

Application Type Renewal
Facility Type Municipal
Major / Minor Minor

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application No. PA0080438
APS ID 275415
Authorization ID 1444256

Applicant and Facility Information

Applicant Name	<u>Northern Lancaster County Authority</u>	Facility Name	<u>Beam Road WWTP</u>
Applicant Address	<u>983 Beam Road</u> <u>Denver, PA 17517-8946</u>	Facility Address	<u>983 Beam Road</u> <u>Denver, PA 17517-8946</u>
Applicant Contact	<u>Matt Ross</u>	Facility Contact	<u>Matt Ross</u>
Applicant Phone	<u>(717) 445-7553</u>	Facility Phone	<u>(717) 445-7553</u>
Client ID	<u>77232</u>	Site ID	<u>445945</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Brecknock Township</u>
Connection Status	<u>No Limitations</u>	County	<u>Lancaster</u>
Date Application Received	<u>June 20, 2023</u>	EPA Waived?	<u>No</u>
Date Application Accepted	<u>June 21, 2023</u>	If No, Reason	<u>Significant CB Discharge</u>
Purpose of Application	<u>NPDES Renewal.</u>		

Summary of Review

Northern Lancaster County Authority (NLCA) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The permit was issued on December 27, 2018 and became effective on January 1, 2019. The permit authorized discharge of treated sewage from the existing wastewater treatment plant (WWTP) in Brecknock Township, Lancaster County into Muddy Creek. Amendment A-1 for the permit was issued on April 17, 2019 to change the UV transmittance monitoring requirement to UV dosage. The existing permit expiration date was December 31, 2023, and the permit has been administratively extended since that time.

Changes in this renewal: Monthly Net Total Nitrogen and Net Total Phosphorus monitoring requirements have been removed from the permit. Fecal coliform instantaneous maximum limits have been added to the permit. Quarterly E. Coli monitoring has been added to the permit. Total Copper monitoring has been removed from the permit.

Sludge use and disposal description and location(s): Aerobic digestion with offsite disposal

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
X		Benjamin R. Lockwood Benjamin R. Lockwood / Environmental Engineering Specialist	January 12, 2024
X		Maria D. Bebenek for Daniel W. Martin, P.E. / Environmental Engineer Manager	February 1, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>001</u>	Design Flow (MGD)	<u>.45</u>
Latitude	<u>40° 10' 41"</u>	Longitude	<u>76° 3' 41"</u>
Quad Name	<u></u>	Quad Code	<u></u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Muddy Creek (TSF)</u>	Stream Code	<u>7760</u>
NHD Com ID	<u>57461807</u>	RMI	<u>5.16</u>
Drainage Area	<u>29.6 mi²</u>	Yield (cfs/mi ²)	<u>0.064</u>
Q ₇₋₁₀ Flow (cfs)	<u>1.9</u>	Q ₇₋₁₀ Basis	<u>USGS PA StreamStats</u>
Elevation (ft)	<u>370</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>7-J</u>	Chapter 93 Class.	<u>TSF</u>
Existing Use	<u>N/A</u>	Existing Use Qualifier	<u>N/A</u>
Exceptions to Use	<u>N/A</u>	Exceptions to Criteria	<u>N/A</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Pathogens</u>		
Source(s) of Impairment	<u>Source Unknown</u>		
TMDL Status	<u>N/A</u>	Name	<u>N/A</u>
Nearest Downstream Public Water Supply Intake	<u>Lancaster City Water Bureau</u>		
PWS Waters	<u>Conestoga River</u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u></u>	Distance from Outfall (mi)	<u>24.1</u>

Changes Since Last Permit Issuance: USGS PA StreamStats provided a drainage area of 29.6 mi² and a Q₇₋₁₀ flow of 1.9 cfs at the point of discharge.

Other Comments: None

Treatment Facility Summary				
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia And Phosphorus	Extended Aeration	UV Disinfection	0.45
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.55	1349	Not Overloaded	Aerobic Digestion	Land Application

Changes Since Last Permit Issuance: None

Other Comments: The treatment process is as follows:

Influent Pump Station – Mechanical Screen and Grit Removal System – Three (3) Vertical Loop Reactor (VLR) Treatment Tanks, Three (3) Clarifiers, UV Disinfection (with Backup Sodium Hypochlorite Injection System) – Post Aeration Tank – Outfall 001 to Little Muddy Creek - Anaerobic Digester – Three (3) Aerobic Digesters – Sludge Reed Beds

Compliance History	
Summary of DMRs:	A summary of the past 12-month DMR effluent data is present on the next page of this fact sheet.
Summary of Inspections:	<p>5/23/2019: A routine inspection was conducted. The effluent troughs from the clarifiers were clear with some algae growth. The UV tank appeared to be functioning. Field sampling results were within permitted limits. No other issues were noted.</p> <p>6/4/2020: An administrative inspection was conducted. All treatment units were online and operable. There were no outstanding issues at the time of inspection.</p>

Other Comments: There are no open violations for this Applicant.

