pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0043494**
Facility Type	**Municipal**	APS ID	**36042**
Major / Minor	**Minor**	Authorization ID	**1384874**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Loysville Village Municipal Authority** **Perry County**	Facility Name	**Loysville STP**
Applicant Address	PO Box 133 Loysville, PA 17047-0133	Facility Address	101 Bunny Lane Loysville, PA 17047
Applicant Contact	Dean Robinson	Facility Contact	Jennie Weary
Applicant Phone	(717) 789-3401	Facility Phone	(717) 789-4420
Client ID	70020	Site ID	451930
Ch 94 Load Status	Existing Hydraulic and Organic Overload	Municipality	Tyrone Township
Connection Status	No Exceptions Allowed	County	Perry
Date Application Received	February 10, 2022	EPA Waived?	No
Date Application Accepted	February 15, 2022	If No, Reason	

Purpose of Application: This is an application for NPDES renewal.

Approve	Deny	Signatures	Date
X		Nicholas Hong, P.E. / Environmental Engineering Specialist Nick Hong (via electronic signature)	February 23, 2022
x		Daniel W. Martin, P.E. / Environmental Engineer Manager Maria D. Bebenek for	February 23, 2022
x		Maria D. Bebenek, P.E. / Environmental Program Manager Maria D. Bebenek	February 23, 2022

Summary of Review

The application submitted by the applicant requests a NPDES renewal permit for the Loysville Sewage Treatment Plant located at 607 Weavers Mill Road, Loysville, PA 17047 in Perry County, municipality of Tyrone. The existing permit became effective on July 1, 2018 and expires(d) on June 30, 2023. The application for renewal was received by DEP Southcentral Regional Office (SCRO) on February 10, 2022. The NPDES permit was processed for renewal early to facilitate the applicant to obtain funding for their proposed upgrade.

The purpose of this Fact Sheet is to present the basis of information used for establishing the proposed NPDES permit effluent limitations. The Fact Sheet includes a description of the facility, a description of the facility's receiving waters, a description of the facility's receiving waters attainment/non-attainment assessment status, and a description of any changes to the proposed monitoring/sampling frequency. Section 6 provides the justification for the proposed NPDES effluent limits derived from technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), total maximum daily loading (TMDL), antidegradation, anti-backsliding, and/or whole effluent toxicity (WET). A brief summary of the outlined descriptions has been included in the Summary of Review section.

Currently, the subject facility is a 0.11 MGD (current) average annual design flow treatment facility. The current hydraulic design flow for the facility is 0.11 MGD.

The proposed average annual design flow is 0.15 MGD and the hydraulic design capacity shall be 0.25 MGD. The applicant anticipates proposed upgrades to the treatment facility in the next five years.

A WQM permit for the upgrades was issued by DEP under WQM # 5070402 A-1 on June 21, 2018 and WQM #5070402 A-2 on February 18, 2021. The NPDES application has been processed as a Minor Sewage Facility (Level 2) due to the type of sewage and the design flow rate for the facility. The applicant disclosed the Act 14 requirement to Perry County Commissioners and Tyrone Township Supervisors and the notice was received by the parties on February 8, 2022. A planning approval letter was issued by DEP on March 3, 2017 under DEP Code A1-50928- ACT as the facility is expanding.

Utilizing the DEP's web-based Emap-PA information system, the receiving waters has been determined to be Muddy Run. The sequence of receiving streams that Muddy Run discharges into are Sherman Creek and the Susquehanna River which eventually drains into the Chesapeake Bay. The subject site is subject to the Chesapeake Bay implementation requirements. The receiving water has protected water usage for warm water fishes (WWF) and migratory fishes (MF). No Class A Wild Trout fisheries are impacted by this discharge. The absence of high quality and/or exceptional value surface waters removes the need for an additional evaluation of anti-degradation requirements.

The Muddy Run is a Category 2 and 5 stream listed in the 2020 Integrated List of All Waters (formerly 303d Listed Streams). This stream is an attaining stream that supports aquatic life. The receiving stream is also impaired for recreational purposes due to pathogens from agriculture. The receiving waters is not subject to a total maximum daily load (TMDL) plan to improve water quality in the subject facility's watershed.

The existing permit and proposed permit differ as summarized below.

- **Due to the EPA Triennial review, E, Coli shall be monitored 1x/month.**
- **Copper, lead, and zinc shall be monitored on a 2x/yr basis.**
- **<u>CHANGES TO OCCUR AT THE COMMENCEMENT OF UPGRADE:</u> Due to the proposed flow rate of 0.15 MGD, loading rate changes will be adjusted due to flow rate. Ammonia concentration limit will be reduced to 2 mg/l. This will take effect at the commencement of the proposed upgrade.**

Sludge use and disposal description and location(s): Sewage Sludge disposed at Harrisburg AWTF in Dauphin County, City of Harrisburg and Derry Township, Dauphin County and Annville STP, Lebanon, Annville Township

The proposed permit will expire five (5) years from the effective date.

Based on the review in this report, it is recommended that the permit be drafted. 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

Summary of Review

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.

Any additional information or public review of documents associated with the discharge or facility may be available at PA DEP Southcentral Regional Office (SCRO), 909 Elmerton Avenue, Harrisburg, PA 17110. To make an appointment for file review, contact the SCRO File Review Coordinator at 717.705.4700.

1.0 Applicant

1.1 General Information

This fact sheet summarizes PA Department of Environmental Protection's review for the NPDES renewal for the following subject facility.

Facility Name:	Loysville Sewage Treatment Plant
NPDES Permit #	PA0043494
Physical Address:	607 Weavers Mill Road Loysville, PA, 17047
Mailing Address:	PO Box 133 Loysville, PA 17047
Contact:	Dean Robinson Chairman (717) 789-3401
Consultant:	Tim Lester Project Manager Entech Engineering, Inc. 315 Clay Road Lititz, PA 17543 (717) 656-6666 tlester@entecheng.com

1.2 Permit History

Description of Facility

The Loysville Village Municipal Authority (Authority) owns and operates the wastewater treatment plant (WWTP) serving the Village of Loysville and the Commonwealth's Loysville Youth Development Center in Tyrone Township, Perry County, Pennsylvania.

The WWTP was designed to accommodate a 0.110 MGD hydraulic load and a 187 lb. (BOD5) per day organic load. The plant began operations on August 15, 1978, and operates under NPDES Permit No. 0043494.

Under WQM #5070401 A-1 and A-2, the facility shall expand the wastewater treatment plant with an average annual flow rate of 0.15 MGD and a hydraulic design capacity of 0.25 MGD. The organic loading shall be 439 lbs BOD/day.

Permit submittal included the following information.

- NPDES Application
- Flow Diagrams
- Influent Sample Data
- Effluent Sample Data

2.0 Treatment Facility Summary

2.1.1 Site location

The physical address for the facility is 607 Weavers Mill Road, Loysville, PA, 17047. A topographical and an aerial photograph of the facility are depicted as Figure 1 and Figure 2.

Figure 1: Topographical map of the subject facility

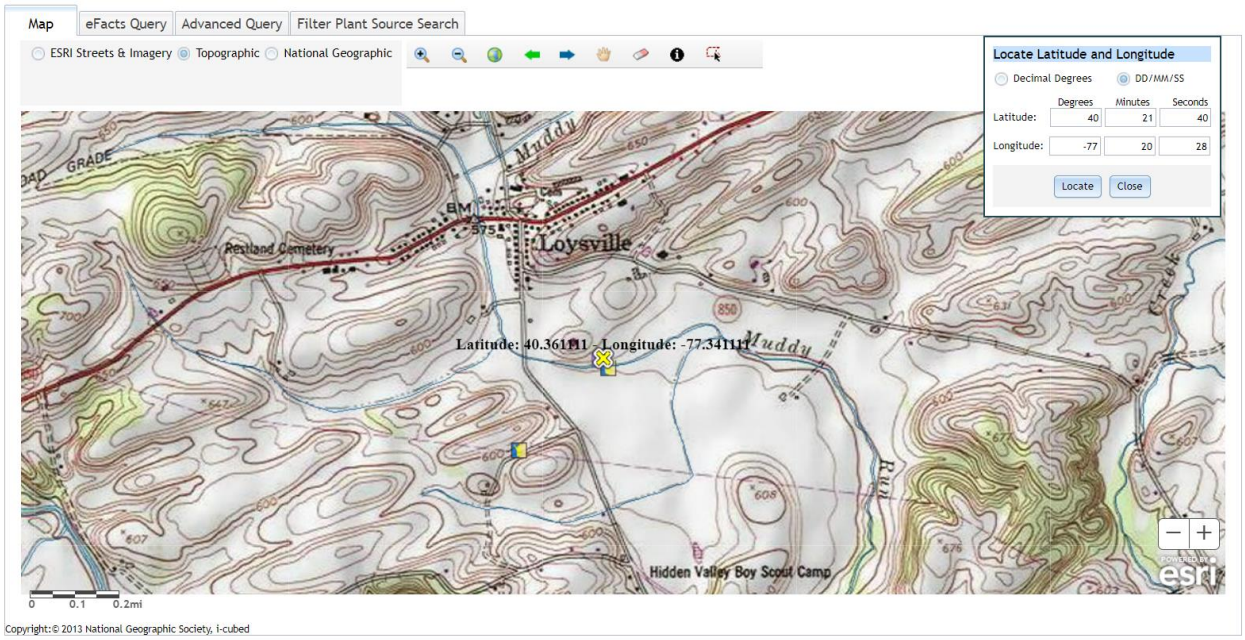
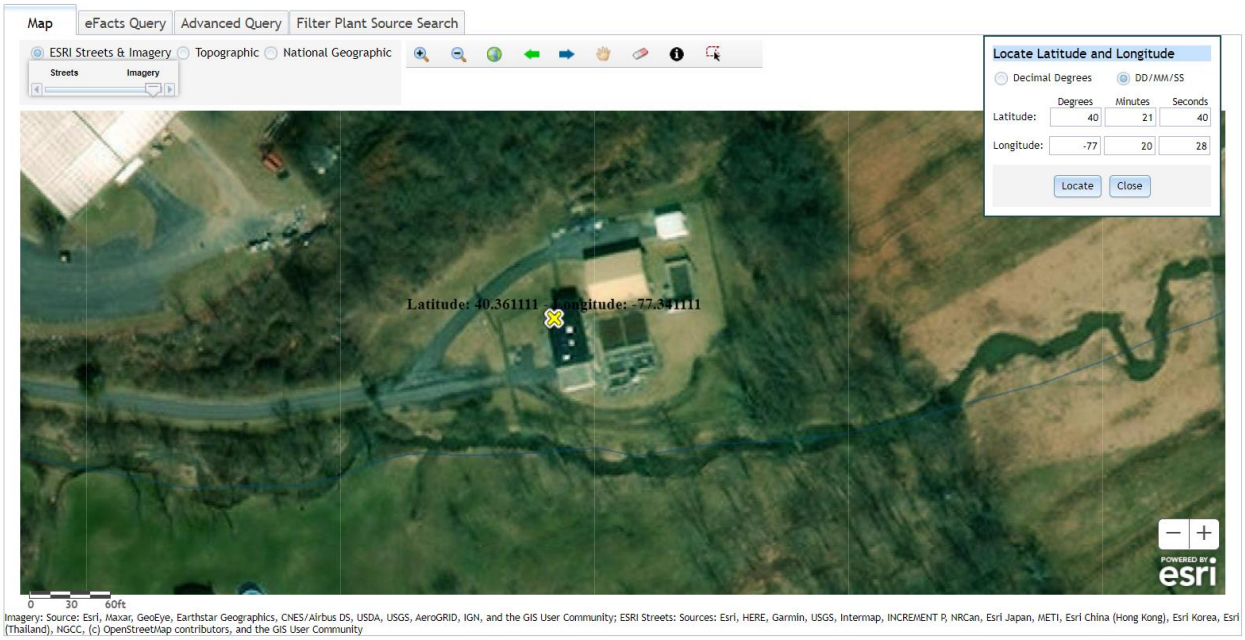


Figure 2: Aerial Photograph of the subject facility



2.1.2 Sources of Wastewater/Stormwater

Sources of Water

The WWTP receives 100% of wastewater from Loysville Borough and Tyrone Township.

