pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	**NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE**		Application No.	**PA0081213**
Facility Type	**Municipal**			APS ID	**856362**
Major / Minor	**Minor**			Authorization ID	**1344319**

Applicant and Facility Information

Applicant Name	**Clay Township Supervisors**	Facility Name	**Hopeland Village WWTP**
Applicant Address	870 Durlach Road	Facility Address	Hopeland Road
	Stevens, PA 17578		Stevens, PA 17578
Applicant Contact	Bruce Leisey	Facility Contact	Brian Norris
Applicant Phone	(717) 733-9675	Facility Phone	(610) 633-8009
Client ID	315637	Site ID	251579
Ch 94 Load Status	Not Overloaded	Municipality	Clay Township
Connection Status	No Limitations	County	Lancaster
Date Application Received	March 2, 2021	EPA Waived?	Yes
Date Application Accepted	March 4, 2021	If No, Reason	

Purpose of Application: NPDES Renewal.

Summary of Review

Clay Township Supervisors has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The existing permit was issued on August 30, 2016 and became effective on September 1, 2016, authorizing discharge of treated wastewater from the existing wastewater treatment plant (WWTP) located in Clay Township into Unnamed Tributary to Middle Creek. The existing permit expiration date was August 31, 2021, and the permit has been administratively extended since that time.

Per the previous fact sheet, the original NPDES permit issued in 1983 was based on a discharge to a High Quality stream. An aquatic survey conducted on January 23, 1985 recommended that the stream be reclassified. In 1988, the “Priority Water Body Survey Team” recommended that the Middle Creek basin be reevaluated. Due to this evaluation, the majority of this basin was reclassified to a trout stocking classification in the early 1990s.

Changes in this renewal: E. Coli monitoring has been added to the permit.

Sludge use and disposal description and location(s): Offsite WWTP

Supplemental information is located at the end of this fact sheet.

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-

Approve	Deny	Signatures	Date
X		Benjamin R. Lockwood Benjamin R. Lockwood / Environmental Engineering Specialist	March 12, 2022
x		Maria D. Bebenek for Daniel W. Martin, P.E. / Environmental Engineer Manager	March 17, 2022
x		Maria D. Bebenek Maria D. Bebenek, P.E. / Program Manager	March 17, 2022

Summary of Review
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)	.035
Latitude	40º 13' 59"	Longitude	76º 15' 37"
Quad Name	Lititz	Quad Code	1735
Wastewater Description:	Sewage Effluent		

Receiving Waters	UNT to Middle Creek (TSF,MF)	Stream Code	NA
NHD Com ID	57461699	RMI	0.25
Drainage Area	0.88 mi^2	Yield (cfs/mi^2)	0.043
Q_{7-10} Flow (cfs)	0.049	Q_{7-10} Basis	USGS PA StreamStats
Elevation (ft)	371	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	TSF, MF
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	Source Unknown		
TMDL Status	N/A	Name	N/A

Nearest Downstream Public Water Supply Intake		Lancaster City Water Bureau	
PWS Waters	Conestoga River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	21

Changes Since Last Permit Issuance: None

Other Comments: USGS StreamStats provided a drainage area of 0.88 mi^2 at the point of discharge. Due to the small drainage area at the point of discharge, a low flow yield downstream was determined and used to estimate a Q_{7-10} at the point of discharge. At the confluence of this UNT and Middle Creek, StreamStats provided a drainage area of 13 mi^2 and a Q_{7-10} of 0.733 cfs. These values would result in a low flow yield of 0.056 cfs/mi^2. Using this LFY and the drainage area at the point of discharge, a Q_{7-10} of 0.049 cfs was calculated. This is consistent with the assumptions used during the previous permit renewal.

Treatment Facility Summary				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.035
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.035	70	Not Overloaded	Sludge Holding	Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: The WWTP consists of: Influent Grinder Pump Station - 1 Comminutor/Bar Screen – 2 Equalization Tanks – 5 Extended Aeration Tanks – 2 Clarifiers – 1 Chlorine Contact Tank – 1 De-Chlorination Tank – 1 Sludge Holding Tank – Outfall 001 to UNT to Middle Creek

Compliance History	
Summary of DMRs:	A summary of the past 12-month DMR effluent data is presented on the next page of this fact sheet.
Summary of Inspections:	1/24/2017: A routine inspection was conducted. No issues with the WWTP were noted. 6/6/2018: A routine inspection was conducted. There was heavy grease and rag accumulation in the influent EQ. There were no apparent accumulation of solids at the outfall. No other issues were noted.

Other Comments: There are currently no open violations associated with the permittee or the facility.

