

Application Type Renewal  
Facility Type Municipal  
Major / Minor Minor

**NPDES PERMIT FACT SHEET  
INDIVIDUAL SEWAGE**

Application No. PA0086185  
APS ID 278499  
Authorization ID 1392584

**Applicant and Facility Information**

Applicant Name	<u>Washington Township Sewer Authority</u>	Facility Name	<u>Washington Township Loyalton STP</u>
Applicant Address	<u>185 Manors Road</u> <u>Elizabethville, PA 17023-8733</u>	Facility Address	<u>Loyalton Village</u> <u>Lykens, PA 17048</u>
Applicant Contact	<u>Charles Laudenslager</u>	Facility Contact	<u></u>
Applicant Phone	<u>(717) 362-3461</u>	Facility Phone	<u></u>
Client ID	<u>44747</u>	Site ID	<u>237876</u>
Ch 94 Load Status	<u>Existing Hydraulic Overload</u>	Municipality	<u>Washington Township</u>
Connection Status	<u>No Exceptions Allowed</u>	County	<u>Dauphin</u>
Date Application Received	<u>April 14, 2022</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>May 12, 2022</u>	If No, Reason	<u></u>
Purpose of Application	<u>NPDES Renewal for discharge of treated sewage</u>		

**Summary of Review**

**1.0 General Discussion**

This fact sheet supports the re-issuance of an existing NPDES permit for discharge of treated domestic wastewater from a wastewater treatment plant located in Washington Township, Dauphin County that serves the village of Loyalton and Upper Dauphin Area School District. Washington Township Sewer Authority (Authority) owns, operates, and maintains the wastewater treatment plant. The treatment plant serves Washington Township (100% of the flow). The sewer collection system is not combined and there are no bypasses or overflows authorized in the collection system. The treatment plant has a maximum monthly hydraulic design capacity of 0.0500 MGD and an annual average design capacity of 0.0500 MGD. The organic design capacity of the facility is 120 lbs/day- BOD5. The discharge goes to Wiconisco Creek via constructed wetlands. Wiconisco Creek is classified for Warm Water Fishes (WWF) The existing NPDES permit was issued on October 26, 2017 with effective date November 1, 2017 and an expiration date of October 31, 2022. The applicant submitted a timely renewal application to the Department and has been operating under the terms and conditions in the existing permit under administrative extension provisions pending Department action on the renewal application. A topographic map showing the discharge location is presented in attachment A.

**1.1 Sludge use and disposal description and location(s):**

Sludge is removed from the lagoons as needed infrequently to Rapho Township.

Approve	Deny	Signatures	Date
X		<i>J. Pascal Kwedza,</i> J. Pascal Kwedza, P.E. / Environmental Engineer	May 2, 2023
X		<i>Maria D. Bebenek for</i> Daniel W. Martin, P.E. / Environmental Engineer Manager	May 19, 2023
X		<i>Maria D. Bebenek</i> Maria D. Bebenek, P.E. / Program Manager	May 19, 2023

**Summary of Review**

**1.2 Public Participation**

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

**1.3 Changes to the existing Permit**

- Quarterly monitoring of E. Coli has been added

**1.4 Existing Permit and Monitoring Requirements**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Daily Min	XXX	XXX	XXX	1/day	Grab
CBOD5	10.4	16.6	XXX	25	40	50	2/month	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS	12.5	18.7	XXX	30	45	60	2/month	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Calculation
Ammonia	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
TKN	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Aluminum	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Iron	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Manganese	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

1.5 Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>001</u>	Design Flow (MGD)	<u>.05</u>
Latitude	<u>40° 33' 59.94"</u>	Longitude	<u>-76° 45' 52.55"</u>
Quad Name	_____	Quad Code	_____
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Wiconisco Creek (WWF)</u>	Stream Code	<u>16895</u>
NHD Com ID	<u>54972987</u>	RMI	<u>23.50</u>
Drainage Area	<u>66.0</u>	Yield (cfs/mi <sup>2</sup> )	_____
Q <sub>7-10</sub> Flow (cfs)	_____	Q <sub>7-10</sub> Basis	_____
Elevation (ft)	_____	Slope (ft/ft)	_____
Watershed No.	<u>6-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	_____	Existing Use Qualifier	_____
Exceptions to Use	_____	Exceptions to Criteria	_____
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Metals, Siltation, pH</u>		
Source(s) of Impairment	<u>Abandoned Mine Drainage, Abandoned Mine Drainage, Abandoned Mine Drainage</u>		
TMDL Status	<u>Final, Final</u>	Name	<u>Wiconisco Creek, Wiconisco Creek AMD</u>
Background/Ambient Data		Data Source	
pH (SU)	_____		_____
Temperature (°F)	_____		_____
Hardness (mg/L)	_____		_____
Other:	_____		_____
Nearest Downstream Public Water Supply Intake	<u>Veolia Water PA</u>		
PWS Waters	_____	Flow at Intake (cfs)	_____
PWS RMI	_____	Distance from Outfall (mi)	<u>48</u>