Existing Permit Limits

Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous 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
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.36	XXX	1.2	1/day	Grab
Ultraviolet light transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	93	150	XXX	25	40	50	1/week	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	75	112	XXX	20	30	40	1/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	112	168	XXX	30	45	60	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	XXX	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	XXX	1/week	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	22	XXX	XXX	6.0	XXX	12	2/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	7.5	XXX	XXX	2.0	XXX	4.0	2/week	24-Hr Composite
Total Phosphorus	7.5	XXX	XXX	2.0	XXX	4.0	2/week	24-Hr Composite

Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Copper, Total	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 001

Outfall 001

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)			Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Net Total Nitrogen	Report	8,219	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	1,096	XXX	XXX	XXX	1/month	Calculation

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 001

Footnotes:

(1) See Part C for Chesapeake Bay Requirements.

(2) This is the minimum number of sampling events required. Permittees are encouraged, and it may be advantageous in demonstrating compliance, to perform more than the minimum number of sampling events required.

Compliance History

DMR Data for Outfall 001 (from December 1, 2022 to November 30, 2023)

Parameter	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22
Flow (MGD) Average Monthly	0.340	0.330	0.334	0.297	0.297	0.308	0.377	0.373	0.397	0.385	0.467	0.444
Flow (MGD) Daily Maximum	0.504	0.441	0.517	0.319	0.344	0.339	0.855	0.552	0.639	0.440	0.703	0.792
pH (S.U.) Instantaneous Minimum	7.4	7.5	7.5	7.6	7.5	7.1	7.1	6.4	6.5	6.4	6.4	6.3
pH (S.U.) Instantaneous Maximum	8.1	7.9	8.0	7.9	7.9	7.8	8.0	8.2	7.0	7.3	7.3	7.3
DO (mg/L) Instantaneous Minimum	9.6	8.8	8.4	8.4	8.3	6.2	7.4	8.3	8.4	9.0	8.4	8.0
TRC (mg/L) Average Monthly	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
TRC (mg/L) Instantaneous Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
CBOD5 (lbs/day) Average Monthly	7.1	5.8	5.4	5.1	4.8	5.4	12.6	9.5	6.7	10.0	10.1	10.1
CBOD5 (lbs/day) Weekly Average	7.1	5.8	5.4	5.1	4.8	5.4	12.6	9.5	6.7	10.0	10.1	10.1
CBOD5 (mg/L) Average Monthly	< 2.4	< 2.2	< 2.0	< 2.1	< 2.0	< 2.1	2.9	2.9	< 2.0	3.1	2.5	< 2.8
CBOD5 (mg/L) Weekly Average	< 2.4	< 2.2	< 2.0	< 2.1	< 2.0	< 2.1	2.9	2.9	< 2.0	3.1	2.5	< 2.8
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	1108	749	724	600	735	641	771	749	726	799	940	852
BOD5 (mg/L) Raw Sewage Influent Average Monthly	377	281	271	244	301	252	222	233	220	251	242	242
TSS (lbs/day) Average Monthly	13.6	12.4	8.7	9.3	5.4	10.8	27.0	14.0	14.2	11.8	10.0	14.6