The facility receives wastewater contributions from the following industrial/commercial users.

Business Name	Average Wastewater Flow (gpd)
Binger Insurance	255
Enck's Sunoco & Garage	414
Car Wash (3411 SVR)	289
Leid's Produce Market	255
Collin's Construction	255
Kreider's Mill	255
Perry Power Equipment	255
Wilson's Repair (Felicia Gipe)	255
Robinson's Bargain Store	255
Family Dollar	510
SBS Products	255
Century Link	255
Daycare	255
Smoke Shop	255
Philip Cook Veterinarian	255
Nickel Funeral Home	300
Pennian Bank	255
RMB Insurance	255
Kistler's Butcher Shop	295
Dr. Jon Noll Optometrist	255
Lebo's Barber	181
PDS Grocery	255
West Perry School District Warehouse	255
Perry Health Center	1400
Post Office & Magistrate (C&R Partnership)	375
Tressler Memorial Church	255
Loysville Community Club	255
Total	**8609**

The facility did not receive any hauled in wastes in the last three years and also does not anticipate any hauled-in wastes in the next five years.

2.2 Description of Wastewater Treatment Process

Current Treatment Process:

The subject facility is a 0.11 MGD average annual design flow facility. The subject facility treats wastewater using the following treatment units

Influent → wet well with muffin monster → influent pumps → EQ basin →splitter box → aeration tanks → clarifier → chlorine contact tank → dechlorination → discharge to Muddy Run through outfall 001

The facility is being evaluated for flow, pH, dissolved oxygen, CBOD5, TSS, TRC, fecal coliform, nitrogen species, and phosphorus. The existing permits limits for the facility is summarized in Section 2.4.

The current treatment process is summarized in the table.

Treatment Facility Summary (Current)				
Treatment Facility Name: Loysville STP				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary with Ammonia and Phosphorus	Activated sludge	Hypochlorite	0.11
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.11	187	Existing Hydraulic Overload		Combination of methods

Proposed Treatment Process:

The subject facility shall expand to a 0.15 MGD average annual design flow facility. The hydraulic design capacity shall be 0.25 MGD. The proposed plant will utilize UV disinfection.

The proposed treatment process comprises of the following units:

Influent Pump Station -> Grinder -> Vertical Fine Screen -> Pre-Equalization -> Extended Aeration -> SBR -> Post-Equalization -> UV Disinfection -> Clarifier -> Aerobic Digester

The proposed treatment process is summarized in the table.

Treatment Facility Summary (Proposed)				
Treatment Facility Name: Loysville STP				
WQM Permit No.	**Issuance Date**			
5070402 A-1	June 21, 2018			
5070402 A-2	February 18, 2021			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Ammonia And Phosphorus	Sequencing Batch Reactor	Ultraviolet	0.15
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.25	439	Existing Hydraulic and Organic Overload	Aerobic Digestion	Combination of methods

2.3 Facility Outfall Information

The facility has the following outfall information for wastewater.

Outfall No. 001 **Design Flow (MGD)** .13 (Current); .15 (proposed)

Latitude 40º 21' 38.81" **Longitude** -77º 20' 27.22"
Wastewater Description: Sewage Effluent

2.3.1 Operational Considerations- Chemical Additives

Chemical additives are chemical products introduced into a waste stream that is used for cleaning, disinfecting, or maintenance and which may be detected in effluent discharged to waters of the Commonwealth. Chemicals excluded are those used for neutralization of waste streams, the production of goods, and treatment of wastewater.

The subject facility utilizes the following chemicals as part of their treatment process.

- Sodium hypochlorite (12.5%) for disinfection (old WWTP)
- Norweco Bio-Max (Na2SO3) for dichlorination (old WWTP)
- Del Pac for coagulation (old WWTP)
- Del Pac for coagulation (new WWTP)
- Magnesium Hydroxide for alkalinity (new WWTP)

2.4 Existing NPDES Permits Limits

The existing NPDES permit limits are summarized in the table.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. A. For Outfall 001 , **Latitude** 40º 21' 39.02" , **Longitude** -77º 20' 27.23" , **River Mile Index** 1.32 , **Stream Code** 11193

Receiving Waters: Muddy Run

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **July 1, 2018** through **Startup of New or Upgraded Facilities**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

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 Residual Chlorine (TRC)	XXX	XXX	XXX	0.2	XXX	0.7	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	22.0	36.0	XXX	25.0	40.0	50	1/week	24-Hr Composite
Total Suspended Solids	27.0	41.0	XXX	30.0	45.0	60	1/week	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	7.5	XXX	XXX	8.5	XXX	17	1/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	2.5	XXX	XXX	2.5	XXX	5.5	1/week	24-Hr Composite
Total Phosphorus	1.8	XXX	XXX	2.0	XXX	4	1/week	24-Hr Composite

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

at Outfall 001

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. B. For Outfall 001 , **Latitude** 40° 21' 39.02" , **Longitude** -77° 20' 27.23" , **River Mile Index** 1.32 , **Stream Code** 11193

Receiving Waters: Muddy Run

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **Startup of New or Upgraded Facilities** through **June 30, 2023**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2]	Required
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum	Measurement Frequency	Sample Type
Carbonaceous Biochemical Oxygen Demand (CBOD5)	27.0	43.0	XXX	25.0	40.0	50	1/week	24-Hr Composite
Total Suspended Solids	32.0	48.0	XXX	30.0	45.0	60	1/week	24-Hr Composite
Ultraviolet light intensity (mW/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Ammonia-Nitrogen Nov 1 - Apr 30	9.0	XXX	XXX	8.0	XXX	16	1/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	3.0	XXX	XXX	2.5	XXX	5.5	1/week	24-Hr Composite
Total Phosphorus	2.0	XXX	XXX	2.0	XXX	4	1/week	24-Hr Composite

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

at Outfall 001

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. C. For Outfall 001 , **Latitude** 40° 21' 39.02" , **Longitude** -77° 20' 27.23" , **River Mile Index** 1.32 , **Stream Code** 11193

Receiving Waters: Muddy Run

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **July 1, 2018** through **June 30, 2023**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2]	Required
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	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

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

at Outfall 001

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. D. For Outfall 001 , **Latitude** 40° 21' 39.02" , **Longitude** -77° 20' 27.23" , **River Mile Index** 1.32 , **Stream Code** 11193

Receiving Waters: Muddy Run

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **Startup of New or Upgraded Facilities** through **June 30, 2023**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Net Total Nitrogen	Report	7306	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	314	XXX	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.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. E. For Outfall 001 , **Latitude** 40° 21' 39.02" , **Longitude** -77° 20' 27.23" , **River Mile Index** 1.32 , **Stream Code** 11193

Receiving Waters: Muddy Run

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **July 1, 2018** through **June 30, 2023**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs) [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	1/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	1/week	24-Hr Composite

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.

3.0 Facility NPDES Compliance History

3.1 Summary of Inspections

A summary of the most recent inspections during the existing permit review cycle is as follows.

The DEP inspector noted the following during the inspection.

01/18/2018:

- The flow remained high from rain over the weekend when the air had been turned off to retain the solids in the treatment plant. The facility stated that 0.5" - 1" of rain triggers high flow procedures. A third temporary pump was set-up to help keep up with the high flows.
- The metal splitter box was showing signs of deterioration.

02/11/2020:

- The facility was under a Consent Order and Agreement (COA) dated for June 2, 2014 and was amended on February 23, 2016. The Correction Action in the COA included an implementation schedule for a plant upgrade. The CAP implementation schedule was extended. The new deadline to secure funding was March 31, 2020.
- The facility stated there were high flows on February 7, 2019. Flow was 182.3 gpm (0.263 MGD) during the inspection which was more than double the hydraulic design of 0.11 MGD. The influent wet well had one of the two main pumps running with the EQ having more than 10' of freeboard. A third temporary pump was in the wet well and could convey additional flow to the EQ tank if required.
- The call-out system was deactivated. The facility stated the call system was notifying hourly for a blower failure.

3.2 Summary of DMR Data

A review of approximately 1-year of DMR data shows that the monthly average flow data for the facility above the design capacity of the treatment system. The maximum average flow data for the DMR reviewed was 0.184 MGD in February 2021. The facility is proposing to expand the treatment plant. The hydraulic design capacity of the proposed treatment system shall be 0.25 MGD.

The off-site laboratory used for the analysis of the parameters was Suburban Testing Labs located at 1037F MacArthur Road, Reading, PA 19605.

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

Parameter	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21
Flow (MGD) Average Monthly	0.113	0.151	0.132	0.174	0.100	0.108	0.100	0.114	0.163	0.174	0.184	0.165
Flow (MGD) Daily Maximum	0.167	0.403	0.338	0.334	0.274	0.239	0.242	0.216	0.506	0.410	0.609	0.318
pH (S.U.) Daily Minimum	7.6	7.3	7.5	7.1	7.2	7.5	7.2	7.0	6.8	7.0	6.9	7.3
pH (S.U.) Daily Maximum	8.3	8.0	7.8	8.3	8.1	8.2	7.8	7.8	7.3	7.5	7.7	7.8
DO (mg/L) Daily Minimum	7.2	6.0	7.2	6.4	7.1	7.5	5.1	8.6	5.0	5.0	5.0	8.5
TRC (mg/L) Average Monthly	0.1	0.1	0.04	0.1	0.2	0.1	0.3	0.3	1.0	1.18	0.2	0.3
TRC (mg/L) Instantaneous Maximum	0.1	0.2	0.1	1.2	0.6	0.2	1.9	0.4	2.2	2.3	0.6	0.7
CBOD5 (lbs/day) Average Monthly	< 2.1	< 6.1	< 1.9	< 8.0	< 4.4	< 2.6	< 3.5	< 4.1	< 19.5	53.1	< 14.1	< 12.2
CBOD5 (lbs/day) Weekly Average	< 2.8	< 7.7	< 2.0	20.1	8.8	< 3.2	11.4	< 10.8	31.8	188.8	44.9	32.9
CBOD5 (mg/L) Average Monthly	< 2.0	< 4.3	< 2.0	< 4.6	< 3.8	< 2.3	< 3.8	< 3.0	< 12.2	38.2	< 8.4	< 8.0
CBOD5 (mg/L) Weekly Average	< 2.0	5.4	2.0	15.8	6.5	3.3	11.1	< 6.0	23.6	143	19.8	19.1
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	87	40	48	81	75	78	67	79	57	64	88	102
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	151	51	63	156	164	99	155	117	88	80	115	141
BOD5 (mg/L) Raw Sewage Influent Average Monthly	80	39	51	49	65	70	86	79	45	48	69	80
TSS (lbs/day) Average Monthly	< 5.4	12.4	< 4.5	< 15.5	< 9.9	< 4.6	< 13.2	< 4.6	< 56.6	192.1	< 16.7	< 14.0

TSS (lbs/day) Raw Sewage Influent Average Monthly	158	76	69	130	131	141	103	99	82	98	136	129
TSS (lbs/day) Raw Sewage Influent Daily Maximum	287	96	91	258	315	171	264	166	101	118	165	224
TSS (lbs/day) Weekly Average	7.2	15.0	5.8	23.7	20.4	6.4	51.2	< 7.2	107.2	670.7	34.4	36.6
TSS (mg/L) Average Monthly	< 5.2	9.0	< 4.9	< 8.0	< 7.8	< 4.0	< 13.8	< 4.1	< 35.5	136.9	< 11.3	< 9.4
TSS (mg/L) Raw Sewage Influent Average Monthly	144	75	75	79	109	126	134	104	63	73	101	109
TSS (mg/L) Weekly Average	7.0	11.5	6.4	17.0	13.5	4.0	50	4.4	114.0	508	15.5	21.3
Fecal Coliform (No./100 ml) Geometric Mean	8	76	6	315	> 1013	165	36	9	42	136	> 716	14
Fecal Coliform (No./100 ml) Instantaneous Maximum	55	9400	19	14200	> 20000	2400	240	18	16600	8500	> 20000	654
Nitrate-Nitrite (mg/L) Average Monthly	14.8	8.46	13.68	10.3	14.5	17.18	16.82	16.68	6.22	4.69	9.62	13.0
Nitrate-Nitrite (lbs) Total Monthly	483	302	393	578	495	603	405	580	275	209	314	455
Total Nitrogen (mg/L) Average Monthly	15.36	11.46	13.85	12.21	16.02	17.68	18.06	17.08	11.86	20.59	13.02	15.57
Total Nitrogen (lbs) Total Monthly	504	429	398	673	552	621	442	589	526	900	484	554
Total Nitrogen (lbs) Total Annual				< 6071								
Ammonia (lbs/day) Average Monthly	< 0.1	< 2.1	< 0.1	< 2.0	< 0.4	< 0.1	< 0.6	< 0.1	< 4.8	< 7.8	< 4.6	< 3.8
Ammonia (mg/L) Average Monthly	< 0.1	< 1.5	< 0.1	< 1.3	< 0.4	< 0.1	< 0.6	< 0.1	< 3.3	< 5.5	< 2.6	< 2.6
Ammonia (lbs) Total Monthly	< 3.3	< 63.1	< 2.9	< 60.7	< 12.9	< 3.5	< 18	< 3.5	< 145.3	< 243.2	< 128.9	< 117.7

