

Application Type Renewal
Facility Type Municipal
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0086266
APS ID 275012
Authorization ID 1417721

Applicant and Facility Information

Applicant Name	<u>Northern Lancaster County Authority</u>	Facility Name	<u>Northern Lancaster County Authority - Kramer Mill Road WWTP</u>
Applicant Address	<u>983 Beam Road</u> <u>Denver, PA 17517-8946</u>	Facility Address	<u>1332 Kramer Mill Road</u> <u>Denver, PA 17517-8919</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>445948</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>November 4, 2022</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>November 22, 2022</u>	If No, Reason	<u></u>
Purpose of Application	<u>NPDES Renewal.</u>		

Summary of Review

Northern Lancaster County Authority 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 June 29, 2018 and became effective on July 1, 2018, authorizing discharge of treated sewage from Kramer Mill Road WWTP into Little Muddy Creek. The existing permit expiration date is June 30, 2023.

Changes in this renewal: Fecal coliform instantaneous maximum limits have been added to the permit. E. Coli monitoring has been added to the permit.

Sludge use and disposal description and location(s): Sludge holding tank with offsite disposal

Supplemental information for this facility is provided 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-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	April 12, 2023
X		Maria D. Bebenek for Daniel W. Martin, P.E. / Environmental Engineer Manager	April 13, 2023

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>001</u>	Design Flow (MGD)	<u>.007</u>
Latitude	<u>40° 12' 14"</u>	Longitude	<u>76° 4' 49"</u>
Quad Name	<u></u>	Quad Code	<u></u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Little Muddy Creek (WWF)</u>	Stream Code	<u>7765</u>
NHD Com ID	<u>57461621</u>	RMI	<u>3.2</u>
Drainage Area	<u>12.7 mi²</u>	Yield (cfs/mi ²)	<u>0.0618</u>
Q ₇₋₁₀ Flow (cfs)	<u>0.785</u>	Q ₇₋₁₀ Basis	<u>USGS PA StreamStats</u>
Elevation (ft)	<u>400</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>7-J</u>	Chapter 93 Class.	<u>WWF, MF</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, Habitat Alterations</u>		
Source(s) of Impairment	<u>Source Unknown, Habitat Modification – Other Than Hydromodification</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>25.5</u>

Changes Since Last Permit Issuance: USGS PA StreamStats provided a drainage area of 12.7 mi² and a Q₇₋₁₀ of 0.785 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	Extended Aeration	UV	0.007
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.007	14.01	Not Overloaded	Aerated Sludge Holding	Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: The treatment process is as follows:

Barscreen - Equalization Tank – Two Aeration Tanks – Clarifier – Ultraviolet Disinfection – Post Settling – Post Aeration – Aerated Sludge Holding Tank – Outfall 001 to Little Muddy Creek

Compliance History	
Summary of DMRs:	A summary of past DMR effluent data is presented on the next page of this fact sheet.
Summary of Inspections:	<p>12/18/2018: A routine partial inspection was conducted. No issues were noted at the WWTP. There were no solids visible in the old chlorine contact tank.</p> <p>5/23/2019: A routine inspection was conducted. The clarifier skimmer was not working at the start of the inspection. The operator made adjustments and the skimmer was functional by the end of the inspection. The final effluent tank was clear and aerated. Field results were within permitted limits.</p> <p>6/4/2020: An administrative inspection was conducted. All treatment units were online and operable. No other issues were noted.</p>

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

Compliance History

DMR Data for Outfall 001 (from February 1, 2022 to January 31, 2023)

Parameter	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22
Flow (MGD) Average Monthly	0.00484	0.00435	0.00381	0.00339	0.00329	0.00343	0.00326	0.00330	0.00380	0.00427	0.00400	0.00472
Flow (MGD) Daily Maximum	0.00592	0.00566	0.00543	0.00472	0.00464	0.00413	0.00459	0.00482	0.00665	0.00799	0.00477	0.00746
pH (S.U.) Instantaneous Minimum	6.8	6.8	7.0	7.1	7.1	7.1	7.2	7.1	7.0	6.9	6.8	7.0
pH (S.U.) Instantaneous Maximum	7.6	7.3	7.4	7.7	7.8	7.8	8.4	7.7	7.6	7.4	7.5	7.5
DO (mg/L) Instantaneous Minimum	9.2	9.3	7.8	8.6	7.5	7.5	7.7	7.8	8.8	9.3	9.1	9.8
CBOD5 (lbs/day) Average Monthly	0.21	0.07	0.09	0.07	0.1	0.08	0.1	0.1	0.06	0.1	0.4	0.2
CBOD5 (lbs/day) Weekly Average	0.21	0.07	0.09	0.07	0.1	0.08	0.1	0.1	0.06	0.1	0.4	0.2
CBOD5 (mg/L) Average Monthly	5.0	< 2.0	2.8	< 2.0	3.3	3.4	3.65	3.7	2	3.8	11.4	5.7
CBOD5 (mg/L) Weekly Average	5.0	< 2.0	2.8	< 2.0	3.3	3.4	3.65	3.7	2	3.8	11.4	5.7
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	13.5	8.2	9.5	10.3	9.1	5.0	9.4	7.3	8.6	11.7	20.5	14.6
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	14.1	8.7	11.7	10.8	9.2	6.0	11.0	7.8	8.9	14.3	37.1	14.6
BOD5 (mg/L) Raw Sewage Influent Average Monthly	323	239	308	330	325	207	281	301	297	337	594	366
TSS (lbs/day) Average Monthly	0.17	0.12	0.12	0.03	0.1	0.3	0.1	0.1	0.04	0.2	0.2	0.2

