Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0209511**
Facility Type	**Municipal**	APS ID	**1085943**
Major / Minor	**Minor**	Authorization ID	**1435217**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Sullivan Township**	Facility Name	**Sullivan Township STP**
Applicant Address	PO Box 84	Facility Address	State Route 6
	Mainesburg, PA 16932-0084		Mainesburg, PA 16932-0084
Applicant Contact	Andrew Tice	Facility Contact	Andrew Tice
Applicant Phone	(570) 549-7051	Facility Phone	(570) 549-7051
Client ID	110560	Site ID	465886
Ch 94 Load Status	Not Overloaded	Municipality	Sullivan Township
Connection Status	No Limitations	County	Tioga
Date Application Received	April 3, 2023	EPA Waived?	Yes
Date Application Accepted	April 18, 2023	If No, Reason	

Purpose of Application: Application for the renewal of the existing individual NPDES permit.

Summary of Review

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		Jonathan P. Peterman / Project Manager	January 8, 2025
X		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	January 9, 2025

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.015
Latitude	41º 47' 8.56"	Longitude	-77º 0' 14.61"
Quad Name	Mansfield	Quad Code	0429
Wastewater Description:	Sewage Effluent		
Receiving Waters	Corey Creek (CWF)	Stream Code	31329
NHD Com ID	57351711	RMI	5.34
Drainage Area	10.8	Yield (cfs/mi^2)	N/A
Q_{7-10} Flow (cfs)	0.0203	Q_{7-10} Basis	Gage No. 1516500
Elevation (ft)	1375	Slope (ft/ft)	N/A
Watershed No.	4-A	Chapter 93 Class.	CWF
Existing Use	CWF	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	N/A		
Source(s) of Impairment	N/A		
TMDL Status	Final	Name	Tioga River
Nearest Downstream Public Water Supply Intake	Mansfield University		
PWS Waters	Corey Creek	Flow at Intake (cfs)	0.16
PWS RMI	0.86	Distance from Outfall (mi)	4

Changes Since Last Permit Issuance: None.

Other Comments: In order to determine the Q7-10 low flow for Corey Creek, a comparative stream analysis was conducted using a downstream gage. The results of this analysis are attached in Appendix A. This stream gage was used in the analysis and indicates that the Q_{7-10} for Corey's Creek is 0.0885 cfs.

Treatment Facility Summary

Treatment Facility Name: Sullivan Township STP

WQM Permit No.	Issuance Date	Notes:
5997406	2/13/98	Initial construction.

Waste Type	Degree of Treatment	Process Type	Disinfection	Design Flow (MGD)
Sewage	Secondary	Septic Tank Sand Filter	Hypochlorite	0.015
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.015	31	Not Overloaded	Anaerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: None.
Other Comments: None.

Treatment System Components for Outfall 001:
- One (1) Influent wet well and flow meter.
- Two (2) Lift pumps.
- One (1) Areation tank.
  - Two (2) Aeration blowers lowers.
- One (1) Settling tank.
- One (1) Dosing tank.
  - Two (2) Dosing tank pumps.
- Two (2) Sand filter beds.
- One (1) Erosion chlorinator.
- One (1) Chlorine contact tank.
- One (1) Outfall.

Changes Since Last Permit Issuance: None.
Other Comments: None.

TMDL Impairment

The Department's Geographic Information System (GIS) shows that the Corey's Creek (Tioga River Watershed) is attaining it's use but a TMDL does exist for the watershed. High levels of metals caused these impairments (iron, manganese, aluminum) as well as pH. All impairments resulted from acid mine drainage. The TMDL addresses the three primary metals associated with acid mine drainage (iron, manganese, aluminum). There is currently no industrial waste being discharged into the treatment plant and this discharge is not expected to contribute to the level of metals in the stream. Given the regulations contained in 40 CFR §122.44(d)(1)(ii)&(iii), it can be determined that the type of effluent from this facility has no "Reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a State numeric criteria within a State water quality standard for an individual pollutant." However, monitoring requirements for metals (iron, manganese and aluminum) will be placed in the permit because point sources in the segment where the TMDL does not assign any wasteload allocations are not authorized to discharge these metals of concern. The result from the monitoring that was conducted over the previous permit cycles demonstrates that the facility is not contributing to this impairment and no furth monitoring is required. The monitoring requirements will be removed. The monitoring results for these metals are attached in the Appendix E.