**NPDES Permit Fact Sheet
Beam Road WWTP**

NPDES Permit No. PA0080438

TSS (lbs/day) Raw Sewage Influent Average Monthly	2187	1226	1208	857	1703	955	830	1106	1171	1492	1415	998
TSS (lbs/day) Weekly Average	13.6	12.4	8.7	9.3	5.4	10.8	27.0	14.0	14.2	11.8	10.0	14.6
TSS (mg/L) Average Monthly	4.5	4.6	3.3	3.8	2.3	4.3	5.8	4.3	< 4.3	3.8	2.6	4.0
TSS (mg/L) Raw Sewage Influent Average Monthly	734	458	439	349	689	373	234	346	355	470	367	290
TSS (mg/L) Weekly Average	4.5	4.6	3.3	3.8	2.3	4.3	5.8	4.3	< 4.3	3.8	2.6	4.0
Fecal Coliform (No./100 ml) Geometric Mean	< 3.8	< 5.1	11.5	< 5.6	< 3.5	< 2.2	< 2.4	11.1	< 3.0	3.1	< 4.7	< 2.8
Nitrate-Nitrite (mg/L) Average Monthly	4.19	3.69	2.96	1.95	3.14	2.04	2.9	2.01	2.00	1.9	1.2	0.4
Nitrate-Nitrite (lbs) Total Monthly	461	319	252	154	248	162	335	190	202	164	143	45
Total Nitrogen (mg/L) Average Monthly	5.32	4.42	< 3.64	2.78	< 4.19	2.99	< 4.2	4.10	4.28	4.9	4.5	3.9
Total Nitrogen (lbs) Effluent Net Total Monthly	461	382	310	220	330	236	487	387	434	433	533	434
Total Nitrogen (lbs) Total Monthly	461	382	310	220	330	236	487	387	434	433	533	434
Total Nitrogen (lbs) Effluent Net Total Annual			< 4343									
Total Nitrogen (lbs) Total Annual			< 4343									
Ammonia (lbs/day) Average Monthly	0.56	0.20	0.11	0.22	0.26	0.26	1.24	1.45	2.76	5.71	8.79	7.03
Ammonia (mg/L) Average Monthly	< 0.18	0.07	< 0.04	0.09	0.10	0.10	0.30	0.46	0.83	1.80	2.26	1.94
Ammonia (lbs) Total Monthly	16.9	6.3	3.2	6.8	8.2	7.7	38.5	43.5	85.5	160.0	272.4	217.8
Ammonia (lbs) Total Annual			< 865									
TKN (mg/L) Average Monthly	1.13	0.73	< 0.68	0.83	< 1.05	0.95	< 1.2	2.09	2.28	3.03	3.25	3.49
TKN (lbs) Total Monthly	101.3	62.9	57.7	65.6	82.0	74.5	151.5	197.0	231.2	268.8	389.8	389.1

NPDES Permit Fact Sheet
Beam Road WWTP

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Total Phosphorus (lbs/day) Average Monthly	2.20	2.01	2.34	1.44	2.90	1.69	2.16	1.19	1.37	2.32	0.78	< 0.44
Total Phosphorus (mg/L) Average Monthly	0.77	0.71	0.80	0.57	1.14	0.64	0.69	0.38	0.42	0.74	0.20	< 0.12
Total Phosphorus (lbs) Effluent Net Total Monthly	66.1	62.2	70.2	44.7	89.8	50.6	67.0	35.6	42.5	65.1	24.1	13.7
Total Phosphorus (lbs) Total Monthly	66.1	62.2	70.2	44.7	89.8	50.6	67.0	35.6	42.5	65.1	24.1	< 13.7
Total Phosphorus (lbs) Effluent Net Total Annual			< 543									
Total Phosphorus (lbs) Total Annual			< 543									
Total Copper (mg/L) Average Monthly	0.006	0.006	0.007	0.004	0.003	0.003	0.001	0.004	0.004	0.004	0.004	0.003
UV Dosage (mWsec/cm ²) Instantaneous Minimum	34	38	38	53	44	44	27	35	28	33	27	23

Development of Effluent Limitations

Outfall No.	001	Design Flow (MGD)	.45
Latitude	40° 10' 41"	Longitude	76° 3' 41"
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

CBOD₅, NH₃-N

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 (CBOD₅), ammonia (NH₃-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 CBOD₅ average monthly limit of 25 mg/l, an NH₃-N average monthly limit of 8.3 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 existing CBOD₅ limit of 20 mg/l is more stringent, and will remain in the permit. The existing NH₃-N limit of 2.0 mg/l is more stringent, and will remain in the permit.

Toxics

Effluent sample results for toxic pollutants reported on the renewal application were entered into DEP's Toxics Management Spreadsheet Version 1.4 to develop appropriate permit requirements for toxic pollutants of concern. The Toxics Management Spreadsheet combines the functions of PENTOXSD and DEP's Toxics Screening Analysis. Stream pH and hardness inputs were based on data included in the NPDES application. Based on effluent sample results reported on the application, the Toxics Management Spreadsheet did not recommend and new limits or monitoring requirements.

This data was analyzed based on the guidelines found in DEP's Water Quality Toxics Management Strategy (Document No. 361-0100-003) and DEP's SOP No. BPNPSM-PMT-033. The results are attached to this fact sheet. The Toxics Management Spreadsheet uses the following logic:

- Establish average monthly and instantaneous maximum (IMAX) limits in the draft permit where the maximum reported concentration exceeds 50% of the WQBEL.

- b. For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.
- c. For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10%-50% of the WQBEL.

The Toxics Management Spreadsheet did not require additional monitoring for Total Copper; therefore, the Total Copper monitoring requirement will be removed from the permit.

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.