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TSS (lbs/day) Raw Sewage Influent Average Monthly	15.7	13.6	8.0	10.7	8.7	5.6	8.8	6.0	7.7	11.3	17.9	12.6
TSS (lbs/day) Raw Sewage Influent Daily Maximum	19.3	17.0	8.7	14.6	10.2	5.7	10.8	6.4	8.3	11.4	28.1	121.6
TSS (lbs/day) Weekly Average	0.17	0.12	0.12	0.03	0.1	0.3	0.1	0.1	0.04	0.2	0.2	0.2
TSS (mg/L) Average Monthly	4.0	3.5	4.0	< 1.0	4.5	10.5	4.0	2.5	1.5	5.5	4.3	6.0
TSS (mg/L) Raw Sewage Influent Average Monthly	379	400	260	315	308	230	260	245	265	336	515	317
TSS (mg/L) Weekly Average	4.0	3.5	4.0	< 1.0	4.5	10.5	4.0	2.5	1.5	5.5	4.3	6.0
Fecal Coliform (No./100 ml) Average Monthly	< 2.0	< 2.4	< 2.0	3.2	< 2.0	4.9	< 2.0	< 2.0	< 2.4	7	2.7	< 2.0
Nitrate-Nitrite (mg/L) Daily Maximum		36.6			20.2			25.2			50.0	
Total Nitrogen (mg/L) Daily Maximum		37.58			20.7			26.58			51.48	
Ammonia (mg/L) Daily Maximum		< 0.02			0.04			0.41			< 0.1	
TKN (mg/L) Daily Maximum		0.98			0.50			1.38			1.48	
Total Phosphorus (mg/L) Daily Maximum		6.10			6.83			6.64			4.96	

Existing Effluent Limitations and Monitoring Requirements

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

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
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Suspended Solids (TSS) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
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
Carbonaceous Biochemical Oxygen Demand (CBOD5)	1.5	2.3	XXX	25	40	50	2/month	8-Hr Composite
Total Suspended Solids	1.8	2.6	XXX	30	45	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	XXX	XXX	2/month	Grab
Ammonia—N	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	8-Hr Composite
Kjeldahl—N	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	8-Hr Composite
Nitrate-Nitrite—N	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	Calculation
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	8-Hr Composite

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

at Outfall 001

Development of Effluent Limitations

Outfall No. <u>001</u>	Design Flow (MGD) <u>.007</u>
Latitude <u>40° 12' 14"</u>	Longitude <u>76° 4' 49"</u>
Wastewater Description: <u>Sewage Effluent</u>	

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 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 CBOD₅ limit is the same as the limit in the existing permit, which will remain. The existing permit only had an NH₃-N monitoring requirement. DEP's Standard Operating Procedure (SOP) No. BPNPSM-PMT-033 (Establishing Effluent Limitations for Individual Sewage Permits) recommends, for existing discharges, a year-round monitoring requirement for ammonia-nitrogen at a minimum when WQM modeling results for summer indicates that an average monthly limit of 25 mg/L is acceptable. This is consistent with the monitoring requirement for ammonia, which will remain in the permit.

There are no industrial/commercial users contributing industrial wastewater to the system and Northern Lancaster County Authority 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.

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.

This facility is considered a Phase 5 non-significant facility with a design flow less than 0.2 MGD but greater than 0.002 MGD. According to the Phase 3 WIP, TN and TP monitoring is recommended for this facility, which is consistent with the existing 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.

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 have been added to the renewal 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.