Compliance History

DMR Data for Outfall 001 (from January 1, 2021 to December 31, 2021)

Parameter	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21
Flow (MGD) Average Monthly	0.02124	0.02345	0.02526	0.03794	0.02412	0.02504	0.02195	0.02351	0.02941	0.03865	0.03271	0.03111
Flow (MGD) Daily Maximum	0.02930	0.03130	0.04470	0.06780	0.03730	0.04520	0.02980	0.02860	0.05050	0.06950	0.06720	0.05010
pH (S.U.) Minimum	7.02	7.10	7.05	7.12	7.08	6.90	6.99	7.08	6.82	6.80	6.50	6.74
pH (S.U.) Maximum	7.33	7.59	7.46	7.62	7.32	7.21	7.23	7.36	7.28	7.14	7.10	7.30
DO (mg/L) Minimum	6.0	5.7	6.0	5.7	5.7	5.9	6.0	6.0	5.9	5.8	5.8	6.0
TRC (mg/L) Average Monthly	0.056	0.061	0.064	0.059	0.058	0.069	0.081	0.078	0.085	0.080	0.077	0.067
TRC (mg/L) Instantaneous Maximum	0.12	0.11	0.12	0.12	0.13	0.15	0.14	0.14	0.15	0.13	0.13	0.12
CBOD5 (lbs/day) Average Monthly	< 0.354	< 0.37	< 0.425	< 0.479	< 0.455	< 0.742	< 0.385	0.611	< 0.519	< 0.585	< 0.582	< 0.431
CBOD5 (lbs/day) Weekly Average	< 0.38	< 0.38	< 0.48	< 0.54	< 0.49	0.75	< 0.39	0.63	< 0.55	0.59	0.64	< 0.48
CBOD5 (mg/L) Average Monthly	< 2	< 2	< 2	< 2	< 2	< 3	< 2	3.2	< 2.25	< 2.2	< 2.45	< 2
CBOD5 (mg/L) Weekly Average	< 2	< 2	< 2	< 2	< 2	4	< 2	3.6	2.5	2.4	2.9	< 2
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	49.1	41.6	47.3	41.9	56.5	59.7	55.0	38.7	57.6	63.8	65.5	45.8
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	51.6	41.8	52.5	44.7	69.4	69.2	55.8	48.3	59.5	71.8	74.4	59.7
BOD5 (mg/L) Raw Sewage Influent Average Monthly	277	225	223	179	255	256	286	207	252	243	270	208
TSS (lbs/day) Average Monthly	0.36	0.66	< 0.4	0.58	0.47	0.47	< 0.67	< 0.81	0.79	0.80	0.95	0.4

TSS (lbs/day) Raw Sewage Influent Average Monthly	9.2	9.3	10.6	11.3	24.2	15.1	32.8	17.5	25.4	24.6	25.7	19.3
TSS (lbs/day) Raw Sewage Influent Daily Maximum	11.3	9.6	11.4	13.4	38.7	18.1	37.2	22.8	27.5	30.0	29.3	27.6
TSS (lbs/day) Weekly Average	0.56	1.15	0.56	0.63	0.73	0.75	1.14	1.4	1.38	0.87	1.11	0.57
TSS (mg/L) Average Monthly	2	3.5	< 2	2.5	2	1.5	< 3.5	< 4.5	3	3	4	2
TSS (mg/L) Raw Sewage Influent Average Monthly	52	50	50	47	112	57	170	94	113	94	106	86
TSS (mg/L) Weekly Average	3	6	3	3	3	2	6	8	5	3	5	3
Fecal Coliform (CFU/100 ml) Geometric Mean	48.8	< 5.1	< 4	< 2	14.7	< 9.6	< 3.7	< 2.4	< 2.4	< 6.3	5.5	< 2
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	70	13	8	< 2	72	46	7	3	3	20	10	< 2
Nitrate-Nitrite (lbs/day) Average Monthly	4.17	3.43	2.20	2.89	2.10	3.77	1.89	1.00	3.99	8.51	7.69	5.83
Nitrate-Nitrite (mg/L) Average Monthly	22.2	19.2	11.8	10.8	10.0	10.0	9.7	4.7	14.4	29.4	34.8	24.1
Total Nitrogen (lbs/day) Average Monthly	4.36	3.52	< 2.3	3.1	2.21	< 3.96	2.21	1.42	4.16	8.71	7.94	6.06
Total Nitrogen (mg/L) Average Monthly	23.21	19.7	< 12.3	11.58	10.5	< 10.5	11.26	6.71	15.04	30.09	35.92	25.07
Total Nitrogen (lbs) Total Monthly	135.02	105.48	< 71.23	93.0	68.41	< 122.7	66.21	43.89	124.93	269.95	222.28	187.97
Ammonia (lbs/day) Average Monthly	< 0.005	0.343	0.016	< 0.024	< 0.235	< 0.028	< 0.134	0.37	< 0.171	< 0.034	< 0.024	< 0.022
Ammonia (mg/L) Average Monthly	< 0.03	1.79	0.08	< 0.1	< 0.97	< 0.1	< 0.69	1.97	< 0.86	< 0.13	< 0.1	< 0.1
TKN (lbs/day) Average Monthly	0.19	0.09	< 0.09	0.21	0.11	< 0.19	0.32	0.42	0.18	0.2	0.25	0.23
TKN (mg/L) Average Monthly	1.01	0.5	< 0.5	0.78	0.5	< 0.5	1.61	1.97	0.64	0.69	1.12	0.97