Beam Road WWTP is a Phase 3 significant discharger. The facility's waste load allocation (WLA) is tracked under an individual WLA as a significant discharger in the Phase 3 Supplement. The following Cap Loads specified in the current Phase 3 Supplement will be included in the draft permit:

NPDES Permit No.	Phase	Facility	Latest Permit Issuance Date	Permit Expiration Date	Cap Load Compliance Start Date	TN Cap Load (lbs/yr)	TN Offsets Included in Cap Load (lbs/yr)	TP Cap Load (lbs/yr)	TN Delivery Ratio	TP Delivery Ratio
PA0080438	3	Northern Lancaster County Authority	1/10/2019	12/31/2023	10/1/2013	8,219	-	1,096	0.552	0.563

These Cap Loads were based on the design flow of 0.45 mgd with TN concentration of 6.0 mg/l and TP concentration of 0.8 mg/l. The Cap Loads are unchanged from the previous renewal. The Phase 3 Supplement states that "the minimum monitoring frequency for TN species and TP in new or renewed NPDES permits for significant sewage dischargers will be 2/week." This is consistent with the monitoring frequency in the existing permit. DEP no longer offers any tools to calculate monthly loads for Net TN and Net TP, and it is no longer needed since offsets and credits are applied annually. Therefore, this reporting requirement is no longer needed and will be removed from the permit.

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 based BPJ. It is still recommended to include this limit in the draft permit to ensure that the facility continues to achieve compliance with DEP water quality standards.

Total Phosphorus

For Total Phosphorus (TP), the current NPDES permit requires the permittee to comply with average monthly and IMAX limits of 2.0 mg/L and 4.0 mg/L, respectively. These existing limits will remain unchanged in the permit to protect the local watershed.

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 instantaneous maximum limits will be added to 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 ≥ 0.05 mgd and < 1 mgd will include E. Coli monitoring with a frequency of 1/quarter. This parameter has been added to the renewal permit.

UV Monitoring

DEP's SOP No. BPNPSM-PMT-033 recommends at a minimum, routine monitoring of UV transmittance, dosage, or intensity when the facility is utilizing a UV disinfection system. The monitoring should occur at the same frequency as would be used for TRC. Presumably, this recommendation was implemented as a part of the proper operation and maintenance requirement specified in Part B of the NPDES permit, requesting permittees to demonstrate the effectiveness of UV disinfection system. This is a reasonable approach and has been assigned to other facilities equipped with similar technology. Accordingly, a parameter for UV Dosage will be included in the permit; the same as the existing permit requirements.

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 0.41 mg/l would be needed to prevent toxicity concerns. The existing TRC limits of 0.36 mg/l monthly average and 1.2 mg/l instantaneous maximum are more stringent and will remain in the permit.

Influent BOD₅ and Total Suspended Solids (TSS) Monitoring

As a result of negotiation with US EPA, influent monitoring of TSS and BOD₅ are required for any publicly owned treatment works (POTWs); therefore, influent sampling of BOD₅ 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 CBOD₅.

Sampling Frequency & Sample Type

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

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 are 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" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous 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	0.36	XXX	1.2	1/day	Grab
CBOD5 Nov 1 - Apr 30	93	150	XXX	25	40	50	1/week	24-Hr Composite
CBOD5 May 1 - Oct 31	75	112	XXX	20	30	40	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	112	168	XXX	30	45	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia Nov 1 - Apr 30	22	XXX	XXX	6.0	XXX	12	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	7.5	XXX	XXX	2.0	XXX	4.0	2/week	24-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	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus	7.5	XXX	XXX	2.0	XXX	4.0	2/week	24-Hr Composite
UV Dosage (mWsec/cm ²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured

Compliance Sampling Location: Outfall 001

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

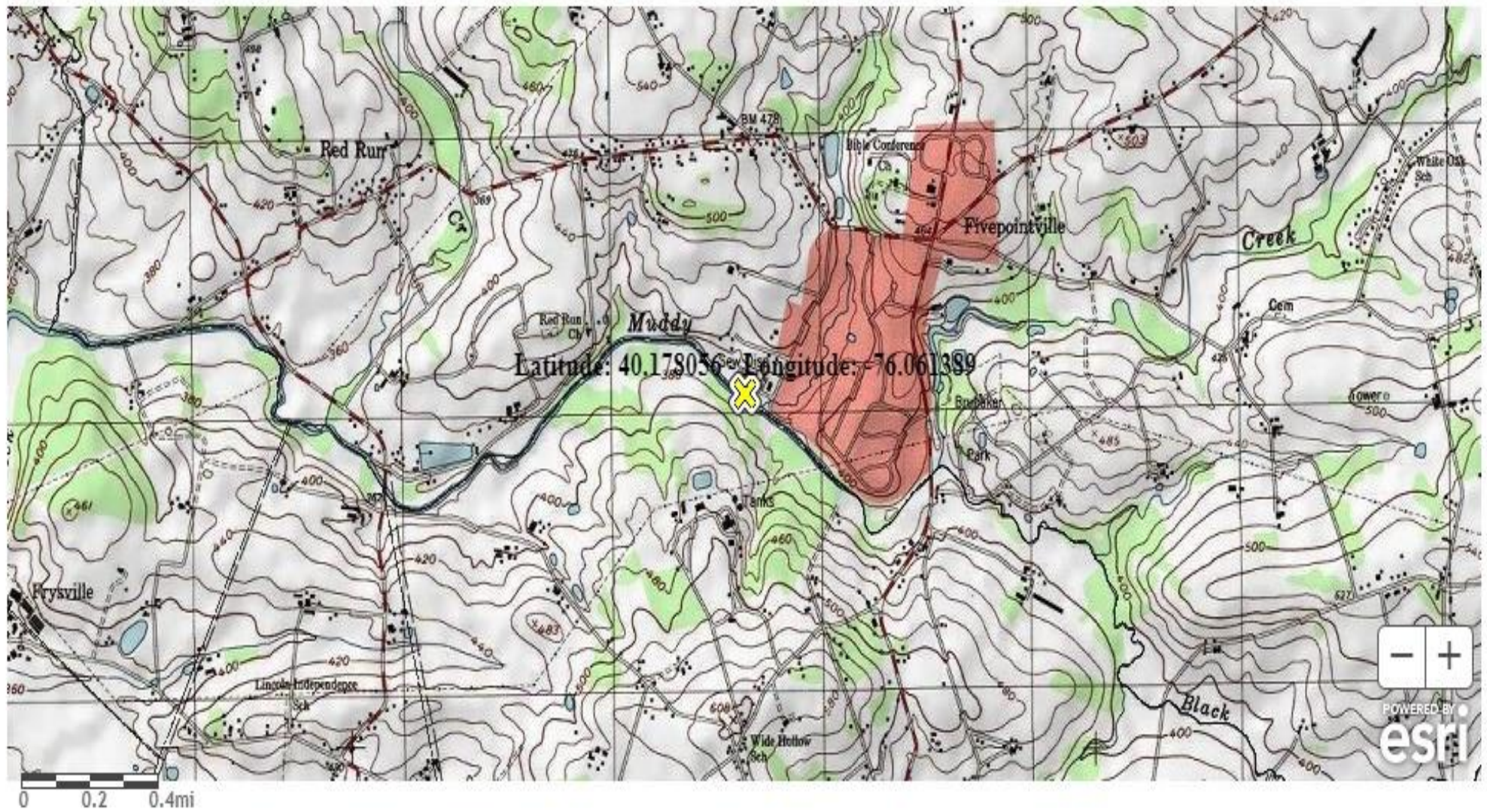
Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrite-Nitrate as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Net Total Nitrogen	XXX	8219	XXX	XXX	XXX	XXX	1/year	Calculation
Net Total Phosphorus	XXX	1096	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 001

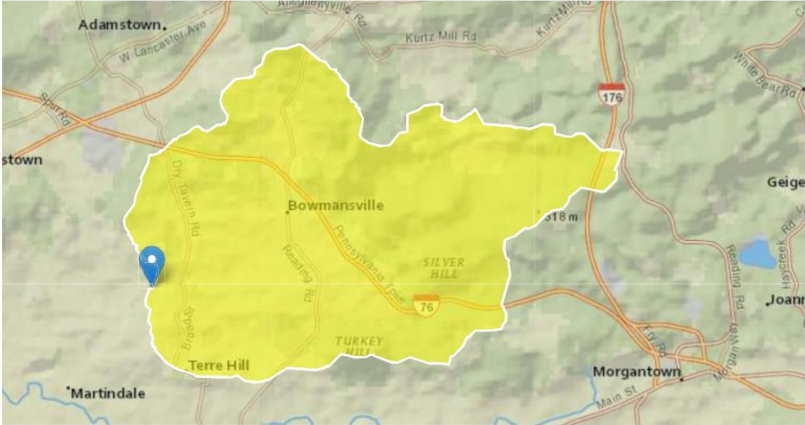
Other Comments: None

Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment)
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment)
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input checked="" type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 386-2000-002, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Design Stream Flows, 386-2000-003, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: BCW-PMT-033
<input type="checkbox"/>	Other:



NLCA - Beam Road WWTP PA0080438 Outfall 001

Region ID: PA
Workspace ID: PA20240111143525826000
Clicked Point (Latitude, Longitude): 40.17792, -76.06161
Time: 2024-01-11 09:35:48 -0500