Ammonia (lbs) Total Annual				< 733								
TKN (mg/L) Average Monthly	< 0.76	3.00	< 0.56	< 2.13	1.52	< 0.62	< 1.54	< 0.76	< 5.81	15.91	< 3.6	< 2.72
TKN (lbs) Total Monthly	< 27	127	< 16	< 106	57	< 23	< 44	< 24	< 257	691	< 177	< 104
Total Phosphorus (lbs/day) Average Monthly	0.5	0.8	0.5	1.2	0.9	0.9	0.8	0.9	1.4	3.7	1.1	0.8
Total Phosphorus (mg/L) Average Monthly	0.5	0.6	0.6	0.6	0.8	0.8	0.9	0.8	1.0	2.6	0.7	0.6
Total Phosphorus (lbs) Total Monthly	15.3	24.1	16.7	34.6	26.4	27.7	22.8	28.3	43.4	113.4	30.0	23.5
Total Phosphorus (lbs) Total Annual				353								

3.2.1 Chesapeake Bay Truing

The table summarizes the facility's compliance/noncompliance with Chesapeake Bay cap loads that will become effective upon completion of construction.

Based upon the cap loads, the facility would meet their nitrogen cap loads. For phosphorus cap loads, the facility would not be meeting the cap loads.

Potentially, the new upgrade and nutrient trading will keep the facility in compliance with phosphorus cap loads. Conversations with the consultant have signaled that nutrient trading is an option.

Chesapeake Bay Annual Nutrient Summary				
Loysville WWTP				
PA0043494				
Year for Truing Period (Oct 1 - Nov 28)	**Net Effluent Limits**		**Compliant with Permit Limits (Yes/No)**	
	Nitrogen (lbs)	**Phosphorus (lbs)**	**Nitrogen**	**Phosphorus**
	7,306	***314***		
2019	6,686	478	Yes	No
2020	6,071	353	Yes	No

3.3 Non-Compliance

3.3.1 Non-Compliance- NPDES Effluent

A summary of the non-compliance to the permit limits for the existing permit cycle is as follows.

From the DMR data beginning in July 1, 2018 to February 13, 2022, the following were observed effluent non-compliances.

NON_COMPLIANCE_DATE	NON_COMPL_CATEGORY_DESC	PARAMETER	SAMPLE_VALUE	VIOLATION_CONDITION	PERMIT_VALUE	UNIT_OF_MEASURE	STAT_BASE_CODE	DISCHARGE_COMMENTS	FACILITY_COMMENTS
8/28/2018	Unauthorized Discharges							SSO event during excessive rainfall event of approx. 10" of rain over a period of 3 days.	
8/28/2018	Effluent	Ammonia-Nitrogen	< 2.6	>	2.5	lbs/day	Average Monthly		
8/28/2018	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	24.6	>	22.0	lbs/day	Average Monthly		
8/28/2018	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	41.2	>	36.0	lbs/day	Weekly Average		
8/28/2018	Effluent	Dissolved Oxygen	3.2	<	5.0	mg/L	Daily Minimum		
8/28/2018	Effluent	Fecal Coliform	> 20000	>	1000	No./100 ml	Instantaneous Maximum		
8/28/2018	Effluent	Total Phosphorus	2.6	>	1.8	lbs/day	Average Monthly		
8/28/2018	Effluent	Total Suspended Solids	< 66.8	>	27.0	lbs/day	Average Monthly		
8/28/2018	Effluent	Total Suspended Solids	115.2	>	41.0	lbs/day	Weekly Average		
9/21/2018	Effluent	Ammonia-Nitrogen	< 3.1	>	2.5	mg/L	Average Monthly		
9/21/2018	Effluent	Ammonia-Nitrogen	< 3.7	>	2.5	lbs/day	Average Monthly		
9/21/2018	Effluent	Fecal Coliform	14600	>	1000	No./100 ml	Instantaneous Maximum		
10/28/2018	Effluent	Ammonia-Nitrogen	< 3.2	>	2.5	mg/L	Average Monthly		Same as above.
10/28/2018	Effluent	Ammonia-Nitrogen	< 7.9	>	2.5	lbs/day	Average Monthly		
10/28/2018	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	24.9	>	22.0	lbs/day	Average Monthly		Same as above.
10/28/2018	Effluent	Fecal Coliform	> 20000	>	1000	No./100 ml	Instantaneous Maximum		Same as above.
10/28/2018	Effluent	Fecal Coliform	> 415	>	200	No./100 ml	Geometric Mean		Same as above.
10/28/2018	Effluent	Total Phosphorus	2.5	>	1.8	lbs/day	Average Monthly		Same as above.
10/28/2018	Effluent	Total Suspended Solids	< 45.2	>	27.0	lbs/day	Average Monthly		Same as above.
10/28/2018	Effluent	Total Suspended Solids	72.8	>	41.0	lbs/day	Weekly Average		Same as above.
11/21/2018	Effluent	Ammonia-Nitrogen	< 3.4	>	2.5	mg/L	Average Monthly		Same as above
11/21/2018	Effluent	Ammonia-Nitrogen	< 4.3	>	2.5	lbs/day	Average Monthly		
11/21/2018	Effluent	Fecal Coliform	20000	>	10000	No./100 ml	Instantaneous Maximum		Same as above

12/20/2018	Effluent	Ammonia-Nitrogen	7.8	>	7.5	lbs/day	Average Monthly		
12/20/2018	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	37.1	>	22.0	lbs/day	Average Monthly		Same as above
12/20/2018	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	47.6	>	36.0	lbs/day	Weekly Average		Same as above
12/20/2018	Effluent	Fecal Coliform	20000	>	10000	No./100 ml	Instantaneous Maximum		Same as above
12/20/2018	Effluent	Total Suspended Solids	51.5	>	27.0	lbs/day	Average Monthly		Same as above
12/20/2018	Effluent	Total Suspended Solids	69.1	>	41.0	lbs/day	Weekly Average		Same as above
1/17/2019	Effluent	Ammonia-Nitrogen	8.2	>	7.5	lbs/day	Average Monthly		Same as above
1/17/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	24.8	>	22.0	lbs/day	Average Monthly		Same as above
1/17/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	37.2	>	36.0	lbs/day	Weekly Average		Same as above
1/17/2019	Effluent	Total Suspended Solids	< 38.0	>	27.0	lbs/day	Average Monthly		
1/17/2019	Effluent	Total Suspended Solids	81.9	>	41.0	lbs/day	Weekly Average		Same as above
2/21/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	26.6	>	22.0	lbs/day	Average Monthly		Same as above
2/21/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	38.5	>	36.0	lbs/day	Weekly Average		Same as above
2/21/2019	Effluent	Fecal Coliform	> 20000	>	10000	No./100 ml	Instantaneous Maximum		Same as above
2/21/2019	Effluent	Total Suspended Solids	114.3	>	41.0	lbs/day	Weekly Average		Same as above
2/21/2019	Effluent	Total Suspended Solids	43.7	>	30.0	mg/L	Average Monthly		Same as above
2/21/2019	Effluent	Total Suspended Solids	53.9	>	27.0	lbs/day	Average Monthly		
2/21/2019	Effluent	Total Suspended Solids	98.0	>	45.0	mg/L	Weekly Average		Same as above
3/20/2019	Effluent	Ammonia-Nitrogen	8.2	>	7.5	lbs/day	Average Monthly		
3/20/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	25.2	>	25.0	mg/L	Average Monthly		Same as above
3/20/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	36.1	>	22.0	lbs/day	Average Monthly		Same as above
3/20/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	52.5	>	36.0	lbs/day	Weekly Average		Same as above
3/20/2019	Effluent	Fecal Coliform	17200	>	10000	No./100 ml	Instantaneous Maximum		Same as above
3/20/2019	Effluent	Fecal Coliform	5127	>	2000	No./100 ml	Geometric Mean		Same as above
3/20/2019	Effluent	Total Suspended Solids	32.8	>	30.0	mg/L	Average Monthly		Same as above
3/20/2019	Effluent	Total Suspended Solids	47.2	>	27.0	lbs/day	Average Monthly		Same as above
3/20/2019	Effluent	Total Suspended Solids	67.0	>	41.0	lbs/day	Weekly Average		Same as above
4/18/2019	Effluent	Ammonia-Nitrogen	7.7	>	7.5	lbs/day	Average Monthly		Same as above
4/18/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	48.6	>	25.0	mg/L	Average Monthly		Same as above
4/18/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	60.5	>	22.0	lbs/day	Average Monthly		

4/18/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	77.2	>	40.0	mg/L	Weekly Average		Same as above
4/18/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	94.1	>	36.0	lbs/day	Weekly Average		Same as above
4/18/2019	Effluent	Fecal Coliform	17100	>	10000	No./100 ml	Instantaneous Maximum		Same as above
4/18/2019	Effluent	Total Suspended Solids	126.3	>	45.0	mg/L	Weekly Average		Same as above
4/18/2019	Effluent	Total Suspended Solids	175.7	>	41.0	lbs/day	Weekly Average		Same as above
4/18/2019	Effluent	Total Suspended Solids	66.0	>	30.0	mg/L	Average Monthly		Same as above
4/18/2019	Effluent	Total Suspended Solids	90.3	>	27.0	lbs/day	Average Monthly		Same as above
5/23/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	31.6	>	22.0	lbs/day	Average Monthly		Additionally, I&I work is in progress.
5/23/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	36.7	>	36.0	lbs/day	Weekly Average		Same as above.
5/23/2019	Effluent	Fecal Coliform	16700	>	10000	No./100 ml	Instantaneous Maximum		
5/23/2019	Effluent	Total Suspended Solids	43.2	>	27.0	lbs/day	Average Monthly		Same as above.
5/23/2019	Effluent	Total Suspended Solids	60.1	>	41.0	lbs/day	Weekly Average		Same as above.
6/20/2019	Effluent	Ammonia-Nitrogen	< 2.8	>	2.5	mg/L	Average Monthly		Same as above.
6/20/2019	Effluent	Ammonia-Nitrogen	< 3.5	>	2.5	lbs/day	Average Monthly		Same as above.
6/20/2019	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	< 23.5	>	22.0	lbs/day	Average Monthly		Same as above.
6/20/2019	Effluent	Fecal Coliform	10500	>	1000	No./100 ml	Instantaneous Maximum		Same as above.
6/20/2019	Effluent	Fecal Coliform	710	>	200	No./100 ml	Geometric Mean		Same as above.
6/20/2019	Effluent	Total Suspended Solids	112.0	>	45.0	mg/L	Weekly Average		Same as above.
6/20/2019	Effluent	Total Suspended Solids	146.6	>	41.0	lbs/day	Weekly Average		Same as above.
6/20/2019	Effluent	Total Suspended Solids	44.9	>	30.0	mg/L	Average Monthly		Same as above.
6/20/2019	Effluent	Total Suspended Solids	59.9	>	27.0	lbs/day	Average Monthly		
7/18/2019	Effluent	Fecal Coliform	2400	>	1000	No./100 ml	Instantaneous Maximum		Low residual chlorine in contact tank. Operator increased chemical feed and changed the drum of hypochlorite. All subsequent samples this month were within permit limits.
8/22/2019	Effluent	Ammonia-Nitrogen	< 3.2	>	2.5	mg/L	Average Monthly		Same as above
8/22/2019	Effluent	Ammonia-Nitrogen	< 3.7	>	2.5	lbs/day	Average Monthly		
8/22/2019	Effluent	Fecal Coliform	> 20000	>	1000	No./100 ml	Instantaneous Maximum		Same as above
8/22/2019	Effluent	Fecal Coliform	> 598	>	200	No./100 ml	Geometric Mean		Same as above
1/23/2020	Effluent	Fecal Coliform	17300	>	10000	No./100 ml	Instantaneous Maximum		See comment above.
1/23/2020	Effluent	Total Suspended Solids	35.0	>	27.0	lbs/day	Average Monthly		Collection system pipe relining completed last year resulted in much improvement, but has not completely resolved high flow issues. Investigation into the sources of the high flows will continue.
1/23/2020	Effluent	Total Suspended Solids	46.0	>	45.0	mg/L	Weekly Average		See comment above.
1/23/2020	Effluent	Total Suspended Solids	52.5	>	41.0	lbs/day	Weekly Average		See comment above.