Total Phosphorus (lbs/day) Average Monthly	0.101	0.181	0.118	0.118	0.097	0.284	0.138	0.067	0.144	0.27	0.186	0.175
Total Phosphorus (mg/L) Average Monthly	0.575	0.96	0.545	0.485	0.455	1.005	0.715	0.335	0.62	1.015	0.785	0.825
Total Phosphorus (lbs) Total Monthly	3.14	5.42	3.65	3.55	3.02	8.79	4.13	2.08	4.32	8.37	5.22	5.43

Existing Effluent Limitations and Monitoring Requirements

The table below summarizes the effluent limits and monitoring requirements implemented in the existing NPDES permit.

Outfall 001

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	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC (9/1/2016 – 8/31/2019)	XXX	XXX	XXX	0.44	XXX	1.44	1/day	Grab
TRC (9/1/2019 – 8/31/2021)	XXX	XXX	XXX	0.14	XXX	0.46	1/day	Grab
CBOD5	7.3	12	XXX	25	40	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	8.8	13	XXX	30	45	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	2,000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Ammonia Nov 1 - Apr 30	3.1	XXX	XXX	10.5	XXX	21.0	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	1.0	XXX	XXX	3.5	XXX	7.0	2/month	8-Hr Composite
Nitrate-Nitrite	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
TKN	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite

Outfall 001, Continued (from 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		
Total Nitrogen	Report	Report Total Mo	XXX	Report	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus	0.6	Report Total Mo	XXX	2.0	XXX	4.0	2/month	8-Hr Composite
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: At discharge from facility

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .035
Latitude 40º 13' 59" **Longitude** 76º 15' 37"
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

Pursuant to 40 CFR § 122.44(d)(1)(i), more stringent requirements should be considered when pollutants are discharged at the levels which have the reasonable potential to cause or contribute to excursions above water quality standards.

WQM 7.0 ver. 1.1b is a water quality model designed to assist DEP in determining appropriate water quality based effluent limits (WQBELs) for carbonaceous biochemical oxygen demand ($CBOD_5$), ammonia (NH_3-N) and dissolved oxygen (D.O.). DEP's Technical Guidance No. 391-2000-007 provides the technical methods contained in WQM 7.0 for determining wasteload allocations and for determining recommended NPDES effluent limits for point source discharges. The model was utilized for this permit renewal. The model output indicated a $CBOD_5$ average monthly limit of 25 mg/l, an NH_3-N average monthly limit of 25 mg/l, and a D.O. minimum limit of 5.0 mg/l were protective of water quality. The flow data used to run the model was acquired from USGS PA StreamStats, and is included as an attachment. The $CBOD_5$ limit is the same as the limit in the existing permit, which will remain. The existing NH_3-N average monthly limit of 3.5 mg/l is more stringent, and will remain in the permit.

There are no industrial/commercial users contributing industrial wastewater to the system and Clay Township Supervisors does not currently have an EPA-approved pretreatment program. Accordingly, evaluating reasonable potential of toxic pollutants is not necessary as effluent levels of toxic pollutants are expected to be insignificant.

Best Professional Judgement (BPJ) Limitations

Dissolved Oxygen
A minimum D.O. limit of 5.0 mg/L is a D.O. water quality criterion found in 25 Pa. Code § 93.7(a). This limit is included in the existing NPDES permit. This limit will remain in the permit to ensure that the facility will achieve compliance with DEP water quality standards.