BOD₅ / Total Suspended Solids (TSS)

As a result of negotiations between the Department and EPA, raw sewage influent monitoring for BOD₅ and TSS is required for any POTWs; therefore, existing influent monitoring requirements will remain in the draft permit. The monitoring requirements must have the same monitoring frequencies and sample types as those proposed for BOD₅ and TSS effluent sampling.

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 due to pathogens from an unknown source. There is an aquatic life impairment due to habitat alterations from habitat modification – other than hydromodification.

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” (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 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5	1.5	2.3	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 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	1.8	2.6	XXX	30	45	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	Calculation
Ammonia	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	8-Hr Composite
TKN	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	8-Hr Composite

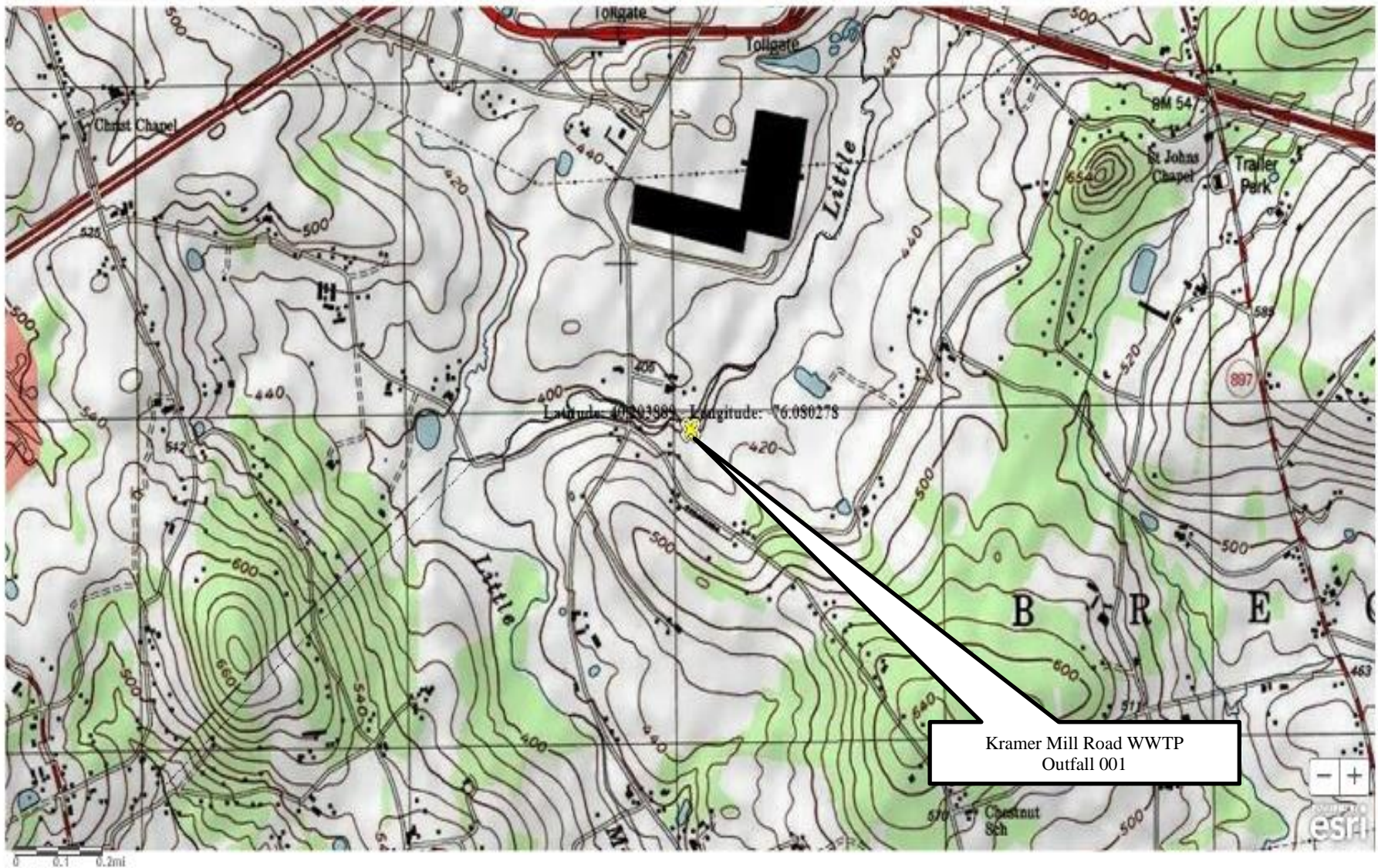
Outfall 001 , Continued (from Permit Effective Date through Permit Expiration Date)

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 Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	8-Hr Composite