Chesapeake Bay Requirements

Previously, the permittee was required to monitor and report TN and TP throughout the permit term at a frequency no less than annually in accordance with the Phase III WIP Chesapeake Bay Strategy for Phase V facilities (0.002 MGD to 0.2 MGD) since it did not have at least two of years of monitoring completed at that time. Monitoring for these parameters was conducted over the next permit term and the yearly monitoring requirements for nutrients were previously removed accordingly. No further monitoring is required at this time. The monitoring results, which will be preserved in the fact sheets, are listed below:

Date (Mo.-Yr.)	Flow (MGD)	Total Nitrogen			Total Phosphorus		
		TN (lbs/day)	TN (lbs/yr)	TN (mg/L)	TP (lbs/day)	TP (lbs/yr)	TP (mg/L)
Mar-18	0.0163	2.24	817.6	16.5	0.26	94.9	1.92
Feb-17	0.0088	1.39	509	19	0.16	38.4	2.15
Jan-16	0.0081	1.95	712	28.9	0.185	67.5	2.75
Nov-15	0.0108	2.41	881	26.8	0.225	82.12	2.53
Jan-15	0.0073	2.4	876	39.65	0.29	105.9	4.7
Jan-14	0.0089	2.56	934.6	34.45	0.26	94.9	3.54
Dec-13	0.0106	2.87	105	32.5	0.34	124	4.05

Existing Effluent Limitations and Monitoring Requirements

Existing Limits – Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Weir
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	6/week	Grab
Dissolved Oxygen	XXX	XXX	Report Daily Min	XXX	XXX	XXX	6/week	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.27	XXX	0.89	6/week	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	3.1	5.0	XXX	25.0	40.0	50	2/month	Grab
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	Grab
Total Suspended Solids	3.8	5.6 Wkly Avg	XXX	30.0	45.0	60	2/month	Grab
Total Suspended Solids Raw Sewage Influent	Report	Report	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 Nov 1 - Apr 30	0.65	XXX	XXX	5.2	XXX	10	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	1.8	XXX	XXX	15.0	XXX	30	2/month	Grab
Aluminum, Total	XXX	XXX	XXX	Report Annl Avg	Report Daily Max	XXX	1/year	Grab
Iron, Total	XXX	XXX	XXX	Report Annl Avg	Report Daily Max	XXX	1/year	Grab
Manganese, Total	XXX	XXX	XXX	Report Annl Avg	Report Daily Max	XXX	1/year	Grab

*The existing effluent limits for Outfall 001 were based on a design flow of 0.015 MGD.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.015
Latitude 41º 47' 8.20" **Longitude** -77º 0' 15.30"
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)

Comments: None.

Water Quality-Based Limitations

To establish whether or not water-quality based effluent limitations (WQBELs) are required, the Department models in-stream conditions. In order to determine limitations for CBOD5, ammonia-N and dissolved oxygen, the Department utilizes the WQM 7.0 v1.0b model and in order to determine limitations for toxics, the Department utilizes Toxics Management Spreadsheet (TMS). The TMS was not utilized or this review.