Additional Considerations

Chesapeake Bay Total Maximum Daily Load (TMDL)

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the *Pennsylvania Chesapeake Watershed Implementation Plan* (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 2 WIP. As part of the Phase 2 WIP, a *Phase 2 Watershed Implementation Plan Wastewater Supplement* (Phase 2 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. A new update to the WIP was published as the Phase 3 WIP in August 2019. As part of the Phase 3 WIP, a *Phase 3 Watershed Implementation Plan Wastewater Supplement* (Phase 3 Supplement) was developed, and was most recently revised on December 17, 2019, and is the basis for the development of any Chesapeake Bay related permit parameters. Sewage discharges have been prioritized based on their design flow to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual Cap Loads based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. These limits may be achieved through a combination of treatment technology, credits, or offsets. For Phase 4 and 5 facilities, Cap Loads are not currently being implemented for renewed or amended permits for facilities that do not increase design flow. For new Phase 4 and 5 sewage dischargers, in general DEP will issue new permits containing Cap Loads of "0" and new facilities will be expected to purchase credits and/or apply offsets to achieve compliance.

This facility is considered a Phase 5 non-significant discharger with a design flow less than 0.2 MGD but greater than 0.002 MGD. According to DEP's latest-revised Phase 3 Supplement, issuance of permits with monitoring and reporting for TN and TP is recommended for any Phase 5 non-significant sewage facilities. Therefore, TN and TP monitoring will be included in the renewed permit, which is consistent with the existing permit.

Total Phosphorus

A TP average monthly limit of 2.0 mg/l and an instantaneous maximum limit of 4.0 mg/l were included in the existing permit. These limits will remain in the renewal.

Total Residual Chlorine

The attached computer printout utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92, Section 92.2d (3) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The attached printout indicates that a water quality limit of 0.14 mg/l would be needed to prevent toxicity concerns. It is recommended that a TRC limit of 0.14 mg/l monthly average and 0.46 mg/l instantaneous maximum be applied this permit cycle, which is the same as the existing limit.

Fecal Coliform

PA Code § 92a.47.(a)(4) requires a monthly average limit of 200/100 mL as a geometric mean and an instantaneous maximum limit not greater than 1,000/100 mL from May through September for fecal coliform. PA Code § 92a.47.(a)(5) requires a monthly average limit of 2,000/100 mL as a geometric mean and an instantaneous maximum limit not greater than 10,000/100 mL from October through April for fecal coliform. These limits are included in the existing permit, and will remain in the permit.

E. Coli

PA Code § 92a.61 requires IMAX reporting of E. Coli. Per DEP's SOP No. BCW-PMT-033, sewage dischargers with a design flow of 0.002 – 0.05 mgd will include E. Coli monitoring with a frequency of 1/year. This parameter has been added to the renewal permit.

Influent BOD_5 and Total Suspended Solids (TSS) Monitoring

As a result of negotiation with US EPA, influent monitoring of TSS and BOD_5 are required for any publicly owned treatment works (POTWs); therefore, influent sampling of BOD_5 and TSS will be included in the permit. A 24-hr composite sample type will be required to be consistent with the proposed sampling frequency for effluent TSS and $CBOD_5$.

Sampling Frequency & Sample Type

The monitoring requirements were established based on the BPJ and/or Table 6-3 of DEP's technical guidance No. 362-0400-001.

Flow Monitoring

Flow monitoring is recommended by DEP's technical guidance and is also required by 25 PA Code §§ 92a.27 and 92a.61.

Anti-Degradation

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

303(d) Listed Streams

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is a recreational impairment for pathogens due to an unknown source.

Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

Anti-Backsliding

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

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" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