Changes Since Last Permit Issuance: None

**1.5.1 Water Supply Intake:**

The nearest downstream water supply intake is approximately 48 miles downstream by Veolia Water PA on the Susquehanna River above Fort Hunter, Dauphin County. The discharge will not impact the intake because of the distance and dilution.

2.0 Treatment Facility Summary				
<b>Treatment Facility Name:</b> Washington Township Loyalton STP				
<b>WQM Permit No.</b>		<b>Issuance Date</b>		
2294402 A-1		4/26/2004		
<b>Waste Type</b>	<b>Degree of Treatment</b>	<b>Process Type</b>	<b>Disinfection</b>	<b>Avg Annual Flow (MGD)</b>
Sewage	Secondary	Artificial Wetlands	Ultraviolet	0.05
<b>Hydraulic Capacity (MGD)</b>	<b>Organic Capacity (lbs/day)</b>	<b>Load Status</b>	<b>Biosolids Treatment</b>	<b>Biosolids Use/Disposal</b>
0.05	120	No limitation	N/A	

Changes Since Last Permit Issuance: None

**2.1 Treatment System**

Raw wastewater is pumped to two (2) facultative lagoons. Treated effluent from the lagoons flows by gravity to a distribution box that feeds two (2) free water constructed wetland cells. (2 trains of treatment lagoons, each train has an aerated lagoon followed by a non-aerated lagoon), Treated effluent then flow by gravity to a UV disinfection system before discharge through a remediated wetland into the Wiconsico Creek. The facultative lagoons were cleaned were cleaned in 2020. The UV is old and has no monitors and is being maintained and checked regularly to ensure continuous operation.

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from March 1, 2022 to February 28, 2023)

Parameter	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22
Flow (MGD) Average Monthly	0.014	0.031	0.035	0.018	0.027	0.026	0.021	0.016	0.017	0.046	0.044	0.025
Flow (MGD) Daily Maximum	0.025	0.057	0.118	0.040	0.072	0.086	0.053	0.035	0.065	0.165	0.095	0.055
pH (S.U.) Minimum	6.9	6.3	7.0	6.6	6.6	6.5	6.8	6.6	6.8	6.8	7.1	7.0
pH (S.U.) Instantaneous Maximum	7.4	7.7	7.5	7.3	7.0	7.0	7.3	7.2	7.1	7.6	7.6	7.5
DO (mg/L) Minimum	3.57	2.44	2.63	0.67	1.07	1.04	0.34	0.26	0.27	0.72	2.05	3.66
CBOD5 (lbs/day) Average Monthly	3.0	6.0	5.0	3.0	1.0	5.0	1.0	3.0	2.0	< 2.0	5.0	4.0
CBOD5 (lbs/day) Weekly Average	4.0	6.0	5.0	6.0	1.0	8.0	2.0	5.0	2.0	3.0	6.0	4.0
CBOD5 (mg/L) Average Monthly	23.7	23.7	26.3	15.0	9.2	17.5	9.1	39.4	10.5	< 6.3	10.2	19.9
CBOD5 (mg/L) Weekly Average	25.3	28.0	29.8	17.4	10.2	20.4	10.8	71.5	13.0	10.6	12.8	20.0
BOD5 (lbs/day) Raw Sewage Influent   Average Monthly	33.0	44.0	34.0	28.0	24.0	23.0	21.0	19.0	25.0	36.0	30.0	27.0
BOD5 (lbs/day) Raw Sewage Influent   Daily Maximum	35.0	45.0	37.0	54.0	25.0	32.0	25.0	35.0	27.0	46.0	30.0	29.0
BOD5 (mg/L) Raw Sewage Influent   Average Monthly	175.0	155.0	158.0	206.0	141.0	94.0	128.0	111.0	178.0	165.0	75.0	110.0
TSS (lbs/day) Average Monthly	2.0	5.0	3.0	2.0	1.0	7.0	4.0	3.0	8.0	< 2.0	4.0	6.0
TSS (lbs/day) Raw Sewage Influent   Average Monthly	11.0	27.0	14.0	8.0	9.0	20.0	14.0	12.0	14.0	28.0	29.0	31.0
TSS (lbs/day) Raw Sewage Influent   Daily Maximum	15.0	30.0	22.0	15.0	10.0	30.0	15.0	21.0	15.0	34.0	73.0	34.0
TSS (lbs/day) Weekly Average	2.0	5.0	3.0	3.0	1.0	11.0	5.0	5.0	15.0	3.0	5.0	6.0