WQM 7.0 for Windows, Version 1.0b, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen
Since there have been no changes to the watershed or the facility, the previous modeling results shall be utilized. The model was previously run using the Q7-10 stream flow, background water quality, average annual design flow, and other discharge characteristics. The technology-based effluent limits for $CBOD_5$ (25 mg/l) and NH3-N (25.0 mg/l) were used as inputs for the modeling. The DO minimum daily average criterion from §93.7 (5.0 mg/L for CWF) was used for the in-stream objective for the model. The summary of the output is as follows:

Parameter	Effluent Limit		
	30 Day Average	Maximum	Minimum
CBOD5	25	N/A	N/A
Ammonia-N	5.19	10.38	N/A
Dissolved Oxygen	N/A	N/A	3

The previous model did not recommend water-quality based effluent limitations with regards to $CBOD_5$ and dissolved oxygen. The model did recommend water-quality based effluent limitations for ammonia-nitrogen, which were applied in the permit. Refer to the Appendix B for the previous WQM 7.0 inputs and results. The existing effluent limits will remain.

Best Professional Judgment (BPJ) Limitations

See the D.O. section below.
Comments: None.

Anti-Backsliding

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

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 the abovementioned 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) and/or BPJ.

Proposed Limits - 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	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Weir
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	6/week	Grab
Dissolved Oxygen	XXX	XXX	Report Daily Min	XXX	XXX	XXX	6/week	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.27	XXX	0.89	6/week	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	3.1	5.0	XXX	25.0	40.0	50	2/month	Grab
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	Grab
Total Suspended Solids	3.8	5.6 Wkly Avg	XXX	30.0	45.0	60	2/month	Grab
Total Suspended Solids Raw Sewage Influent	Report	Report	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 Nov 1 - Apr 30	0.65	XXX	XXX	5.2	XXX	10	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	1.8	XXX	XXX	15.0	XXX	30	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

*The proposed effluent limits for Outfall 001 were based on a design flow of 0.015 MGD.

Effluent Limit Determination for Outfall 001

General Information
All of the limits proposed above are consistent with other permits issued for wastewater treatment plants in the region. The associated mass-based limits (lbs/day) for all parameters were based on the formula: design flow (average annual) (MGD) x concentration limit (mg/L) at design flow x conversion factor (8.34). All effluent limits were then rounded down in accordance with the rounding rules established in the *Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001)*, Chapter 5 - Specifying Effluent Limitations in NPDES Permits.

Flow
Reporting of the average monthly and daily maximum flow is consistent with monitoring requirements for other treatment plants of this size.

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)
The results of the WQM 7.0 model show that the previously applied secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for $CBOD_5$ are protective of water quality.

Total Suspended Solids (TSS)
The previously applied technology based secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for TSS will remain as well.

pH
CFR Title 40 §133.102(c) and 25 PA Code §95.2(1) provide the basis of effluent limitations for pH. The existing limits will remain.

TRC
In accordance with 25 Pa. Code 92a.48(b)(2), a best available technology (BAT) value of 0.5 mg/l was used in lieu of the existing effluent limit (1.0 mg/L) in the TRC Spreadsheet. The attached TRC model indicates that the existing water quality-based effluent limits of 0.27 mg/L (Average Monthly) and 0.89 mg/L (Instantaneous Maximum) are still adequate to protect water quality.

Fecal Coliforms
The existing fecal coliform limits with I-max limits were previously updated from the previous Chapter 92 code to correspond with what is specified in the updated 25 PA Code § 92a.47 (a)(4)&(5).

Ammonia-Nitrogen (NH3-N)
The results of the WQM 7.0 model show that a discharge of ammonia-nitrogen at the water quality-based effluent limit (0.65 mg/L) is still adequate to protect water quality. Additionally, seasonal limits have been applied in accordance with the *Implementation Guidance of Section 93.7 Ammonia Criteria* (391-2000-013).

Dissolved Oxygen (DO)
Based on BPJ, monitoring of the minimum Dissolved Oxygen (DO) standard found in Chapter 93 for cold water fishes will be established. This will ensure that the discharge does not contributes to an in-stream excursion above the allowable ambient concentration of State numeric criteria within a State water quality standard for an individual pollutant. Discharges of concentrations less than this value (5.0 mg/L) could contribute to an impairment of D.O. in this segment.