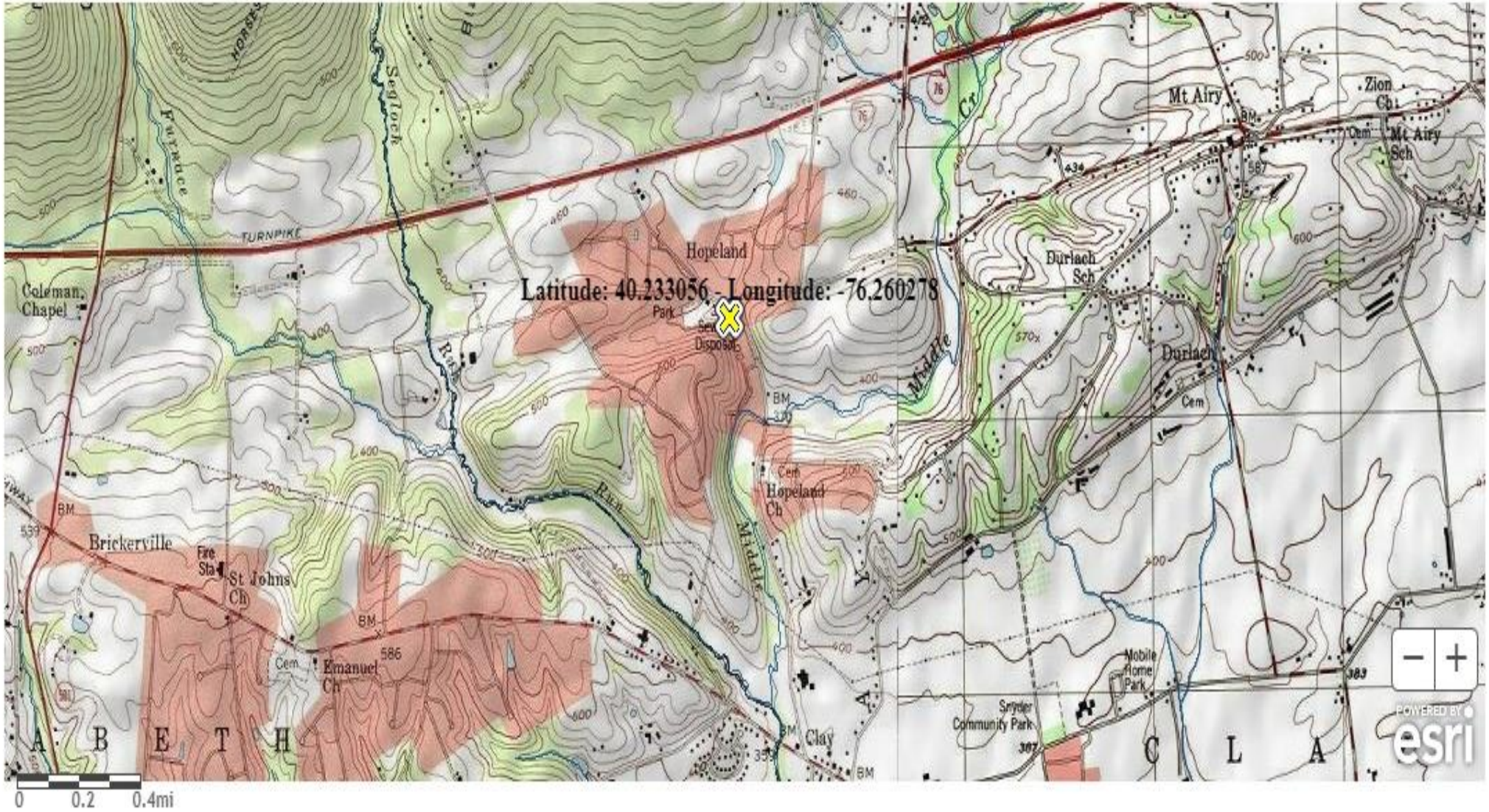
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.14	XXX	0.46	1/day	Grab
CBOD5	7.3	12	XXX	25	40	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	8.8	13	XXX	30	45	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	2,000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Ammonia Nov 1 - Apr 30	3.1	XXX	XXX	10.5	XXX	21.0	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	1.0	XXX	XXX	3.5	XXX	7.0	2/month	8-Hr Composite
Nitrate-Nitrite	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
TKN	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite

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		
Total Nitrogen	Report	Report Total Mo	XXX	Report	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus	0.6	Report Total Mo	XXX	2.0	XXX	4.0	2/month	8-Hr Composite
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: At discharge from facility

Other Comments: None

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: No. BCW-PMT-002, No. BCW-PMT-033
☐	Other:



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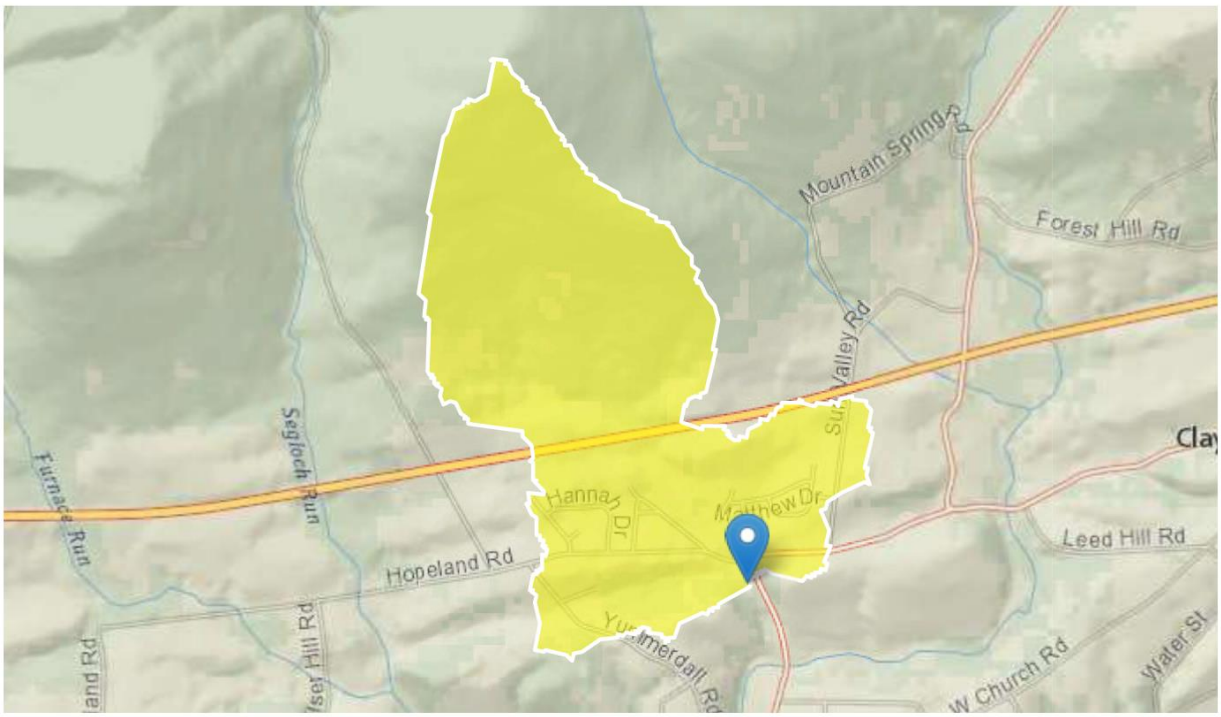
Clay Township Supervisors PA0081213 Outfall 001