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Washington Township Loyalton STP**

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TSS (mg/L) Average Monthly	16.0	19.0	15.0	12.0	9.2	24.0	22.0	43.0	44.0	< 7.0	9.3	27.0
TSS (mg/L) Raw Sewage Influent   Average Monthly	56.0	89.0	60.0	92.0	54.0	79.0	22.0	71.0	103.0	123.0	73.0	127.0
TSS (mg/L) Weekly Average	17.0	26.0	16.0	16.0	10.2	28.0	28.0	70.0	78.0	10.0	11.0	29.0
Fecal Coliform (No./100 ml) Geometric Mean	1.0	4.0	382.0	21.0	92.0	8.0	< 1.0	< 1.0	< 8.0	< 26.0	1.0	< 1.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	1.0	7.0	635.0	41.0	160.0	12.0	< 1.0	< 1.0	59.0	692.0	2.0	< 1.0
Nitrate-Nitrite (mg/L) Average Quarterly			< 0.2			< 0.10			0.47			0.68
Total Nitrogen (mg/L) Average Quarterly			16.6			12.4			15.8			21.58
Ammonia (mg/L) Average Quarterly			14.0			11.5			12.5			16.9
TKN (mg/L) Average Quarterly			16.4			12.4			15.3			20.9
Total Phosphorus (mg/L) Average Quarterly			3.38			7.68			4.89			3.93
Total Aluminum (mg/L) Average Quarterly			< 0.05			< 0.050			0.051			< 0.05
Total Iron (mg/L) Average Quarterly			2.12			1.27			1.29			0.244
Total Manganese (mg/L) Average Quarterly			< 0.202			0.263			0.182			0.87

**3.2 Effluent Violations for Outfall 001, from: April 1, 2022 To: February 28, 2023**

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
CBOD5	07/31/22	Avg Mo	39.4	mg/L	25	mg/L
CBOD5	07/31/22	Avg Mo	39.4	mg/L	25	mg/L
CBOD5	12/31/22	Avg Mo	26.3	mg/L	25	mg/L
CBOD5	07/31/22	Wkly Avg	71.5	mg/L	40	mg/L

CBOD5	07/31/22	Wkly Avg	71.5	mg/L	40	mg/L
TSS	07/31/22	Avg Mo	43.0	mg/L	30	mg/L
TSS	07/31/22	Avg Mo	43.0	mg/L	30	mg/L
TSS	06/30/22	Avg Mo	44.0	mg/L	30	mg/L
TSS	07/31/22	Wkly Avg	70.0	mg/L	45	mg/L
TSS	07/31/22	Wkly Avg	70.0	mg/L	45	mg/L
TSS	06/30/22	Wkly Avg	78.0	mg/L	45	mg/L

**3.3 Summary of Discharge Monitoring Reports (DMRs):**

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.1 indicates permit limits have been met most of the time. TSS and CBOD5 effluent violations were noted on DMRs for the months of June, July and December in 2022 during the period reviewed and presented in section 3.2 above. The operator is unsure what caused these violations. No violation occurred in past 4 months operation.

**3.4 Summary of Inspections:**

The facility has been inspected a couple times during last permit cycle. No effluent violations were found during plant inspections. An NOV was sent on November 26, 2019 for broken influent pipes. The pipes have been repaired.

**4.0 Development of Effluent Limitations**

<b>Outfall No.</b>	<u>001</u>	<b>Design Flow (MGD)</b>	<u>.05</u>
<b>Latitude</b>	<u>40° 33' 57.90"</u>	<b>Longitude</b>	<u>-76° 45' 51.49"</u>
<b>Wastewater Description:</b> <u>Sewage Effluent</u>			

**4.1 Basis for Effluent Limitations**

In general, the Clean Water Act(AWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

**4.2 Technology-Based Limitations**

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
CBOD <sub>5</sub>	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: Total Residual Chlorine limitation not applicable. The facility utilizes UV for disinfection.