Collapse All

Basin Characteristics					
Parameter Code	Parameter Description	Value	Unit		
BSLOPD	Mean basin slope measured in degrees	4.5958	degrees		
DRNAREA	Area that drains to a point on a stream	29.6	square miles		
ROCKDEP	Depth to rock	4.3	feet		
URBAN	Percentage of basin with urban development	5.1006	percent		

Low-Flow Statistics					
Low-Flow Statistics Parameters [Low Flow Region 1]					
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	29.6	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	4.5958	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.3	feet	4.13	5.21
URBAN	Percent Urban	5.1006	percent	0	89

Low-Flow Statistics Flow Report [Low Flow Region 1]					
PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)					
Statistic	Value	Unit	SE	ASEp	
7 Day 2 Year Low Flow	4.2	ft^3/s	46	46	
30 Day 2 Year Low Flow	5.73	ft^3/s	38	38	
7 Day 10 Year Low Flow	1.9	ft^3/s	51	51	
30 Day 10 Year Low Flow	2.67	ft^3/s	46	46	
90 Day 10 Year Low Flow	4.36	ft^3/s	41	41	

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/>)

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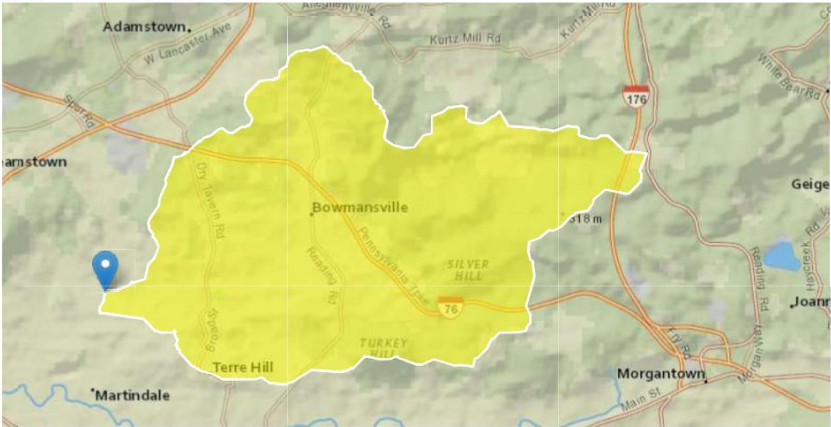
Application Version: 4.19.3

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

NLCA - Beam Road WWTP PA0080438 Downstream Pt.

Region ID: PA
Workspace ID: PA20240111144042742000
Clicked Point (Latitude, Longitude): 40.17691, -76.08474
Time: 2024-01-11 09:41:03 -0500



Collapse All

Basin Characteristics					
Parameter Code	Parameter Description	Value	Unit		
BSLOPD	Mean basin slope measured in degrees	4.5609	degrees		
DRNAREA	Area that drains to a point on a stream	30.6	square miles		
ROCKDEP	Depth to rock	4.3	feet		
URBAN	Percentage of basin with urban development	4.9488	percent		

Low-Flow Statistics					
Low-Flow Statistics Parameters [Low Flow Region 1]					
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	30.6	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	4.5609	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.3	feet	4.13	5.21
URBAN	Percent Urban	4.9488	percent	0	89
Low-Flow Statistics Flow Report [Low Flow Region 1]					
PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)					
Statistic	Value	Unit	SE	ASEp	
7 Day 2 Year Low Flow	4.29	ft^3/s	46	46	
30 Day 2 Year Low Flow	5.86	ft^3/s	38	38	
7 Day 10 Year Low Flow	1.94	ft^3/s	51	51	
30 Day 10 Year Low Flow	2.72	ft^3/s	46	46	
90 Day 10 Year Low Flow	4.46	ft^3/s	41	41	
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/)					

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Application Version: 4.19.3

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

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	7760	MUDDY CREEK	5.160	370.00	29.60	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)						Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.100	0.00	1.90	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
Beam Road WWTP	PA0080438	0.4500	0.4500	0.4500	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

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	7760	MUDDY CREEK	3.680	345.00	30.60	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)						Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.100	0.00	1.94	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

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
07J		7760				MUDDY CREEK						
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
Q7-10 Flow												
5.160	1.90	0.00	1.90	.6962	0.00320	.616	25.72	41.78	0.16	0.552	21.34	7.00
Q1-10 Flow												
5.160	1.22	0.00	1.22	.6962	0.00320	NA	NA	NA	0.14	0.655	21.82	7.00
Q30-10 Flow												
5.160	2.58	0.00	2.58	.6962	0.00320	NA	NA	NA	0.19	0.484	21.06	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
07J	7760	MUDDY CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
	5.160 Beam Road WW	14.41	39.59	14.41	39.59	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
	5.160 Beam Road WW	1.76	8.3	1.76	8.3	1	0

Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
	5.16 Beam Road WWTP	25	25	8.3	8.3	5	5	0	0

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
07J	7760	MUDDY CREEK		
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
5.160	0.450	21.341	7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
25.724	0.616	41.785	0.164	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
8.17	1.116	2.23	0.776	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
7.373	5.144	Tsivoglou	5	
<u>Reach Travel Time (days)</u>	Subreach Results			
0.552	TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
	0.055	7.65	2.13	6.71
	0.110	7.17	2.04	6.27
	0.166	6.71	1.96	6.00
	0.221	6.29	1.88	5.84
	0.276	5.89	1.80	5.78
	0.331	5.51	1.72	5.77
	0.386	5.16	1.65	5.81
	0.441	4.84	1.58	5.88
	0.497	4.53	1.51	5.97
	0.552	4.24	1.45	6.08

WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>	<u>Stream Name</u>				
07J		7760	MUDDY 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)
5.160	Beam Road WWTP	PA0080438	0.450	CBOD5	25		
				NH3-N	8.3	16.6	
				Dissolved Oxygen			5



Discharge Information

Instructions Discharge Stream

Facility: **NLCA - Beam Road WWTP** NPDES Permit No.: **PA0080438** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Sewage Effluent**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q ₇₋₁₀	Q _h
0.45	100	7						

				0 if left blank		0.5 if left blank		0 if left blank			1 if left blank					
Discharge Pollutant				Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl	
Group 1	Total Dissolved Solids (PWS)	mg/L		745												
	Chloride (PWS)	mg/L		293												
	Bromide	mg/L		0.13												
	Sulfate (PWS)	mg/L		73.6												
	Fluoride (PWS)	mg/L														
Group 2	Total Aluminum	µg/L														
	Total Antimony	µg/L														
	Total Arsenic	µg/L														
	Total Barium	µg/L														
	Total Beryllium	µg/L														
	Total Boron	µg/L														
	Total Cadmium	µg/L														
	Total Chromium (III)	µg/L														
	Hexavalent Chromium	µg/L														
	Total Cobalt	µg/L														
	Total Copper	µg/L		6												
	Free Cyanide	µg/L														
	Total Cyanide	µg/L														
	Dissolved Iron	µg/L														
	Total Iron	µg/L														
	Total Lead	µg/L	<	1												
	Total Manganese	µg/L														
	Total Mercury	µg/L														
	Total Nickel	µg/L														
	Total Phenols (Phenolics) (PWS)	µg/L														
	Total Selenium	µg/L														
	Total Silver	µg/L														
	Total Thallium	µg/L														
	Total Zinc	µg/L		35												
	Total Molybdenum	µg/L														
	Acrolein	µg/L	<													
	Acrylamide	µg/L	<													
	Acrylonitrile	µg/L	<													
	Benzene	µg/L	<													
	Bromoform	µg/L	<													

Group 3	Carbon Tetrachloride	µg/L	<																	
	Chlorobenzene	µg/L																		
	Chlorodibromomethane	µg/L	<																	
	Chloroethane	µg/L	<																	
	2-Chloroethyl Vinyl Ether	µg/L	<																	
	Chloroform	µg/L	<																	
	Dichlorobromomethane	µg/L	<																	
	1,1-Dichloroethane	µg/L	<																	
	1,2-Dichloroethane	µg/L	<																	
	1,1-Dichloroethylene	µg/L	<																	
	1,2-Dichloropropane	µg/L	<																	
	1,3-Dichloropropylene	µg/L	<																	
	1,4-Dioxane	µg/L	<																	
	Ethylbenzene	µg/L	<																	
	Methyl Bromide	µg/L	<																	
	Methyl Chloride	µg/L	<																	
	Methylene Chloride	µg/L	<																	
	1,1,2,2-Tetrachloroethane	µg/L	<																	
	Tetrachloroethylene	µg/L	<																	
	Toluene	µg/L	<																	
	1,2-trans-Dichloroethylene	µg/L	<																	
Group 4	1,1,1-Trichloroethane	µg/L	<																	
	1,1,2-Trichloroethane	µg/L	<																	
	Trichloroethylene	µg/L	<																	
	Vinyl Chloride	µg/L	<																	
	2-Chlorophenol	µg/L	<																	
	2,4-Dichlorophenol	µg/L	<																	
	2,4-Dimethylphenol	µg/L	<																	
	4,6-Dinitro-o-Cresol	µg/L	<																	
	2,4-Dinitrophenol	µg/L	<																	
	2-Nitrophenol	µg/L	<																	
Group 5	4-Nitrophenol	µg/L	<																	
	p-Chloro-m-Cresol	µg/L	<																	
	Pentachlorophenol	µg/L	<																	
	Phenol	µg/L	<																	
	2,4,6-Trichlorophenol	µg/L	<																	
	Acenaphthene	µg/L	<																	
	Acenaphthylene	µg/L	<																	
	Anthracene	µg/L	<																	
	Benzidine	µg/L	<																	
	Benzo(a)Anthracene	µg/L	<																	
	Benzo(a)Pyrene	µg/L	<																	
	3,4-Benzofluoranthene	µg/L	<																	
	Benzo(ghi)Perylene	µg/L	<																	
	Benzo(k)Fluoranthene	µg/L	<																	
	Bis(2-Chloroethoxy)Methane	µg/L	<																	
	Bis(2-Chloroethyl)Ether	µg/L	<																	
	Bis(2-Chloroisopropyl)Ether	µg/L	<																	
	Bis(2-Ethylhexyl)Phthalate	µg/L	<																	
	4-Bromophenyl Phenyl Ether	µg/L	<																	
	Butyl Benzyl Phthalate	µg/L	<																	
Group 5	2-Chloronaphthalene	µg/L	<																	
	4-Chlorophenyl Phenyl Ether	µg/L	<																	
	Chrysene	µg/L	<																	
	Dibenzo(a,h)Anthracene	µg/L	<																	
	1,2-Dichlorobenzene	µg/L	<																	
	1,3-Dichlorobenzene	µg/L	<																	
	1,4-Dichlorobenzene	µg/L	<																	
	3,3-Dichlorobenzidine	µg/L	<																	
	Diethyl Phthalate	µg/L	<																	
	Dimethyl Phthalate	µg/L	<																	
Group 5	Di-n-Butyl Phthalate	µg/L	<																	
	2,4-Dinitrotoluene	µg/L	<																	