2/19/2020	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	< 43.6	>	36.0	lbs/day	Weekly Average		Same as above.
2/19/2020	Effluent	Total Suspended Solids	< 31.1	>	27.0	lbs/day	Average Monthly		Plant was operated in high flow mode until flow receded. Three additional samples were taken.
2/19/2020	Effluent	Total Suspended Solids	80.7	>	41.0	lbs/day	Weekly Average		Same as above.
3/18/2020	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	< 24.1	>	22.0	lbs/day	Average Monthly		Same as above.
3/18/2020	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	46.7	>	36.0	lbs/day	Weekly Average		Same as above.
3/18/2020	Effluent	Fecal Coliform	19400	>	10000	No./100 ml	Instantaneous Maximum		Same as above.
3/18/2020	Effluent	Total Suspended Solids	< 40.9	>	27.0	lbs/day	Average Monthly		Plant was operated in high flow mode. Three additional samples were collected.
3/18/2020	Effluent	Total Suspended Solids	71.5	>	41.0	lbs/day	Weekly Average		Same as above.
4/22/2020	Effluent	Fecal Coliform	12400	>	10000	No./100 ml	Instantaneous Maximum		See comments above.
4/22/2020	Effluent	Total Suspended Solids	43.2	>	41.0	lbs/day	Weekly Average		The Authority is currently pursuing funding for and planning a plant upgrade. Investigation of the sources of high flow is also ongoing.
5/20/2020	Effluent	Fecal Coliform	12400	>	10000	No./100 ml	Instantaneous Maximum		Plant was in high flow mode when the high fecal sample was collected.
6/18/2020	Effluent	Ammonia-Nitrogen	< 2.7	>	2.5	lbs/day	Average Monthly		Blowers were off-line at time of sample collection due to high flows after 0.40" of rain the previous day.
6/18/2020	Effluent	Fecal Coliform	3600	>	1000	No./100 ml	Instantaneous Maximum		See comments above.
1/18/2021	Effluent	Fecal Coliform	> 20000	>	10000	No./100 ml	Instantaneous Maximum		3 samples were taking during plant shutdown due to high flow. Disinfection detention time was inadequate.
2/17/2021	Other Violation	Nitrate-Nitrite as N							
2/17/2021	Other Violation	Total Kjeldahl Nitrogen							
2/17/2021	Effluent	Total Residual Chlorine (TRC)	0.3	>	.2	mg/L	Average Monthly		Hypochlorite pump rate was increased during a period of high flow/plant shut down, then slowly decreased as flow subsided. Several higher than average residuals increased the monthly average, but there was no IMax exceedance.
3/16/2021	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	44.9	>	36.0	lbs/day	Weekly Average		Plant was shutdown due to high flow after rain events and melting snow.
3/16/2021	Effluent	Fecal Coliform	> 20000	>	10000	No./100 ml	Instantaneous Maximum		Same as above.
4/15/2021	Effluent	Ammonia-Nitrogen	< 7.8	>	7.5	lbs/day	Average Monthly		See comments above.
4/15/2021	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	143	>	40.0	mg/L	Weekly Average		See comments above.
4/15/2021	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	188.8	>	36.0	lbs/day	Weekly Average		See comments above.
4/15/2021	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	38.2	>	25.0	mg/L	Average Monthly		See comments above.
4/15/2021	Effluent	Carbonaceous Biochemical Oxygen Demand (CBOD5)	53.1	>	22.0	lbs/day	Average Monthly		Due to rain and snow melt, plant was shut down 22/31 days in March. DEP was notified of shutdowns and an extra sample was taken for each occurrence. (First shutdown in Feb, second in March)
4/15/2021	Effluent	Total Phosphorus	2.6	>	2.0	mg/L	Average Monthly		See comments above.
4/15/2021	Effluent	Total Phosphorus	3.7	>	1.8	lbs/day	Average Monthly		See comments above.
4/15/2021	Effluent	Total Residual Chlorine (TRC)	1.18	>	.2	mg/L	Average Monthly		See comments above.
4/15/2021	Effluent	Total Residual Chlorine (TRC)	2.3	>	.7	mg/L	Instantaneous Maximum		See comments above.
4/15/2021	Effluent	Total Suspended Solids	136.9	>	30.0	mg/L	Average Monthly		See comments above.
4/15/2021	Effluent	Total Suspended Solids	192.1	>	27.0	lbs/day	Average Monthly		See comments above.

4/15/2021	Effluent	Total Suspended Solids	508	>	45.0	mg/L	Weekly Average		See comments above.
4/15/2021	Effluent	Total Suspended Solids	670.7	>	41.0	lbs/day	Weekly Average		See comments above.
5/19/2021	Effluent	Fecal Coliform	16600	>	10000	No./100 ml	Instantaneous Maximum		Same as above.
5/19/2021	Effluent	Total Residual Chlorine (TRC)	1.0	>	.2	mg/L	Average Monthly		Same as above.
5/19/2021	Effluent	Total Residual Chlorine (TRC)	2.2	>	.7	mg/L	Instantaneous Maximum		Same as above.
5/19/2021	Effluent	Total Suspended Solids	< 35.5	>	30.0	mg/L	Average Monthly		Same as above.
5/19/2021	Effluent	Total Suspended Solids	< 56.6	>	27.0	lbs/day	Average Monthly		
5/19/2021	Effluent	Total Suspended Solids	107.2	>	41.0	lbs/day	Weekly Average		Same as above.
5/19/2021	Effluent	Total Suspended Solids	114.0	>	45.0	mg/L	Weekly Average		Same as above.
6/21/2021	Effluent	Total Residual Chlorine (TRC)	0.3	>	.2	mg/L	Average Monthly		There was an unpredicted significant drop in the average daily flow in May. Chemical feed has been adjusted accordingly.
7/18/2021	Effluent	Total Residual Chlorine (TRC)	0.3	>	.2	mg/L	Average Monthly		The hypochlorite feed rate was increased to handle the high flow after a rain event. The feed rate was decreased when flow returned to normal.
7/18/2021	Effluent	Total Residual Chlorine (TRC)	1.9	>	.7	mg/L	Instantaneous Maximum		Same as above.
7/18/2021	Effluent	Total Suspended Solids	50	>	45.0	mg/L	Weekly Average		Same as above.
7/18/2021	Effluent	Total Suspended Solids	51.2	>	41.0	lbs/day	Weekly Average		Adjustments were made to place the plant in high-flow mode.
8/21/2021	Effluent	Fecal Coliform	2400	>	1000	No./100 ml	Instantaneous Maximum		There was no flow due to a stuck float for a period of time before the sample was collected so no hypochlorite was being dispensed and the TRC was not adequate for disinfection. All subsequent samples in July were in compliance.
10/20/2021	Effluent	Fecal Coliform	14200	>	1000	No./100 ml	Instantaneous Maximum		See comment above.
10/20/2021	Effluent	Fecal Coliform	315	>	200	No./100 ml	Geometric Mean		Plant was operating in storm mode (aeration off) when samples were collected that caused the violations. There was over 12" of rain in September, and the plant was operated in storm mode for 12/30 days.
10/20/2021	Effluent	Total Residual Chlorine (TRC)	1.2	>	.7	mg/L	Instantaneous Maximum		See comment above.

3.3.2 Non-Compliance- Enforcement Actions

A summary of the non-compliance enforcement actions for the current permit cycle is as follows:

Beginning in July 1, 2018 and ending February 13, 2022, the following were observed enforcement actions.

Summary of Enforcement Actions
Beginning July 1, 2018 and Ending February 13, 2022

ENF REGION	ENF ID	ENF TYPE	ENF TYPE DESC	ENF CREATION DATE	EXECUTED DATE	VIOLATIONS
SCRO	389644	NOV	Notice of Violation	10/27/2020	10/26/2020	CSL401

3.4 Summary of Biosolids Disposal

A summary of the biosolids disposed of from the facility is as follows.

2021			
Sewage Sludge / Biosolids Production Information			
Hauled Off-Site			
2021	Gallons	% Solids	Dry Tons
January	10,040	0.6	0.243
February	11,081	2.2	1.015
March	15,444	2.375	1.395
April	28,020	2.95	3.526
May	10,077	2.6	1.088
June	10,034	3.65	1.518
July	18,891	2.6	2.024
August	21,383	2.8	2.492
September	7,766	2.35	0.783
October	8,201	4.05	1.269
November	9,684	2.2	0.886
December	15,006	3.9	2.459
Notes:			
Sewage Sludge disposed at Harrisburg AWTF in Dauphin County, City of Harrisburg			
Derry Township, Dauphin County and Annville STP, Lebanon, Annville Township			

3.5 Open Violations

No open violations existed as of February 2022.

4.0 Receiving Waters and Water Supply Information Detail Summary

4.1 Receiving Waters

The receiving waters has been determined to be Muddy Run. The sequence of receiving streams that Muddy Run discharges into are Sherman Creek and the Susquehanna River which eventually drains into the Chesapeake Bay.

4.2 Public Water Supply (PWS) Intake

The closest PWS to the subject facility is Suez Water (PWS ID #7220015) located approximately 37 miles downstream of the subject facility on the Susquehanna River. Based upon the distance and the flow rate of the facility, the PWS should not be impacted.

4.3 Class A Wild Trout Streams

Class A Wild Trout Streams are waters that support a population of naturally produced trout of sufficient size and abundance to support long-term and rewarding sport fishery. DEP classifies these waters as high-quality coldwater fisheries.

The information obtained from EMAP suggests that no Class A Wild Trout Fishery will be impacted by this discharge.

4.4 2020 Integrated List of All Waters (303d Listed Streams)

Section 303(d) of the Clean Water Act requires States to list all impaired surface waters not supporting uses even after appropriate and required water pollution control technologies have been applied. The 303(d) list includes the reason for impairment which may be one or more point sources (i.e. industrial or sewage discharges) or non-point sources (i.e. abandoned mine lands or agricultural runoff and the pollutant causing the impairment such as metals, pH, mercury or siltation).

States or the U.S. Environmental Protection Agency (EPA) must determine the conditions that would return the water to a condition that meets water quality standards. As a follow-up to listing, the state or EPA must develop a Total Maximum Daily Load (TMDL) for each waterbody on the list. A TMDL identifies allowable pollutant loads to a waterbody from both point and non-point sources that will prevent a violation of water quality standards. A TMDL also includes a margin of safety to ensure protection of the water.

The water quality status of Pennsylvania's waters uses a five-part categorization (lists) of waters per their attainment use status. The categories represent varying levels of attainment, ranging from Category 1, where all designated water uses are met to Category 5 where impairment by pollutants requires a TMDL for water quality protection.

The receiving waters is listed in the 2020 Pennsylvania Integrated Water Quality Monitoring and Assessment Report as a Category 2 and 5 waterbody. The surface waters is an attaining stream that supports aquatic life. The receiving stream is also impaired for recreational purposes due to pathogens from agriculture. The designated use has been classified as protected waters for warm water fishes (WWF) and migratory fishes (MF).