Influent BOD_5 and TSS
The Department requires the reporting of raw sewage influent monitoring for BOD_5 and TSS in all POTW permits. This provides the Department with the ability to monitor the percent removal of each parameter as stipulated in section 2 of the Part A conditions and maintain records of the BOD_5 loading as required by 25 Pa. Code Chapter 94. The monitoring frequencies and sample types are identical to the effluent sampling.

E. Coli
25 PA Code § 92a.61 provide the basis of monitoring requirements for E. Coli. Yearly monitoring will be required going forward.

Monitoring Frequencies (TRC, pH, and D.O.)

Previous reviews established a monitoring frequency of 6/ Week for pH, D.O., and TRC. However, these monitoring frequencies do not correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3 which calls for daily monitoring and 2/ month samples accordingly. Based on BPJ and given that there is no history of significant non-compliance with effluent limitations over the past two years of DMR data, the existing frequencies will be continued in the renewed permit. Given that this facility utilizes a septic / sand filter system in lieu of a traditional aeration system, a 6/ week sampling frequency is acceptable. It is expected that the effluent quality would not differ drastically on days when monitoring is not conducted given that there is a lesser potential for a system malfunction with a sand filter system.

Compliance History

Summary of Inspections -The last inspection of the facilities was conducted by the Department on 10/31/24 which reveals the facility was operating normally. Some effluent limit exceedances were noted.

WMS Query Summary - A WMS Query was run at *Reports - Violations & Enforcements – Open Violations for Client Report* to determine whether there are any unresolved violations associated with the client that will affect issuance of the permit (per CSL Section 609). This query revealed that there were no unresolved violations.

DMRs Summary - Upon review of the last year of DMR's, the facility appears to be generally operating within the given concentration limits with the exception of Ammonia-Nitrogen and fecal coliforms.

Compliance History

DMR Data for Outfall 001 (from December 1, 2023 to November 30, 2024)

Parameter	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23
Flow (MGD) Average Monthly	0.0087	0.0075	0.0072	0.0186	0.0105	0.0123	0.0167	0.0175	0.0205	0.0164	0.0100	0.0104
Flow (MGD) Daily Maximum	0.0138	0.007	0.0073	0.0294	0.0114	0.0128	0.0220	0.0320	0.0294	0.0301	0.0155	0.0126
pH (S.U.) Instantaneous Minimum	7.25	6.99	7.20	6.99	7.01	7.01	6.86	6.99	7.09	6.99	7.01	7.00
pH (S.U.) Instantaneous Maximum	7.44	7.37	7.26	7.26	7.31	7.26	7.33	7.34	7.26	7.24	7.26	7.24
DO (mg/L) Daily Minimum	9.2	8.9	9.2	9.3	9.3	9.8	9.1	9.8	8.3	8.3	8.9	8.3
TRC (mg/L) Average Monthly	0.22	0.19	0.18	0.20	0.21	0.16	0.22	0.19	0.21	0.19	0.20	0.19
TRC (mg/L) Instantaneous Maximum	0.31	0.27	0.29	0.27	0.31	0.27	0.31	0.30	0.31	0.26	0.31	0.26
CBOD5 (lbs/day) Average Monthly	0.63	1.1	0.39	0.31	0.14	0.56	0.25	0.50	< 0.27	0.36	0.21	0.17
CBOD5 (lbs/day) Daily Maximum	0.69	1.8	0.65	0.31	0.15	0.74	0.25	0.85	< 0.32	0.39	0.28	0.23
CBOD5 (mg/L) Average Monthly	9.83	20.0	7.7	< 3.0	1.6	5.8	< 1.8	4.9	< 1.8	2.9	2.8	2.3
CBOD5 (mg/L) Weekly Average	9.83	20.0	12.6	< 3.0	1.7	7.17	< 1.8	8.2	< 1.8	3.2	3.6	2.7
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	3.74	3.2	1.3	5.1	4.9	4.8	1.97	3.7	4.39	7.1	2.7	3.0
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	4.35	4.5	1.4	5.1	5.0	5.2	2.1	4.8	4.44	8.6	3.1	3.1
BOD5 (mg/L) Raw Sewage Influent Average Monthly	58.3	51.8	27.9	49.2	52.5	49.8	14.2	36.8	31.5	55.8	36.7	43.1