Region ID: PA
Workspace ID: PA20220309140821467000
Clicked Point (Latitude, Longitude): 40.23272, -76.26005
Time: 2022-03-09 09:08:41 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.88	square miles
BSLOPD	Mean basin slope measured in degrees	6.0286	degrees
ROCKDEP	Depth to rock	3.4	feet
URBAN	Percentage of basin with urban development	10.1148	percent

Low-Flow Statistics Parameters [Low Flow Region 1]

Permit No. PA0081213

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.88	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	6.0286	degrees	1.7	6.4
ROCKDEP	Depth to Rock	3.4	feet	4.13	5.21
URBAN	Percent Urban	10.1148	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

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

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0691	ft^3/s
30 Day 2 Year Low Flow	0.105	ft^3/s
7 Day 10 Year Low Flow	0.0241	ft^3/s
30 Day 10 Year Low Flow	0.0398	ft^3/s
90 Day 10 Year Low Flow	0.0711	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

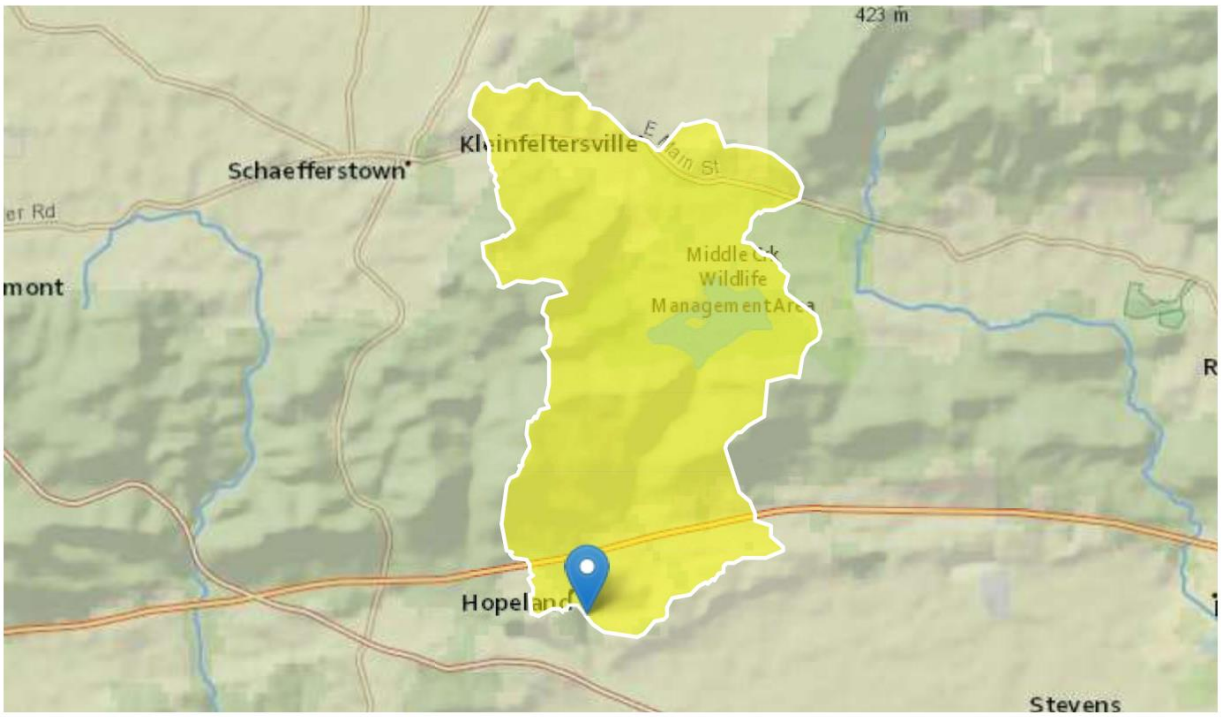
Permit No. PA0081213

Application Version: 4.7.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Permit No. PA0081213