4.5 Low Flow Stream Conditions

Water quality modeling estimates are based upon conservative data inputs. The data are typically estimated using either a stream gauge or through USGS web based StreamStats program. The NPDES effluent limits are based upon the combined flows from both the stream and the facility discharge.

A conservative approach to estimate the impact of the facility discharge using values which minimize the total combined volume of the stream and the facility discharge. The volumetric flow rate for the stream is based upon the seven-day, 10-year low flow (Q710) which is the lowest estimated flow rate of the stream during a 7 consecutive day period that occurs once in 10 -year time period. The facility discharge is based upon a known design capacity of the subject facility.

The closest WQN station to the subject facility is the Sherman Creek station (WQN243). This WQN station is located approximately 13 miles downstream of the subject facility.

The closest gauge station to the subject facility is the Shermans Creek at Shermans Dale, PA (USGS station number 1568000). This gauge station is located approximately 15 miles downstream of the subject facility.

For WQM modeling, pH and stream water temperature data from the water quality network station was used. pH was estimated to be 8.15 and the stream water temperature was estimated to be 23.3 C.

The hardness of the stream was estimated from the water quality network to be 79 mg/l $CaCO_3$.

The low flow yield and the Q710 for the subject facility was estimated as shown below.

Gauge Station Data			
USGS Station Number	1568000		
Station Name	Shermans Creek at Shermans Dale, PA		
Q710	15.5	ft^3/sec	
Drainage Area (DA)	207	mi^2	
Calculations			
The low flow yield of the gauge station is:			
Low Flow Yield (LFY) = Q710 / DA			
LFY =	(15.5 ft^3/sec / 207 mi^2)		
LFY =	0.0749	$ft^3/sec/mi^2$	
The low flow at the subject site is based upon the DA of		3.11	mi^2
Q710 = (LFY@gauge station)(DA@Subject Site)			
Q710 = (0.0749 $ft^3/sec/mi^2$)(3.11 mi^2)			
Q710 =	0.233	ft^3/sec	

4.6 Summary of Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.13
Latitude	40º 21' 39.02"	Longitude	-77º 20' 27.23"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		

Receiving Waters	Muddy Run (WWF)	Stream Code	11193
NHD Com ID	56401909	RMI	1.35
Drainage Area	3.11	Yield (cfs/mi^2)	0.0749
Q_{7-10} Flow (cfs)	0.233	Q_{7-10} Basis	StreamStats/StreamGauge
Elevation (ft)	567	Slope (ft/ft)	
Watershed No.	7-A	Chapter 93 Class.	WWF, MF
Existing Use	Same as Chapter 93 class	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s) supports aquatic life. Impaired for recreational purposes.		
Cause(s) of Impairment	Pathogens		
Source(s) of Impairment	Agriculture		
TMDL Status	Not applicable	Name	

Background/Ambient Data		Data Source
pH (SU)	8.15	Median July to Sept; WQN 243
Temperature (°C)	23.3	Median July to Sept; WQN 243
Hardness (mg/L)	79	Historical Median; WQN 243
Other:		

Nearest Downstream Public Water Supply Intake	Suez Water		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	75	Distance from Outfall (mi)	37

5.0: Overview of Presiding Water Quality Standards

5.1 General

There are at least six (6) different policies which determines the effluent performance limits for the NPDES permit. The policies are technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), antidegradation, total maximum daily loading (TMDL), anti-backsliding, and whole effluent toxicity (WET) The effluent performance limitations enforced are the selected permit limits that is most protective to the designated use of the receiving waters. An overview of each of the policies that are applicable to the subject facility has been presented in Section 6.

5.2.1 Technology-Based Limitations

TBEL treatment requirements under section 301(b) of the Act represent the minimum level of control that must be imposed in a permit issued under section 402 of the Act (40 CFR 125.3). Available TBEL requirements for the state of Pennsylvania are itemized in PA Code 25, Chapter 92a.47.

The presiding sources for the basis for the effluent limitations are governed by either federal or state regulation. The reference sources for each of the parameters is itemized in the tables. The following technology-based limitations apply, subject to water quality analysis and best professional judgement (BPJ) where applicable:

Parameter	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)

5.2.2 Mass Based Limits

For publicly owned treatment works (POTW), mass loadings are calculated based upon design flow rate of the facility and the permit limit concentration. The generalized calculation for mass loadings is shown below:

$$Quantity\left(\frac{lb}{day}\right) = (MGD)(Concentration)(8.34)$$

5.3 Water Quality-Based Limitations

WQBEL are based on the need to attain or maintain the water quality criteria and to assure protection of designated and existing uses (PA Code 25, Chapter 92a.2). The subject facility that is typically enforced is the more stringent limit of either the TBEL or the WQBEL.

Determination of WQBEL is calculated by spreadsheet analysis or by a computer modeling program developed by DEP. DEP permit engineers utilize the following computing programs for WQBEL permit limitations: (1) MS Excel worksheet for Total Residual Chorine (TRC); (2) WQM 7.0 for Windows Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1.1 (WQM Model) and (3) Toxics using DEP Toxics Management Spreadsheet for Toxics pollutants.

The modeling point nodes utilized for this facility are summarized below.

General Data 1 (Modeling Point #1)	***Input Value***	***Units***
Stream Code	11193	
River Mile Index	1.35	miles
Elevation	567	feet
Latitude	40.361111	
Longitude	-77.341111	
Drainage Area	3.11	sq miles
Reach Slope	Default	ft/ft
Low Flow Yield	0.0749	cfs/sq mile
General Data 2 (Modeling Point #2)	***Input Value***	***Units***
Stream Code	11193	
River Mile Index	0	miles
Elevation	532	feet
Latitude	40.351447	
Longitude	-77.333601	
Drainage Area	103	sq miles
Reach Slope	Default	ft/ft
Low Flow Yield	0.0749	cfs/sq mile

5.3.1 Water Quality Modeling 7.0

The WQM Model is a computer model that is used to determine NPDES discharge effluent limitations for Carbonaceous BOD (CBOD5), Ammonia Nitrogen (NH3-N), and Dissolved Oxygen (DO) for single and multiple point source discharges scenarios. WQM Model is a complete-mix model which means that the discharge flow and the stream flow are assumed to instantly and completely mixed at the discharge node.

WQM recommends effluent limits for DO, CBOD5, and NH_3-N in mg/l for the discharge(s) in the simulation.

Four types of limits may be recommended. The limits are

(a) a *minimum concentration for DO in the discharge as 30-day average;*
(b) a 30-day average concentration for CBOD5 in the discharge;
(c) a 30-day average concentration for the NH_3-N in the discharge;
(d) *24-hour average concentration for NH_3-N in the discharge*.

The WQM Model requires several input values for calculating output values. The source of data originates from either EMAP, the National Map, or Stream Stats. Data for stream gauge information, if any, was abstracted from USGS Low-Flow, Base-Flow, and Mean-Flow Regression Equations for Pennsylvania Streams authored by Marla H. Stuckey (Scientific Investigations Report 2006-5130).

Water quality modeling was run only for the proposed treatment plant with an average annual flow rate of 0.15 MGD. Since the flow rate will increase from 0.11 MGD to 0.15 MGD, it was advisable to complete the modeling for 0.15 MGD. The current limits for CBOD and ammonia shall continue.

At the time of the commencement of the new treatment plant, new loadings shall occur. The ammonia concentration limit and loading will also be adjusted to reflect the higher flow rate.

The applicable WQM Effluent Limit Type are discussed in Section 6 under the corresponding parameter which is either DO, CBOD, or ammonia-nitrogen.

5.3.2 Toxics Modeling

The Toxics Management Spreadsheet model is a computer model that is used to determine effluent limitations for toxics (and other substances) for single discharge wasteload allocations. This computer model uses a mass-balance water quality analysis that includes consideration for mixing, first-order decay, and other factors used to determine recommended water quality-based effluent limits. Toxics Management Spreadsheet does not assume that all discharges completely mix with the stream. The point of compliance with water quality criteria are established using criteria compliance times (CCTs). The available CCTs are either acute fish criterion (AFC), chronic fish criterion (CFC), or human health criteria (THH & CRL).

Acute Fish Criterion (AFC) measures the criteria compliance time as either the maximum criteria compliance time (i.e.15 minutes travel time downstream of the current discharge) or the complete mix time whichever comes first. AFC is evaluated at Q710 conditions.

Chronic Fish Criterion (CFC) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the complete mix time whichever comes first. CFC is evaluated at Q710 conditions.

Threshold Human Health (THH) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the estimated travel time downstream to the nearest potable water supply intake whichever comes first. THH is evaluated at Q710 conditions.

Cancer Risk Level (CRL) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the complete mix time whichever comes first. CRL is evaluated at Qh (harmonic mean or normal flow) conditions.

The Toxics Model requires several input values for calculating output values. The source of data originates from either EMAP, the National Map, or Stream Stats. Data for stream gauge information, if any, was abstracted from USGS Low-Flow, Base-Flow, and Mean-Flow Regression Equations for Pennsylvania Streams authored by Marla H. Stuckey (Scientific Investigations Report 2006-5130).

5.3.2.1 Determining if NPDES Permit Will Require Monitoring/Limits in the Proposed Permit for Toxic Pollutants

To determine if Toxics modeling is necessary, DEP has developed a Toxics Management Spreadsheet to identify toxics of concern. Toxic pollutants whose maximum concentrations as reported in the permit application or on DMRs are greater than the most stringent applicable water quality criterion are pollutants of concern. A Reasonable Potential Analysis was utilized to determine (a) if the toxic parameters modeled would require monitoring or (b) if permit limitations would be required for the parameters. The toxics reviewed for reasonable potential were the pollutants in TDS, chloride, bromide, sulfate, copper, lead, and zinc.

Based upon the SOP- Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants (Revised January 10, 2019), monitoring and/or limits will be established as follows.

(a) When reasonable potential is demonstrated, establish limits where the maximum reported concentration equals or 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.

Toxics Management Spreadsheet was run only for the proposed treatment plant with an average annual flow rate of 0.15 MGD. The TMS recommends monitoring for lead, copper, and zinc. Monitoring for the toxic metals will begin with the effective date of the permit.

Applicable monitoring or permit limits for toxics are summarized in Section 6.

The Toxics Management Spreadsheet output has been included in Attachment B.

5.3.3 Whole Effluent Toxicity (WET)

The facility is not subject to WET.

5.4 Total Maximum Daily Loading (TMDL)

5.4.1 TMDL

The goal of the Clean Water Act (CWA), which governs water pollution, is to ensure that all of the Nation's waters are clean and healthy enough to support aquatic life and recreation. To achieve this goal, the CWA created programs designed to regulate and reduce the amount of pollution entering United States waters. Section 303(d) of the CWA requires states to assess their waterbodies to identify those not meeting water quality standards. If a waterbody is not meeting standards, it is listed as impaired and reported to the U.S. Environmental Protection Agency. The state then develops a plan to clean up the impaired waterbody. This plan includes the development of a Total Maximum Daily Load (TMDL) for the pollutant(s) that were found to be the cause of the water quality violations. A Total Maximum Daily Load (TMDL) calculates the maximum amount of a specific pollutant that a waterbody can receive and still meet water quality standards.

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit margin of safety (MOS) to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody. The TMDL components are illustrated using the following equation:

$$TMDL = \Sigma WLAs + \Sigma LAs + MOS$$

Pennsylvania has committed to restoring all impaired waters by developing TMDLs and TMDL alternatives for all impaired waterbodies. The TMDL serves as the starting point or planning tool for restoring water quality.

5.4.1.1 Local TMDL

The subject facility does not discharge into a local TMDL.

5.4.1.2 Chesapeake Bay TMDL Requirement

The Chesapeake Bay Watershed is a large ecosystem that encompasses approximately 64,000 square miles in Maryland, Delaware, Virginia, West Virginia, Pennsylvania, New York and the District of Columbia. An ecosystem is composed of interrelated parts that interact with each other to form a whole. All of the plants and animals in an ecosystem depend on each other in some way. Every living thing needs a healthy ecosystem to survive. Human activities affect the Chesapeake Bay ecosystem by adding pollution, using resources and changing the character of the land.