TSS (lbs/day) Average Monthly	0.46	0.78	0.24	< 0.42	0.37	< 0.38	< 0.55	0.45	0.54	0.71	0.29	< 0.33
TSS (lbs/day) Raw Sewage Influent Average Monthly	0.93	1.2	0.83	1.5	2.6	1.1	6.35	1.3	1.87	0.36	0.58	1.6
TSS (lbs/day) Raw Sewage Influent Daily Maximum	1.29	1.9	0.88	1.5	2.8	1.4	9.2	1.8	2.13	0.53	0.70	1.9
TSS (lbs/day) Weekly Average	0.57	0.78	0.31	< 0.42	0.37	< 0.38	< 0.55	0.52	0.62	0.93	0.30	< 0.44
TSS (mg/L) Average Monthly	7.0	13.5	5.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.5	5.0	5.5	< 4.0	< 4.0
TSS (mg/L) Raw Sewage Influent Average Monthly	16.0	19	17.0	14	27.5	12	45.8	13	13	9.5	8.0	22
TSS (mg/L) Weekly Average	9.66	13.5	5.0	< 4.0	< 4.0	< 4.0	< 4.0	5.0	6.0	7.0	< 4.0	< 4.5
Fecal Coliform (No./100 ml) Geometric Mean	11.1	131.2	44.9	2.0	2.02	178.3	1.4	52.8	15.12	18	150	320
Fecal Coliform (No./100 ml) Instantaneous Maximum	123.9	140.8	1011.2	2.0	4.1	185	2.0	1011.2	114.3	42	5654.4	960.6
Ammonia (lbs/day) Average Monthly	0.76	0.69	0.50	0.04	< 0.01	< 0.01	0.09	0.52	0.65	0.22	0.50	0.03
Ammonia (mg/L) Average Monthly	11.9	11.5	10.6	0.43	< 0.10	< 0.10	0.65	5.2	6.1	1.7	0.75	0.33
Total Aluminum (mg/L) Annual Average												0.07
Total Aluminum (mg/L) Daily Maximum												0.07
Total Iron (mg/L) Annual Average												0.086
Total Iron (mg/L) Daily Maximum												0.086
Total Manganese (mg/L) Annual Average												0.009

Total Manganese (mg/L) Daily Maximum												0.009

Compliance History

Effluent Violations for Outfall 001, from: January 1, 2024 To: November 30, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	09/30/24	IMAX	1011.2	No./100 ml	1000	No./100 ml
Ammonia	11/30/24	Avg Mo	0.76	lbs/day	.65	lbs/day
Ammonia	11/30/24	Avg Mo	11.9	mg/L	5.2	mg/L
Ammonia	03/31/24	Avg Mo	6.1	mg/L	5.2	mg/L

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☒	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

APPENDIX A

Q7-10 ANALYSIS AND STREAM DATA

Q_{7-10} Analysis

Facility: Sullivan Township
Outfall: 001

NPDES Permit No.: PA0209511
RMI at Outfall: 5.34 Elev. 1375

Reference Stream Gage Information	
Stream Name	Corey Creek
Reference Gage	1516500
Station Name	Corey Creek near Maincsburg, PA
Gage Drainage Area (sq. mi.)	12.2
Q_{7-10} at gage (cfs)	0.1
Yield Ratio (cfs/mi^2)	0.0082