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

NLCA - Beam Road WWTP, NPDES Permit No. PA0080438, Outfall 001

Instructions Discharge Stream

Receiving Surface Water Name: **Muddy Creek** No. Reaches to Model: **1**

- ☒ Statewide Criteria
☐ Great Lakes Criteria
☐ ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi ²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	007760	5.16	370	29.6			Yes
End of Reach 1	007760	3.68	345	30.6			Yes

Q₇₋₁₀

Location	RMI	LFY (cfs/mi ²)*	Flow (cfs)		W/D Ratio	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary					Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	5.16	0.1	1.9						250.9	8.4		8.4		
End of Reach 1	3.68	0.1	1.94						250.9	8.4		8.4		

Q_h

Location	RMI	LFY (cfs/mi ²)*	Flow (cfs)		W/D Ratio	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary					Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	5.16													
End of Reach 1	3.68													



Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

NLCA - Beam Road WWTP, NPDES Permit No. PA0080438, Outfall 001

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

All

Inputs

Results

Limits

☐ Hydrodynamics

☒ Wasteload Allocations

☒ AFC CCT (min): 15 PMF: 0.918 Analysis Hardness (mg/l): 207.87 Analysis pH: 7.50

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	26.779	27.9	97.8	Chem Translator of 0.96 applied
Total Lead	0	0		0	141.832	207	727	Chem Translator of 0.684 applied
Total Zinc	0	0		0	217.831	223	781	Chem Translator of 0.978 applied

☒ CFC CCT (min): 17.781 PMF: 1 Analysis Hardness (mg/l): 210.44 Analysis pH: 7.53

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	16.913	17.6	65.7	Chem Translator of 0.96 applied
Total Lead	0	0		0	5.599	8.2	30.6	Chem Translator of 0.683 applied
Total Zinc	0	0		0	221.908	225	839	Chem Translator of 0.986 applied

☒ THH CCT (min): 17.781 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	

Total Copper	0	0	0	0	N/A	N/A	N/A	N/A	N/A
Total Lead	0	0	0	0	N/A	N/A	N/A	N/A	N/A
Total Zinc	0	0	0	0	N/A	N/A	N/A	N/A	N/A

☒ **CRL** CCT (min): 9.971 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0	0	0	N/A	N/A	N/A	
Chloride (PWS)	0	0	0	0	N/A	N/A	N/A	
Sulfate (PWS)	0	0	0	0	N/A	N/A	N/A	
Total Copper	0	0	0	0	N/A	N/A	N/A	
Total Lead	0	0	0	0	N/A	N/A	N/A	
Total Zinc	0	0	0	0	N/A	N/A	N/A	

☒ Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

Pollutants	Mass Limits			Concentration Limits			Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			

☒ Other Pollutants without Limits or Monitoring

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Copper	62.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	N/A	N/A	Discharge Conc < TQL
Total Zinc	501	µg/L	Discharge Conc ≤ 10% WQBEL