Most of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the federal Water Pollution Control Act ("Clean Water Act"), 33 U.S.C. § 1313(d). While the Chesapeake Bay is outside the boundaries of Pennsylvania, more than half of the State lies within the watershed. Two major rivers in Pennsylvania are part of the Chesapeake Bay Watershed. They are (a) the Susquehanna River and (b) the Potomac River. These two rivers total 40 percent of the entire Chesapeake Bay watershed.

The overall management approach needed for reducing nitrogen, phosphorus and sediment are provided in the Bay TMDL document and the Phase I, II, and III WIPs which is described in the Bay TMDL document and Executive Order 13508.

The Bay TMDL is a comprehensive pollution reduction effort in the Chesapeake Bay watershed identifying the necessary pollution reductions of nitrogen, phosphorus and sediment across the seven Bay watershed jurisdictions of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia to meet applicable water quality standards in the Bay and its tidal waters.

The Watershed Implementation Plans (WIPs) provides objectives for how the jurisdictions in partnership with federal and local governments will achieve the Bay TMDL's nutrient and sediment allocations.

Phase 3 WIP provides an update on Chesapeake Bay TMDL implementation activities for point sources and DEP's current implementation strategy for wastewater. The latest revision of the supplement was September 13, 2021.

The Chesapeake Bay TMDL (Appendix Q) categorizes point sources into four sectors:

- Sector A- significant sewage dischargers;
- Sector B- significant industrial waste (IW) dischargers;
- Sector C- non-significant dischargers (both sewage and IW facilities); and
- Sector D- combined sewer overflows (CSOs).

All sectors contain a listing of individual facilities with NPDES permits that were believed to be discharging at the time the TMDL was published (2010). All sectors with the exception of the non-significant dischargers have individual wasteload allocations (WLAs) for TN and TP assigned to specific facilities. Non-significant dischargers have a bulk or aggregate allocation for TN and TP based on the facilities in that sector that were believed to be discharging at that time and their estimated nutrient loads.

Cap Loads will be established in permits as Net Annual TN and TP loads (lbs/yr) that apply during the period of October 1 – September 30. For facilities that have received Cap Loads in any other form, the Cap Loads will be modified accordingly when the permits are renewed.

Offsets have been incorporated into Cap Loads in several permits issued to date. From this point forward, permits will be issued with the WLAs as Cap Loads and will identify Offsets separately to facilitate nutrient trading activities and compliance with the TMDL.

Based upon the supplement the subject facility has been categorized as a Sector C discharger. The supplement defines Sector C as a non-significant dischargers include sewage facilities (Phase 4 facilities: ≥ 0.2 MGD and < 0.4 MGD and Phase 5 facilities: > 0.002 MGD and < 0.2 MGD), small flow/single residence sewage treatment facilities (≤ 0.002 MGD), and non-significant IW facilities, all of which may be covered by statewide General Permits or may have individual NPDES permits.

At this time, there are approximately 850 Phase 4 and 5 sewage facilities, approximately 715 small flow sewage treatment facilities covered by a statewide General Permit, and approximately 300 non-significant IW facilities.

For Phase 5 sewage facilities with individual permits (average annual design flow on August 29, 2005 > 0.002 MGD and < 0.2 MGD), DEP will issue individual permits with monitoring and reporting for TN and TP throughout the permit term at a frequency no less than annually, unless 1) the facility has already conducted at least two years of nutrient monitoring and 2) a summary of the monitoring results are included in the next permit's fact sheet. If, however, Phase 5 facilities choose to expand, the renewed or amended permits will contain Cap Loads based on the lesser of a) existing TN/TP concentrations at current design average annual flow or b) 7,306 lbs/yr TN and 974 lbs/yr TP.

If no data are available to determine existing concentrations for expanding Phase 4 or 5 facilities, default concentrations of 25 mg/l TN and 4 mg/l TP may be used (these are the average estimated concentrations of all non-significant sewage facilities).

DEP will not issue permits to existing Phase 4 and 5 facilities containing Cap Loads unless it is done on a broad scale or unless the facilities are expanding.

For new Phase 4 and 5 sewage discharges, in general DEP will issue new permits containing Cap Loads of "0" and new facilities will be expected to purchase credits and/or apply offsets to achieve compliance, with the exception of small flow and single residence facilities.

Courtesy of the Fact Sheet prepared in February 2018, Loysville had TP limits of 2.0 mg/l and 1.8 lbs./day in existing permit. DMR data from May 2015 to April 2017 indicated an average monthly discharge concentration of 0.9375 mg/l which resulted in 314 lbs./year as follows:

0.11 MGD * 8.34 * 0.9375 mg/l * 365 days/year = 314 lbs./year

This value is less than 974 lbs./year and is applicable as TP cap load.

Application data indicated an average monthly concentration of 24.4 mg/l which results in 8,170 lbs./year following previous equation. This value is greater than 7,306 lbs./year. The lower value of 7,306 lbs./year of TN will be appropriate. These values were discussed with PADEP's Central Office on May 17, 2017 and were verbally approved. These values were sent to the permittee as a part of the PEL. The final CB cap loads will be:

Facility	Phase	NPDES permit no.	TN Cap Load (lb/yr)	TP Cap Load (lb/yr)
Loysville STP	5	PA0043494	7,306	314

Communication occurred again with Central Office on February 22, 2022 to confirm that the cap loads will not need to be adjusted with more recent DMR data.

The facility is subject to Chesapeake Bay WIP. The facility shall be monitored on a 1x/week basis with the cap loads summarized in the table above. The cap loads will be effective upon completion of the upgrade.

5.5 Anti-Degradation Requirement

Chapter 93.4a of the PA regulations requires that surface water of the Commonwealth of Pennsylvania may not be degraded below levels that protect the existing uses. The regulations specifically state that *Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected*. Antidegradation requirements are implemented through DEP's guidance manual entitled Water Quality Antidegradation Implementation Guidance (Document #391-0300-02).

The policy requires DEP to protect the existing uses of all surface waters and the existing quality of High Quality (HQ) and Exceptional Value (EV) Waters. Existing uses are protected when DEP makes a final decision on any permit or approval for an activity that may affect a protected use. Existing uses are protected based upon DEP's evaluation of the best available information (which satisfies DEP protocols and Quality Assurance/Quality Control (QA/QC) procedures) that indicates the protected use of the waterbody.

For a new, additional, or increased point source discharge to an HQ or EV water, the person proposing the discharge is required to utilize a nondischarge alternative that is cost-effective and environmentally sound when compared with the cost of the proposed discharge. If a nondischarge alternative is not cost-effective and environmentally sound, the person must use the best available combination of treatment, pollution prevention, and wastewater reuse technologies and assure that any discharge is nondegrading. In the case of HQ waters, DEP may find that after satisfaction of intergovernmental coordination and public participation requirements lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In addition, DEP will assure that cost-effective and reasonable best management practices for nonpoint source control in HQ and EV waters are achieved.

The subject facility's discharge will be to a non-special protection waters and the permit conditions are imposed to protect existing instream water quality and uses. Neither HQ waters or EV waters is impacted by this discharge.

5.6 Anti-Backsliding

Anti-backsliding is a federal regulation which prohibits a permit from being renewed, reissued, or modified containing effluent limitations which are less stringent than the comparable effluent limitations in the previous permit (40 CFR 122.l.1 and 40

CFR 122.l.2). A review of the existing permit limitations with the proposed permit limitations confirm that the facility is consistent with anti-backsliding requirements. The facility has proposed effluent limitations that are as stringent as the existing permit.

6.0 NPDES Parameter Details

The basis for the proposed sampling and their monitoring frequency that will appear in the permit for each individual parameter are itemized in this Section. The final limits are the more stringent of technology based effluent treatment (TBEL) requirements, water quality based (WQBEL) limits, TMDL, antidegradation, anti-degradation, or WET.

The reader will find in this section:

a) a justification of recommended permit monitoring requirements and limitations for each parameter in the proposed NPDES permit;
b) a summary of changes from the existing NPDES permit to the proposed permit; and
c) a summary of the proposed NPDES effluent limits.

6.1 Recommended Monitoring Requirements and Effluent Limitations

A summary of the recommended monitoring requirements and effluent limitations are itemized in the tables. The tables are categorized by (a) Conventional Pollutants and Disinfection, (b) Nitrogen Species and Phosphorus, and (c) Toxics.

6.1.1.1 Conventional Pollutants and Disinfection (Current Treatment Plant with 0.11 MGD flow rate)

Summary of Proposed NPDES Parameter Details for Conventional Pollutants and Disinfection
Loysville Village MA; PA0043494

Parameter	Permit Limitation Required by[1]:	Recommendation	
pH (S.U.)	TBEL	Monitoring:	The monitoring frequency shall be daily as a grab sample (Table 6-3).
		Effluent Limit:	Effluent limits may range from pH = 6.0 to 9.0
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 95.2(1).
Dissolved Oxygen	BPJ	Monitoring:	The monitoring frequency shall be daily as a grab sample (Table 6-3).
		Effluent Limit:	Effluent limits shall be greater than 5.0 mg/l.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by best professional judgement.
CBOD	TBEL	Monitoring:	The monitoring frequency shall be 1x/wk as an 24-hr composite sample (Table 6-3).
		Effluent Limit:	Effluent limits shall not exceed 22 lbs/day and 25 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(1). WQM modeling indicates that the TBEL is more stringent than the WQBEL. Thus, the permit limit is confined to TBEL.
TSS	TBEL	Monitoring:	The monitoring frequency shall be 1/wk as a 24-hr composite sample (Table 6-3).
		Effluent Limit:	Effluent limits shall not exceed 27 lbs/day and 30 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(1). While there is no WQM modeling for this parameter, the permit limit for TSS is generally assigned similar effluent limits as CBOD or BOD. Since the TBEL is more stringent than WQBEL, TBEL will apply.
TRC	WQBEL	Monitoring:	The monitoring frequency shall be on a daily basis as a grab sample (Table 6-3).
		Effluent Limit:	The average monthly limit should not exceed 0.2 mg/l and/or 0.7 mg/l as an instantaneous maximum. TRC limit will be eliminated from monitoring at commencement of proposed upgrade.
		Rationale: Chlorine in both combined (chloramine) and free form is extremely toxic to freshwater fish and other forms of aquatic life (Implementation Guidance Total Residual Chlorine 1). The TRC effluent limitations to be imposed on a discharger shall be the more stringent of either the WQBEL or TBEL requirements and shall be expressed in the NPDES permit as an average monthly and instantaneous maximum effluent concentration (Implementation Guidance Total Residual Chlorine 4). Based on the stream flow rate (lowest 7-day flow rate in 10 years) and the design flow rate of the subject facility calculated by the TRC Evaluation worksheet, the WQBEL is more stringent than the TBEL. The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.48(b)(2)	
Fecal Coliform	TBEL	Monitoring:	The monitoring frequency shall be 1x/wk as a grab sample (Table 6-3).
		Effluent Limit:	Summer effluent limits shall not exceed 200 No./100 mL as a geometric mean. Winter effluent limits shall not exceed 2000 No./100 mL as a geometric mean.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(4) and 92a.47(a)(5).
E. Coli	SOP; Chapter 92a.61	Monitoring:	The monitoring frequency shall be 1x/month as a grab sample (SOP).
		Effluent Limit:	No effluent requirements.
		Rationale:	Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised March 22, 2019) and under the authority of Chapter 92a.61, the facility will be required to monitor for E.Coli.