Was Ecoflows Used?	No
Correlation From Ecoflows	

Check Dilution Ratio		
Discharge at Outfall (wf) (mgd)	0.015	
	sf (cfs)	wf (cfs)
Dilution Ratio = sf/wf	0.0885	0.023209431
Dilution Ratio =	3.814328901 to 1	

Q_{7-10} at Outfall	
Drainage Area at site (sq. mi.)	10.8
Q_{7-10} at discharge site (cfs)	0.0885
Q_{7-10} at discharge site (mgd)	0.0572
Low Flow Yield Ratio of 0.1 cfs/mi^2 (For Approx. Comparison Only)	
Q_{7-10} at discharge site (cfs)	1.0800
Q_{7-10} at discharge site (mgd)	0.6980

Q_{7-10} at Downstream Reach #1	
Drainage Area at Reach (sq. mi.)	[Drainage Area @ Reach #1]
RMI	[RMI @ Reach #1]
Q_{7-10} at reach (cfs)	#VALUE!
Q_{7-10} at reach (mgd)	#VALUE!
	Elev. [Reach #1]

Q_{7-10} at Downstream Reach #2	
Drainage Area at Reach (sq. mi.)	[Drainage Area @ Reach #2]
RMI	[RMI @ Reach #2]
Q_{7-10} at reach (cfs)	#VALUE!
Q_{7-10} at reach (mgd)	#VALUE!

Q_{7-10} at Downstream Reach #3	
Drainage Area at Reach (sq. mi.)	[Drainage Area @ Reach #3]
RMI	[RMI @ Reach #3]
Q_{7-10} at reach (cfs)	#VALUE!
Q_{7-10} at reach (mgd)	#VALUE!

Basin Characteristics Report at [Site / Reach]

Basin Map at Outfall

[Insert Drainage Area Map from Stream Stats]

APPENDIX B

PREVIOUS WQM 7.0 MODEL INPUT/OUTPUT

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
04A	31329	COREY CREEK	5.340	1380.00	10.80	0.00910	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	0.002	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
Malnesburg	PA0209511	0.0150	0.0150	0.0150	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
04A	31329	COREY CREEK	**4.510**	1340.00	12.20	0.00910	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
27-10	0.002	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
01-10		0.00	0.00	0.000	0.000							
30-10		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

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
04A	31329	COREY CREEK	1.870	1190.00	15.70	0.00870	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	0.002	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
04A	31329	COREY 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												
5.340	0.02	0.00	0.02	.0232	0.00910	.327	5.75	17.58	0.02	2.315	22.62	7.00
4.510	0.02	0.00	0.02	.0232	0.00910	.332	5.95	17.93	0.02	7.336	22.67	7.00
Q1-10 Flow												
5.340	0.01	0.00	0.01	.0232	0.00910	NA	NA	NA	0.02	2.547	23.35	7.00
4.510	0.01	0.00	0.01	.0232	0.00910	NA	NA	NA	0.02	8.129	23.21	7.00
Q30-10 Flow												
5.340	0.11	0.00	0.11	.0232	0.00910	NA	NA	NA	0.04	1.176	20.84	7.00
4.510	0.13	0.00	0.13	.0232	0.00910	NA	NA	NA	0.04	3.627	20.76	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	Uniform Treatme	Use Inputted W/D Ratio	☑
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	6.4	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
04A	31329	COREY 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
5.340	Mainesburg	NA	50	7.6	11.36	1	77
4.510		NA	NA	7.68	NA	NA	NA

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
5.340	Mainesburg	NA	25	1.8	10.72	1	57
4.510		NA	NA	1.81	NA	NA	NA