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 [redacted])
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment [redacted])
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [redacted])
<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, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 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, 391-2000-002, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 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, 391-2000-007, 6/2004.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
<input type="checkbox"/>	Design Stream Flows, 391-2000-023, 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, 391-2000-024, 10/98.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input type="checkbox"/>	SOP: BCW-PMT-033
<input type="checkbox"/>	Other: [redacted]



NLCA - Kramer Mill Road PA0086266 Outfall 001

Region ID: PA
 Workspace ID: PA20230405144253732000
 Clicked Point (Latitude, Longitude): 40.20402, -76.08071
 Time: 2023-04-05 10:43:15 -0400



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> Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	4.8739	degrees
DRNAREA	Area that drains to a point on a stream	12.7	square miles
ROCKDEP	Depth to rock	4.2	feet
URBAN	Percentage of basin with urban development	6.4534	percent

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [99.9 Percent (12.7 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	12.7	square miles	4.78	1150
BSLOPD	Mean Basin Slope	4.8739	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.2	feet	4.13	5.21
URBAN	Percent Urban	6.4534	percent	0	89

Low-Flow Statistics Flow Report [99.9 Percent (12.7 square miles) Low Flow Region 1]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.79	ft ³ /s	46	46
30 Day 2 Year Low Flow	2.46	ft ³ /s	38	38
7 Day 10 Year Low Flow	0.785	ft ³ /s	51	51
30 Day 10 Year Low Flow	1.12	ft ³ /s	46	46
90 Day 10 Year Low Flow	1.83	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: 4.14.0

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

Permit No. PA0086266

NLCA - Kramer Mill Road PA0086266 Downstream Point

Region ID: PA
Workspace ID: PA20230405150020504000
Clicked Point (Latitude, Longitude): 40.20285, -76.09075
Time: 2023-04-05 11:00:43 -0400



 Collapse All

> Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	4.8489	degrees
DRNAREA	Area that drains to a point on a stream	12.8	square miles
ROCKDEP	Depth to rock	4.2	feet
URBAN	Percentage of basin with urban development	6.383	percent

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [99.9 Percent (12.8 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	12.8	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	4.8489	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.2	feet	4.13	5.21
URBAN	Percent Urban	6.383	percent	0	89

Low-Flow Statistics Flow Report [99.9 Percent (12.8 square miles) Low Flow Region 1]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.79	ft ³ /s	46	46
30 Day 2 Year Low Flow	2.46	ft ³ /s	38	38
7 Day 10 Year Low Flow	0.783	ft ³ /s	51	51
30 Day 10 Year Low Flow	1.12	ft ³ /s	46	46
90 Day 10 Year Low Flow	1.83	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: 4.14.0

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

Permit No. PA0086266

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	7765	LITTLE MUDDY CREEK	3.200	400.00	12.70	0.00000	0.00	<input checked="" type="checkbox"/>

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		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.100	0.00	0.79	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
Kramer Mill	PA0086266	0.0070	0.0070	0.0070	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. PA0086266

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	7765	LITTLE MUDDY CREEK	2.550	390.00	12.80	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.100	0.00	0.78	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		7765				LITTLE MUDDY CREEK						
RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
3.200	0.79	0.00	0.79	.0108	0.00291	.509	15.46	30.37	0.10	0.393	20.07	7.00
Q1-10 Flow												
3.200	0.50	0.00	0.50	.0108	0.00291	NA	NA	NA	0.08	0.503	20.11	7.00
Q30-10 Flow												
3.200	1.07	0.00	1.07	.0108	0.00291	NA	NA	NA	0.12	0.332	20.05	7.00

Permit No. PA0086266

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	7765	LITTLE 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
3.200	Kramer Mill	16.61	50	16.61	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
3.200	Kramer Mill	1.88	25	1.88	25	0	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)		
3.200	Kramer Mill	25	25	25	25	5	5	0	0

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
07J	7765	LITTLE MUDDY CREEK		
<hr/>				
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
3.200	0.007	20.068	7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
15.464	0.509	30.368	0.101	
<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>	
2.31	0.172	0.34	0.704	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
8.199	16.309	Owens	5	
<u>Reach Travel Time (days)</u>	Subreach Results			
0.393	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.039	2.30	0.33	8.23
	0.079	2.28	0.32	8.23
	0.118	2.27	0.31	8.23
	0.157	2.25	0.30	8.23
	0.197	2.24	0.30	8.23
	0.236	2.22	0.29	8.23
	0.275	2.21	0.28	8.23
	0.314	2.19	0.27	8.23
	0.354	2.18	0.27	8.23
	0.393	2.16	0.26	8.23

Permit No. PA0086266

WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
07J		7765		LITTLE 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)
3.200	Kramer Mill	PA0086266	0.007	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5