Middle Creek

Region ID: PA
Workspace ID: PA20220309140408942000
Clicked Point (Latitude, Longitude): 40.22991, -76.25962
Time: 2022-03-09 09:04:28 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	13	square miles
BSLOPD	Mean basin slope measured in degrees	5.7611	degrees
ROCKDEP	Depth to rock	4	feet
URBAN	Percentage of basin with urban development	1.8849	percent

Low-Flow Statistics Parameters [100.0 Percent (13 square miles) Low Flow Region 1]

Permit No. PA0081213

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	5.7611	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4	feet	4.13	5.21
URBAN	Percent Urban	1.8849	percent	0	89

Low-Flow Statistics Disclaimers [100.0 Percent (13 square miles) Low Flow Region 1]

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

Low-Flow Statistics Flow Report [100.0 Percent (13 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	1.69	ft^3/s
30 Day 2 Year Low Flow	2.3	ft^3/s
7 Day 10 Year Low Flow	0.733	ft^3/s
30 Day 10 Year Low Flow	1.04	ft^3/s
90 Day 10 Year Low Flow	1.64	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

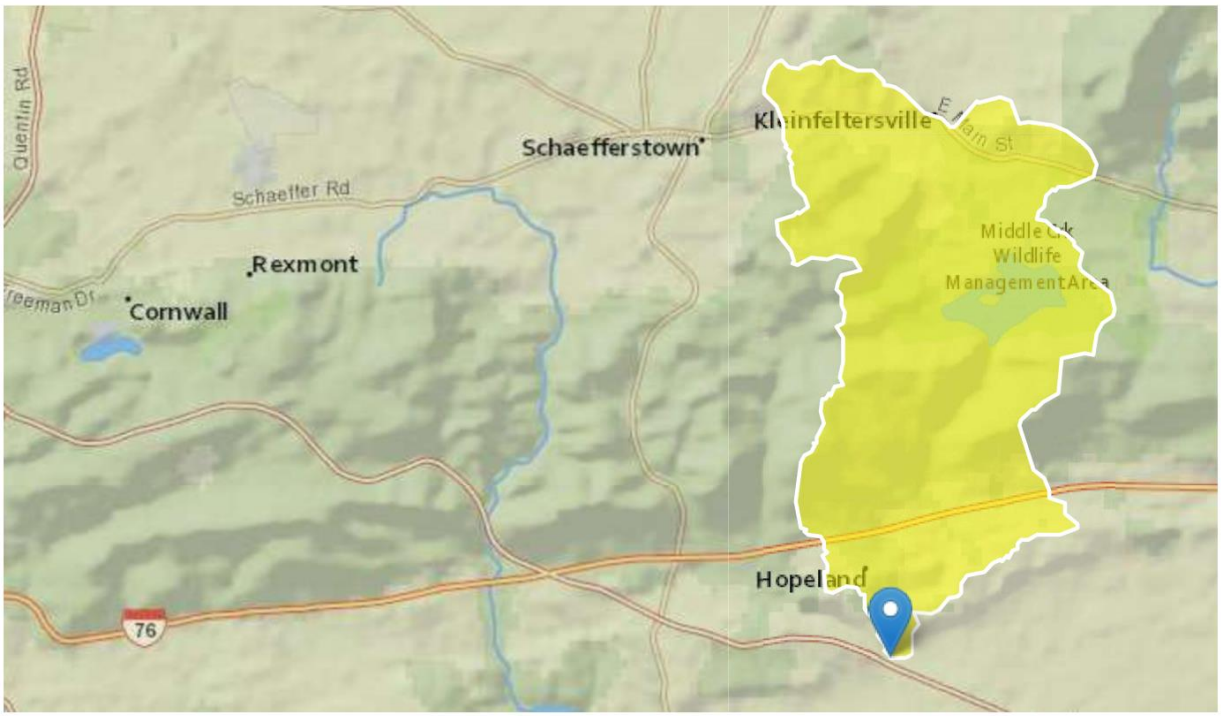
Permit No. PA0081213

Application Version: 4.7.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Permit No. PA0081213