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)		
5.34	Mainesburg	25	25	11.36	10.38	3	5	1	5
4.51		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
04A	31329	COREY CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
5.340	0.015	22.821	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
5.745	0.327	17.580	0.022
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
14.98	0.764	5.86	0.870
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.413	14.200	Owens	6
Reach Travel Time (days)			
2.315			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.232	12.24	4.79	6.11
0.463	10.01	3.92	6.55
0.695	8.19	3.20	6.94
0.926	6.69	2.62	7.26
1.158	5.47	2.14	7.53
1.389	4.47	1.75	7.74
1.621	3.66	1.43	7.83
1.852	2.99	1.17	7.83
2.084	2.45	0.96	7.83
2.315	2.00	0.78	7.83

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
4.510	0.015	22.670	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
5.953	0.332	17.934	0.022
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.00	0.000	0.74	0.860
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.852	13.785	Owens	6
Reach Travel Time (days)			
7.335			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.733	2.00	0.39	7.85
1.467	2.00	0.21	7.85
2.200	2.00	0.11	7.85
2.934	2.00	0.06	7.85
3.667	2.00	0.03	7.85
4.401	2.00	0.02	7.85
5.134	2.00	0.01	7.85
5.868	2.00	0.00	7.85
6.601	2.00	0.00	7.85
7.335	2.00	0.00	7.85

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
04A	31329	COREY 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)
5.340	Malnesburg	PA0209511	0.015	CBOD5	25		
				NH3-N	5.19	10.38	
				Dissolved Oxygen			5

APPENDIX C

TRC ANALYSIS

1A	B	C	D	E	F	G
2	**TRC EVALUATION**	Sullivan Township				
3	Input appropriate values in B4:B8 and E4:E7					
4	0.0885	= Q stream (cfs)		0.5	= CV Daily	
5	0.015	= 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 Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.6	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.III	WLA afc = 1.236		1.3.2.III	WLA cfc = 1.197
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 0.460		5.1d	LTA_cfc = 0.696
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) = 0.500		BAT/BPJ	
18			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)

APPENDIX D

FACILITY MAP

APPENDIX E

METALS SAMPLING RESULTS

PERMIT	PF NAME	DUE DATE	OUTFALL	PARAMETER	CONC UNITS	CONC 2 VALUE	CONC 2 SBC	CONC 3 VALUE	CONC 3 SBC	SAMPLE FREQUENCY	SAMPLE TYPE
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2020	001	Aluminum, Total	mg/L	0.06	Annual Average	0.06	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2021	001	Aluminum, Total	mg/L	< 0.050	Annual Average	< 0.050	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2022	001	Aluminum, Total	mg/L	< 0.05	Annual Average	< 0.05	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2023	001	Aluminum, Total	mg/L	0.03	Annual Average	0.03	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2024	001	Aluminum, Total	mg/L	0.07	Annual Average	0.07	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2025	001	Aluminum, Total	mg/L	0.051	Annual Average	0.051	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2020	001	Iron, Total	mg/L	0.07	Annual Average	0.07	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2021	001	Iron, Total	mg/L	< 0.070	Annual Average	< 0.070	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2022	001	Iron, Total	mg/L	< 0.07	Annual Average	< 0.07	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2023	001	Iron, Total	mg/L	0.05	Annual Average	0.05	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2024	001	Iron, Total	mg/L	0.086	Annual Average	0.086	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2025	001	Iron, Total	mg/L	0.092	Annual Average	0.092	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2020	001	Manganese, Total	mg/L	0.28	Annual Average	0.28	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2021	001	Manganese, Total	mg/L	0.036	Annual Average	0.036	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2022	001	Manganese, Total	mg/L	0.075	Annual Average	0.075	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2023	001	Manganese, Total	mg/L	0.05	Annual Average	0.05	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2024	001	Manganese, Total	mg/L	0.009	Annual Average	0.009	Daily Maximum	1/year	Grab
PA0209511	MAINESBURG STP/COLLECTION SYSTEM	01/28/2025	001	Manganese, Total	mg/L	0.13	Annual Average	0.13	Daily Maximum	1/year	Grab