Notes:

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 0.11 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

6.1.1.2 Nitrogen Species and Phosphorus (Current Treatment Plant with 0.11 MGD flow rate)

Summary of Proposed NPDES Parameter Details for Nitrogen Species and Phosphorus

Loysville Village MA; PA0043494

Parameter	Permit Limitation Required by[1]:	Recommendation	
Ammonia-Nitrogen	Antibacksliding/WQ BEL	Monitoring:	The monitoring frequency shall be 1x/wk as a 24-hr composite sample
		Effluent Limit:	During the months of May 1 to October 31, the effluent should not exceed 2.5 lbs/day and 2.5 mg/l. During the months of November 1 to April 30, the effluent should not exceed 7.5 lbs/day and 8.5 mg/l.
		Rationale:	Water quality modeling was not completed for the current flow rate 0.11 MGD. The current ammonia limits were carried to the proposed permit until the upgrade is complete. Water quality modeling was completed for a flow rate of 0.15 MGD.
Nitrate-Nitrite as N	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/wk as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/wk.
Total Nitrogen	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/mo as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/mo.
TKN	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/wk as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/wk.
Total Phosphorus	Anti-backsliding	Monitoring:	The monitoring frequency shall be 1x/wk as a 24-hr composite sample
		Effluent Limit:	Effluent limits shall not exceed 1.8 lbs/day and 2.0 mg/l as an average monthly.
		Rationale:	Due to anti-backsliding, the current permit limit shall continue to the proposed permit.
Net Total Nitrogen	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/yr as a calculation.
		Effluent Limit:	Effluent shall not exceed 7,306 lbs/yr.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/yr.
Net Total Phosphorus	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/yr as a calculation.
		Effluent Limit:	Effluent shall not exceed 314 lbs/yr.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/yr.
Notes:			

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 0.11 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

6.1.2.1 Conventional Pollutants and Disinfection (Proposed Treatment Plant with 0.15 MGD flow rate)

Summary of Proposed NPDES Parameter Details for Conventional Pollutants and Disinfection
Loysville Village MA; PA0043494

Parameter	Permit Limitation Required by[1]:	Recommendation	
pH (S.U.)	TBEL	Monitoring:	The monitoring frequency shall be daily as a grab sample (Table 6-3).
		Effluent Limit:	Effluent limits may range from pH = 6.0 to 9.0
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 95.2(1).
Dissolved Oxygen	BPJ	Monitoring:	The monitoring frequency shall be daily as a grab sample (Table 6-3).
		Effluent Limit:	Effluent limits shall be greater than 5.0 mg/l.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by best professional judgement.
CBOD	TBEL	Monitoring:	The monitoring frequency shall be 1x/wk as an 24-hr composite sample (Table 6-3).
		Effluent Limit:	Effluent limits shall not exceed 31 lbs/day and 25 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(1). WQM modeling indicates that the TBEL is more stringent than the WQBEL. Thus, the permit limit is confined to TBEL.
TSS	TBEL	Monitoring:	The monitoring frequency shall be 1/wk as a 24-hr composite sample (Table 6-3).
		Effluent Limit:	Effluent limits shall not exceed 37 lbs/day and 30 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(1). While there is no WQM modeling for this parameter, the permit limit for TSS is generally assigned similar effluent limits as CBOD or BOD. Since the TBEL is more stringent than TBEL, TBEL will apply.
UV disinfection	SOP	Monitoring:	The monitoring frequency is 1/day. The facility will be required to recording the UV intensity.
		Effluent Limit:	No effluent requirements.
		Rationale:	Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised January 10, 2019), the facility will be required to have routine monitoring for UV intensity.
Fecal Coliform	TBEL	Monitoring:	The monitoring frequency shall be 1x/wk as a grab sample (Table 6-3).
		Effluent Limit:	Summer effluent limits shall not exceed 200 No./100 mL as a geometric mean. Winter effluent limits shall not exceed 2000 No./100 mL as a geometric mean.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(4) and 92a.47(a)(5).
E. Coli	SOP; Chapter 92a.61	Monitoring:	The monitoring frequency shall be 1x/month as a grab sample (SOP).
		Effluent Limit:	No effluent requirements.
		Rationale:	Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised March 22, 2019) and under the authority of Chapter 92a.61, the facility will be required to monitor for E.Coli.

Notes:

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 0.15 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

6.1.2.2 Nitrogen Species and Phosphorus (Proposed Treatment Plant with 0.15 MGD flow rate)

Summary of Proposed NPDES Parameter Details for Nitrogen Species and Phosphorus

Loysville Village MA; PA0043494

Parameter	Permit Limitation Required by[1]:	Recommendation	
Ammonia-Nitrogen	WQBEL	Monitoring:	The monitoring frequency shall be 1x/wk as a 24-hr composite sample
		Effluent Limit:	During the months of May 1 to October 31, the effluent should not exceed 2.5 lbs/day and 2.0 mg/l. During the months of November 1 to April 30, the effluent should not exceed 7.5 lbs/day and 6.0 mg/l.
		Rationale:	Water quality modeling recommends water quality based effluent limits.
Nitrate-Nitrite as N	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/wk as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/wk.
Total Nitrogen	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/mo as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/mo.
TKN	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/wk as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/wk.
Total Phosphorus	Antibacksliding	Monitoring:	The monitoring frequency shall be 1x/wk as a 24-hr composite sample
		Effluent Limit:	Effluent limits shall not exceed 2.5 lbs/day and 2.0 mg/l as an average monthly.
		Rationale:	Due to anti-backsliding, the current permit limit shall continue to the proposed permit.
Net Total Nitrogen	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/yr as a calculation.
		Effluent Limit:	Effluent shall not exceed 7,306 lbs/yr.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/yr.
Net Total Phosphorus	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/yr as a calculation.
		Effluent Limit:	Effluent shall not exceed 314 lbs/yr.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/yr.
Notes:			

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 0.15 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

6.1.3 Toxics (Based upon proposed Treatment Plant with 0.15 MGD flow rate)

Summary of Proposed NPDES Parameter Details for Toxics

Loysville Village MA; PA0043494

Parameter	Permit Limitation Required by[1]:	Recommendation	
Copper	WQBEL	Monitoring:	The monitoring frequency shall be 2x/yr as a 24-hr composite sample
		Effluent Limit:	No effluent requirement
		Rationale:	Toxics Management Spreadsheet recommends monitoring. Monitoring shall be required 2x/yr to collect more samples to determine adverse impacts. Pending favorable sampling results, the monitoring may be reduced or eliminated in future renewals.
Lead	WQBEL	Monitoring:	The monitoring frequency shall be 2x/yr as a 24-hr composite sample
		Effluent Limit:	No effluent requirement
		Rationale:	Toxics Management Spreadsheet recommends monitoring. Monitoring shall be required 2x/yr to collect more samples to determine adverse impacts. Pending favorable sampling results, the monitoring may be reduced or eliminated in future renewals.
Zinc	WQBEL	Monitoring:	The monitoring frequency shall be 2x/yr as a 24-hr composite sample
		Effluent Limit:	No effluent requirement
		Rationale:	Toxics Management Spreadsheet recommends monitoring. Monitoring shall be required 2x/yr to collect more samples to determine adverse impacts. Pending favorable sampling results, the monitoring may be reduced or eliminated in future renewals.

Notes:

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 0.15 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

6.2 Summary of Changes From Existing Permit to Proposed Permit

A summary of how the proposed NPDES permit differs from the existing NPDES permit is summarized as follows.

Changes in Permit Monitoring or Effluent Quality

Parameter	Existing Permit	Draft Permit
E. Coli	No monitoring or effluent limit	Due to EPA Triennial review, monitoring shall be 1x/month
Ammonia-Nitrogen (upon commencement of plant upgrade)	During the months of May 1 to October 31, the effluent should not exceed 2.5 lbs/day and 2.5 mg/l. During the months of November 1 to April 30, the effluent should not exceed 7.5 lbs/day and 8.5 mg/l.	During the months of May 1 to October 31, the effluent should not exceed 2.5 lbs/day and 2.0 mg/l. During the months of November 1 to April 30, the effluent should not exceed 7.5 lbs/day and 6.0 mg/l.
Copper	No monitoring or effluent limit	Toxics Management Spreadsheet recommends monitoring. Monitoring shall be required 2x/yr to collect more samples to determine adverse impacts. Pending favorable sampling results, the monitoring may be reduced or eliminated in future renewals.
Lead	No monitoring or effluent limit	Toxics Management Spreadsheet recommends monitoring. Monitoring shall be required 2x/yr to collect more samples to determine adverse impacts. Pending favorable sampling results, the monitoring may be reduced or eliminated in future renewals.
Zinc	No monitoring or effluent limit	Toxics Management Spreadsheet recommends monitoring. Monitoring shall be required 2x/yr to collect

6.3.1 Summary of Proposed NPDES Effluent Limits

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.

The proposed NPDES effluent limitations are summarized in the table below.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. A. For Outfall 001, **Latitude** 40° 21' 38.81", **Longitude** 77° 20' 27.22", **River Mile Index** 1.35, **Stream Code** 11193

Receiving Waters: Muddy Run (WWF)

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Completion of Construction**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

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 Residual Chlorine (TRC)	XXX	XXX	XXX	0.2	XXX	0.7	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	22.0	36.0	XXX	25.0	40.0	50	1/week	24-Hr Composite
Total Suspended Solids	27.0	41.0	XXX	30.0	45.0	60	1/week	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	7.5	XXX	XXX	8.5	XXX	17	1/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	2.5	XXX	XXX	2.5	XXX	5.5	1/week	24-Hr Composite
Total Phosphorus	1.8	XXX	XXX	2.0	XXX	4	1/week	24-Hr Composite

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

at Outfall 001

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. B. For Outfall 001 , **Latitude** 40º 21' 38.81" , **Longitude** 77º 20' 27.22" , **River Mile Index** 1.35 , **Stream Code** 11193

Receiving Waters: Muddy Run (WWF)

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **Completion of Construction** through **Permit Expiration Date**.

2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Carbonaceous Biochemical Oxygen Demand (CBOD5)	31.0	50.0	XXX	25.0	40.0	50	1/week	24-Hr Composite
Total Suspended Solids	37.0	56.0	XXX	30.0	45.0	60	1/week	24-Hr Composite
Ultraviolet light intensity (mW/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Ammonia-Nitrogen Nov 1 - Apr 30	7.5	XXX	XXX	6.0	XXX	12	1/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	2.5	XXX	XXX	2.0	XXX	4	1/week	24-Hr Composite
Total Phosphorus	2.5	XXX	XXX	2.0	XXX	4	1/week	24-Hr Composite

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

at Outfall 001

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. C. **For Outfall** 001 , **Latitude** 40° 21' 38.81" , **Longitude** 77° 20' 27.22" , **River Mile Index** 1.35 , **Stream Code** 11193

Receiving Waters: Muddy Run (WWF)

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Permit Expiration Date**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

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	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	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	Report	XXX	1/month	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Copper, Total	Report SEMI AVG	XXX	XXX	Report SEMI AVG	XXX	XXX	1/6 months	24-Hr Composite

Outfall001 , 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	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Lead, Total	Report SEMI AVG	XXX	XXX	Report SEMI AVG	XXX	XXX	1/6 months	24-Hr Composite
Zinc, Total	Report SEMI AVG	XXX	XXX	Report SEMI AVG	XXX	XXX	1/6 months	24-Hr Composite

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

at Outfall 001

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. D. **For Outfall** 001, **Latitude** 40° 21' 38.81", **Longitude** 77° 20' 27.22", **River Mile Index** 1.35, **Stream Code** 11193

Receiving Waters: Muddy Run (WWF)

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **Completion of Construction** through **Permit Expiration Date**.

2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

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	1/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Net Total Nitrogen	Report	7306	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	314	XXX	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.

6.3.2 Summary of Proposed Permit Part C Conditions

The subject facility has the following Part C conditions.