Middle Creek RMI = 5.95

Region ID: PA
Workspace ID: PA20220311191121957000
Clicked Point (Latitude, Longitude): 40.22037, -76.25773
Time: 2022-03-11 14:11:42 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	13.3	square miles
BSLOPD	Mean basin slope measured in degrees	5.7907	degrees
ROCKDEP	Depth to rock	4	feet
URBAN	Percentage of basin with urban development	1.8509	percent

Low-Flow Statistics Parameters [100.0 Percent (13.3 square miles) Low Flow Region 1]

Permit No. PA0081213

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.3	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	5.7907	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4	feet	4.13	5.21
URBAN	Percent Urban	1.8509	percent	0	89

Low-Flow Statistics Disclaimers [100.0 Percent (13.3 square miles) Low Flow Region 1]

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

Low-Flow Statistics Flow Report [100.0 Percent (13.3 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	1.73	ft^3/s
30 Day 2 Year Low Flow	2.36	ft^3/s
7 Day 10 Year Low Flow	0.756	ft^3/s
30 Day 10 Year Low Flow	1.07	ft^3/s
90 Day 10 Year Low Flow	1.68	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Permit No. PA0081213

Application Version: 4.7.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Permit No. PA0081213

TRC_CALC

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	**Input appropriate values in B4:B8 and E4:E7**					
4	0.049	**= Q stream (cfs)**		**0.5**	**= CV Daily**	
5	0.035	**= Q discharge (MGD)**		**0.5**	**= CV Hourly**	
6	30	**= no. samples**		**1**	**= AFC_Partial Mix Factor**	
7	0.3	**= Chlorine Demand of Stream**		**1**	**= CFC_Partial Mix Factor**	
8	0	**= Chlorine Demand of Discharg**		**15**	**= AFC_Criteria Compliance Time (min)**	
9	**0.5**	**= BAT/BPJ Value**		**720**	**= CFC_Criteria Compliance Time (min)**	
	0	**= % Factor of Safety (FOS)**			**=Decay Coefficient (K)**	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	**1.3.2.iii**	WLA afc = 0.308		**1.3.2.iii**	WLA cfc = 0.292
12	PENTOXSD TRG	**5.1a**	LTAMULT afc = 0.373		**5.1c**	LTAMULT cfc = 0.581
13	PENTOXSD TRG	**5.1b**	LTA_afc= 0.115		**5.1d**	LTA_cfc = 0.170
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	**5.1f**	AML MULT = 1.231			
17	PENTOXSD TRG	**5.1g**	AVG MON LIMIT (mg/l) = 0.141		AFC	
18			INST MAX LIMIT (mg/l) = 0.462			

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)**

Permit No. PA0081213

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
07J	7689	MIDDLE CREEK	**6.740**	358.00	13.00	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.100	0.00	0.73	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
Clay TWP	PA0081213	0.0350	0.0350	0.0350	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	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0081213

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
07J	7689	MIDDLE CREEK	**5.950**	349.00	13.30	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.100	0.00	0.76	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
		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

Permit No. PA0081213

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07J	7689	MIDDLE 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												
6.740	0.73	0.00	0.73	.0541	0.00216	.513	15.73	30.65	0.10	0.495	20.34	7.00
Q1-10 Flow												
6.740	0.47	0.00	0.47	.0541	0.00216	NA	NA	NA	0.08	0.623	20.52	7.00
Q30-10 Flow												
6.740	1.00	0.00	1.00	.0541	0.00216	NA	NA	NA	0.11	0.421	20.26	7.00

Permit No. PA0081213

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		

Permit No. PA0081213

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07J	7689	MIDDLE 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
6.740	Clay TWP	16.06	50	16.06	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
6.740	Clay TWP	1.86	25	1.86	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)		
6.74	Clay TWP	25	25	25	25	5	5	0	0

Permit No. PA0081213

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07J	7689	MIDDLE CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.740	0.035	20.344	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
15.734	0.513	30.654	0.097
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.58	0.583	1.72	0.719
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.020	15.789	Owens	5
Reach Travel Time (days)			
0.495			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.050	3.48	1.66	8.19
0.099	3.38	1.60	8.19
0.149	3.28	1.55	8.19
0.198	3.19	1.49	8.19
0.248	3.09	1.44	8.19
0.297	3.00	1.39	8.19
0.347	2.92	1.34	8.19
0.396	2.83	1.29	8.19
0.446	2.75	1.25	8.19
0.495	2.67	1.20	8.19

Permit No. PA0081213

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07J	7689	MIDDLE 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)
6.740	Clay TWP	PA0081213	0.035	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5