WLA cfc = 22.477
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 4.395	5.1d	LTA_cfc = 13.067

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)

MPLEMENTATION SPREADSHEET FOR § 96.5 MANAGEMENT OF POINT SOURCE PHOS

Water Body Name:	FJS Reservoir
Chapter 93 Classification:	Non-Special Protection
No. Point Source Discharges:	9

Discharger Name	NPDES Permit No.	Existing Flow (MGD)	Design Flow (MGD)
Village of Julian WWTP	PA0228508	0.04	0.04
Martha's Furnace MHP LLC	PA0033162	0.0072	0.0072
University Area Joint Auhtority	PA0026239	6	6
Bellefonte Borough	PA0020486	3.22	3.22
Mid Centre County Authority	PA110965	0.995	0.995
PFBC - Benner Springs	PA0010553	8.064	8.064
PFBC - Pleasant Gap	PA0010561	5.508	5.508
PFBC - Bellefonte Lower Spring Creek	PA0040835	10.512	10.512
Port Matilda Borough Authority	PA0112771	0.08	0.08

Lake Inputs	***Value***
In-Lake TP Concentration (mg/L):	0.03
Mean Depth of Lake (m):	17.2
Mean Detention Time of Lake (days):	32
Surface Area of Lake (acres):	1730
Lake Type:	Anoxic
Mean Depth / Detention Time (m/yr)	196.2

PHORUS DISCHARGES TO LAKES, PONDS & IMPOUNDMENT

Avg Monthly Effluent TP Conc (mg/L)	Direct or Tributary Discharge	Existing Annual Load (lbs/yr)	Design Annual Load (lbs/yr)
2.8	Direct	340.9	340.9
5.5	Direct	120.5	120.5
0.8	Direct	14,611.7	14,611.7
0.8	Direct	7,841.6	7,841.6
0.8	Direct	2,423.1	2,423.1
0.8	Direct	19,638.1	19,638.1
0.8	Direct	13,413.5	13,413.5
0.8	Direct	25,599.7	25,599.7
0.8	Direct	194.8	194.8

Water Body Results

Water Body Name: **FJS Reservoir**

Type: **Anoxic**

Status: **Non-Special Protection**

Parameter	*Existing Conditions*	*Design Conditions*	
		Additional PS Controls	*Recommended PS Controls*
In-Lake TP Concentration (mg/L):	0.03	0.030	0.030
Total TP Loading Rate (lbs/ac/yr):	60.10	60.10	60.10
Point Source Loading Rate (lbs/ac/yr):	48.66	48.66	48.66
Trophic State Index (TSI):	53.2	53.2	53.2
NPS Loading Rate (lbs/ac/yr):	11.44	11.44	11.44
NPS TSI:	29.3	29.3	29.3

Lake Status, Existing Conditions: ***Water Body is Currently Eutrophic***

Discharge Results

Based on the TSI at Design Conditions, an Average Monthly Limit (AML) of 2 mg/L

Discharger Name	NPDES Permit No.	Existing Flow (MGD)	Design Flow (MGD)
Village of Julian WWTP	PA0228508	0.04	0.04
Martha's Furnace MHP LLC	PA0033162	0.0072	0.0072
University Area Joint Auhtority	PA0026239	6	6
Bellefonte Borough	PA0020486	3.22	3.22
Mid Centre County Authority	PA110965	0.995	0.995
PFBC - Benner Springs	PA0010553	8.064	8.064
PFBC - Pleasant Gap	PA0010561	5.508	5.508
PFBC - Bellefonte Lower Spring Creek	PA0040835	10.512	10.512
Port Matilda Borough Authority	PA0112771	0.08	0.08

Water Body Name: **FJS Reservoir**

Status: **Non-Special Protection**

TP Should be Established for All Significant Discharges

Avg Monthly Effluent TP Conc (mg/L)	Recommended TP AML (mg/L)	Additional Controls?	Design Annual Load (lbs/yr)
2.8	2.80	No	340.9
5.5	5.50	No	120.5
0.8	0.80	No	14,611.7
0.8	0.80	No	7,841.6
0.8	0.80	No	2,423.1
0.8	0.80	No	19,638.1
0.8	0.80	No	13,413.5
0.8	0.80	No	25,599.7
0.8	0.80	No	194.8