- Chlorine Minimization
- SBR Batch Discharge Condition
- Hauled-in Waste Restrictions
- Chesapeake Bay Nutrient Definitions
- Solids Management for Non-Lagoon Treatment Systems

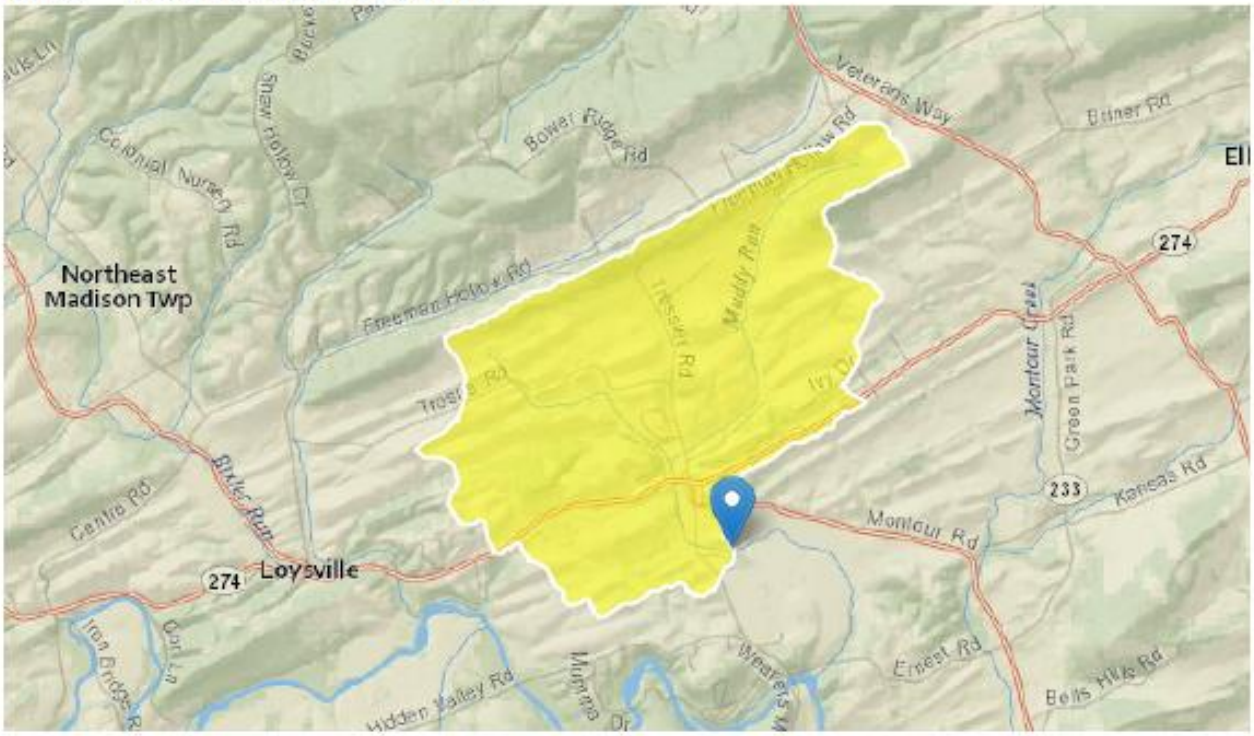
Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: New and Reissuance Sewage Individual NPDES Permit Applications, rev 1/6/2020
☐	Other:

Attachment A

Stream Stats/Gauge Data

StreamStats Report

Region ID: PA
Workspace ID: PA20220211180629984000
Clicked Point (Latitude, Longitude): 40.36084, -77.34107
Time: 2022-02-11 13:06:54 -0500



Loysville Village MA PA0043494 Modeling Point #1 February 2022

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	3.11	square miles
PRECIP	Mean Annual Precipitation	39	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	2.21	miles per square mile
ROCKDEP	Depth to rock	5.8	feet
CARBON	Percentage of area of carbonate rock	28.59	percent

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.11	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	2.21	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	5.8	feet	3.32	5.65
CARBON	Percent Carbonate	28.59	percent	0	99

Low-Flow Statistics Disclaimers [Low Flow Region 2]

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

Low-Flow Statistics Flow Report [Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.439	ft^3/s
30 Day 2 Year Low Flow	0.531	ft^3/s
7 Day 10 Year Low Flow	0.272	ft^3/s
30 Day 10 Year Low Flow	0.312	ft^3/s
90 Day 10 Year Low Flow	0.398	ft^3/s

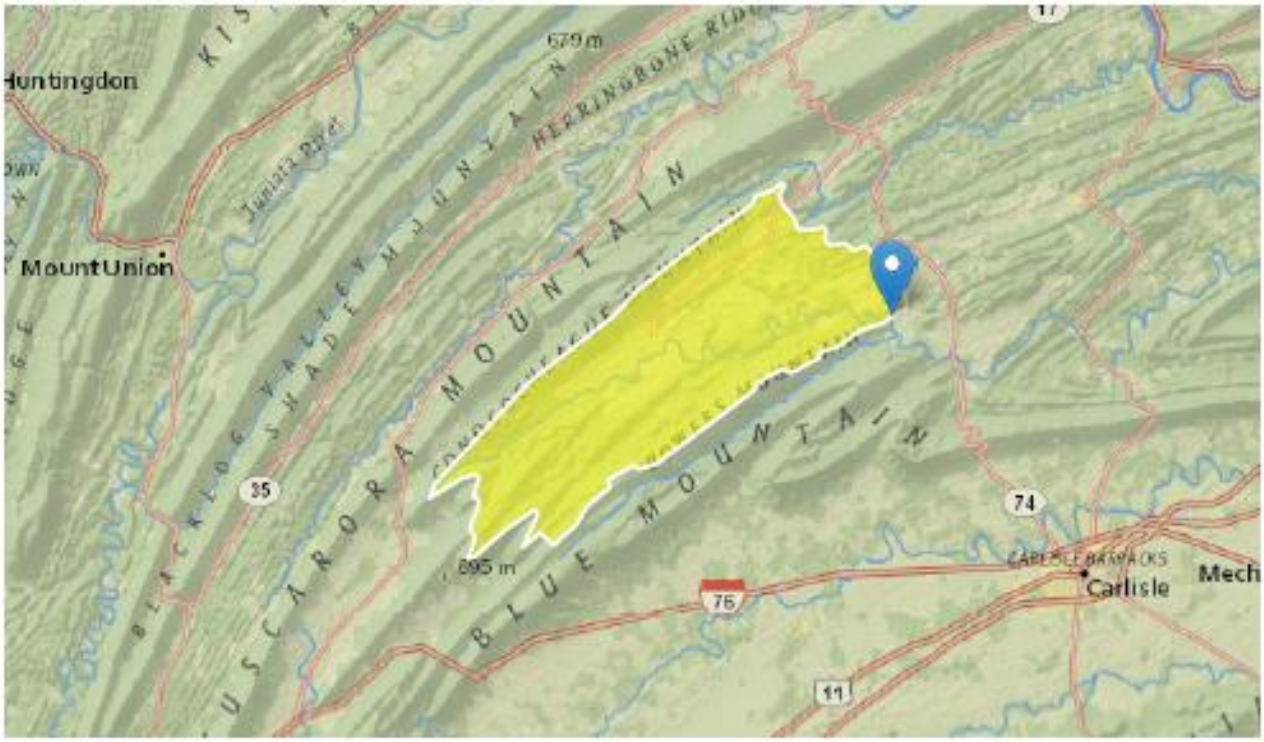
Low-Flow Statistics Citations

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

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

StreamStats Report

Region ID: PA
Workspace ID: PA20220211182509891000
Clicked Point (Latitude, Longitude): 40.35093, -77.33334
Time: 2022-02-11 13:25:35 -0500



Loysville Village MA PA0043494 Modeling Point #2 February 2022

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	103	square miles
PRECIP	Mean Annual Precipitation	40	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	2.06	miles per square mile
ROCKDEP	Depth to rock	4.8	feet
CARBON	Percentage of area of carbonate rock	11.23	percent

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	103	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	40	inches	35	50.4
STRDEN	Stream Density	2.06	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.8	feet	3.32	5.65
CARBON	Percent Carbonate	11.23	percent	0	99

Low-Flow Statistics Flow Report [Low Flow Region 2]

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	13.9	ft^3/s	38	38
30 Day 2 Year Low Flow	17.6	ft^3/s	33	33
7 Day 10 Year Low Flow	8.09	ft^3/s	51	51
30 Day 10 Year Low Flow	10.1	ft^3/s	46	46
90 Day 10 Year Low Flow	13.9	ft^3/s	36	36

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/)

functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

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Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Attachment B

Note: Modeling was based upon a flow rate of 0.15 MGD

WQM 7.0 Modeling Output Values

Toxics Management Spreadsheet Output Values

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07A	11193	MUDDY RUN

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)
1.350	Loysville WWTP	PA0043494	0.150	CBOD5	25		
				NH3-N	2.16	4.32	
				Dissolved Oxygen			5

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07A	11193	MUDDY RUN

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
1.350	Loysville WWTP	5.94	10.82	5.94	10.82	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
1.350	Loysville WWTP	.96	2.16	.96	2.16	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
1.35	Loysville WWTP	25	25	2.16	2.16	5	5	0	0

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
07A	11193	MUDDY RUN	1.350	567.00	3.11	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.075	0.00	0.00	0.000	0.000	0.0	0.00	0.00	22.30	8.15	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
Loysville WWTP	PA0043494	0.1500	0.1500	0.1500	0.000	20.00	7.54

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
07A	11193	MUDDY RUN	0.000	532.00	103.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.075	0.00	0.00	0.000	0.000	0.0	0.00	0.00	22.30	8.15	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	0.00	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 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07A	11193	MUDDY RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.350	0.150	21.152	7.746
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
9.736	0.449	21.698	0.106
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
13.48	1.299	1.08	0.765
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.625	21.898	Owens	5
Reach Travel Time (days)			
0.775			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.078	12.12	1.02	7.44
0.155	10.90	0.96	7.69
0.233	9.80	0.90	7.83
0.310	8.82	0.85	7.94
0.388	7.93	0.80	8.04
0.465	7.13	0.76	8.07
0.543	6.41	0.71	8.07
0.620	5.77	0.67	8.07
0.698	5.19	0.63	8.07
0.775	4.66	0.60	8.07

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07A	11193	MUDDY RUN

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												
1.350	0.23	0.00	0.23	.2321	0.00491	.449	9.74	21.7	0.11	0.775	21.15	7.75
Q1-10 Flow												
1.350	0.19	0.00	0.19	.2321	0.00491	NA	NA	NA	0.10	0.817	21.04	7.72
Q30-10 Flow												
1.350	0.29	0.00	0.29	.2321	0.00491	NA	NA	NA	0.11	0.727	21.28	7.78

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☐
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.82	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.24	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Loysville MA** NPDES Permit No.: **PA0043494** 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
0.15	100	7.54						

					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		646									
	Chloride (PWS)	mg/L		231									
	Bromide	mg/L		0.2									
	Sulfate (PWS)	mg/L		36.3									
	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	mg/L		0.004									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	mg/L		0.0006									
	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	mg/L		0.023									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										
	Carbon Tetrachloride	µg/L	<										
	Chlorobenzene	µg/L											
	Chlorodibromomethane	µg/L	<										
	Chloroethane	µg/L	<										
	2-Chloroethyl Vinyl Ether	µg/L	<										

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Loysville MA, NPDES Permit No. PA0043494, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Muddy Run**

No. Reaches to Model: 1

- (•) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	011193	1.35	567	3.11			Yes
End of Reach 1	011193	0	532	103			Yes

Q $_{7\text{-}10}$

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	1.35	0.0749										79	8.15		
End of Reach 1	0	0.0749										79	8.15		

Q $_{h}$

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	1.35														
End of Reach 1	0														

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

Pollutants	*Mass Limits* AML (lbs/day)	MDL (lbs/day)	*Concentration Limits* AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	Report	Report	Report	Report	Report	mg/L	0.016	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Lead	Report	Report	Report	Report	Report	mg/L	0.006	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	mg/L	0.14	AFC	Discharge Conc > 10% WQBEL (no RP)

Attachment C

TRC Evaluation

(Current treatment plant with flow rate of 0.11 MGD)

Loysville Village MA
PA0043494
Current Treatment Plant w/ flow rate of 0.11 MGD

February 2022

	A	B	C	D	E	F	G
2	**TRC EVALUATION**						
3	Input appropriate values in B4:B8 and E4:E7						
4		0.233	**= Q stream (cfs)**		**0.5**	**= CV Daily**	
5		0.11	**= 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		**0.5**	**= 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 = 0.456		**1.3.2.iii**	WLA cfc = 0.437
12		PENTOXSD TRG	**5.1a**	LTAMULT afc = 0.373		**5.1c**	LTAMULT cfc = 0.581
13		PENTOXSD TRG	**5.1b**	LTA_afc= 0.170		**5.1d**	LTA_cfc = 0.254
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) = 0.209		AFC	
18				INST MAX LIMIT (mg/l) = 0.684			

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)**