**4.3 Mass-Based Limits**

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

$$\text{Mass based limit (lb/day)} = \text{concentration limit (mg/L)} \times \text{design flow (mgd)} \times 8.34$$

**4.3.1 WQM 7.0 Stream Model**

WQM 7.0 is a water quality model DEP utilizes to establish appropriate effluent limits for CBOD<sub>5</sub>, NH<sub>3</sub>-N and DO in permits. The model simulates mixing and degradation of NH<sub>3</sub>-N in the stream and compares calculated instream NH<sub>3</sub>-N concentrations to NH<sub>3</sub>-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of CBOD<sub>5</sub> and NH<sub>3</sub>-N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits.



#### 4.4 Water Quality-Based Limitations

##### 4.4.1 Receiving Stream

The receiving stream is the Wiconisco Creek. According to 25 PA § 93.9o, Wiconisco Creek is protected for Warm Water Fishes (WWF). It is located in Drainage List m and State Watershed 6-C. It has been assigned stream code 16895. According to the Department's Pennsylvania Integrated Water Quality Monitoring and Assessment Report, this stream is impaired for pH, siltation and metals due to abandoned mine drainage. A TMDL for the effects of Acid Mine Drainage was completed and approved on November 24, 2008 and is discussed further in this report.

##### 4.4.2 Streamflow:

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No. 0155500 on Mahantango. The  $Q_{7-10}$  and drainage area at the gage are 6.38ft<sup>3</sup>/s and 164 mi<sup>2</sup> respectively. The resulting yields are as follows:

$$\begin{aligned} Q_{7-10} &= 6.38 \text{ cfs} / 164 \text{ sq. mi} = 0.04\text{cfs/sq.mi} \\ Q_{30-10} / Q_{7-10} &= 1.47 \\ Q_{1-10} / Q_{7-10} &= 0.74 \end{aligned}$$

The drainage area at the point of discharge taken from previous protection report = 66 sq. mi.  
The design flow is calculated as:  $Q_{7-10} = 0.04\text{cfs} \times 66 \text{ sq. mi} = 2.64\text{cfs}$

##### 4.4.3 NH<sub>3</sub>N Calculations

NH<sub>3</sub>N calculations will be based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH<sub>3</sub>N criteria used in the WQM model of the stream:

- STP pH = 6.6 (DMR median July – Sept.)
- STP Temperature = 25 ° C (default)
- Stream pH = 7.0 (Default)
- Stream Temperature = 20 ° C (Default)
- Background NH<sub>3</sub>-N = 0.0 (default)

##### 4.4.4 CBOD<sub>5</sub>:

Water quality modeling for this discharge was done in conjunction with the Williamstown Borough Authority STP discharge, Elizabethtown STP's discharge and Lykens Borough's discharge due to the proximity of these discharges to each other.

The attached results of the WQM 7.0 stream model (attachment B) indicates that for Washington Township's discharge with an annual average flow of 0.05 MGD, a monthly average limit of 25 mg/l is needed to protect the water quality of the stream. This limit is consistent with the existing limit. DMRs and inspection reports show that the STP has been achieving less than 25 mg/l CBOD<sub>5</sub>. Therefore, a limit of 25mg/l monthly average with 40mg/l weekly average and 50 mg/l instantaneous maximum will be applied for this current permit cycle.

Mass Limits are calculated as follows:

$$\text{Mass based AML (lb/day) for the winter months} = 25 \text{ (mg/L)} \times 0.05\text{(mgd)} \times 8.34 = 10.4$$

$$\text{Mass based AWL (lb/day) for the winter months} = 40\text{(mg/L)} \times 0.05\text{(mgd)} \times 8.34 = 16.6$$

##### 4.4.5 NH<sub>3</sub>-N

The attached result of the WQM 7.0 stream model (Attachment B) also indicates that no limitation on NH<sub>3</sub> is necessary to protect the aquatic life from toxicity effects. However, ammonia monitoring quarterly required in the existing permit will continue to ensure treatment efficiency.

#### **4.4.6 Dissolved Oxygen**

The existing permit contains monitor for Dissolved Oxygen (DO). Effluent D.O. levels fluctuate in the 1 to 3 mg/l range and there is no reliable means to add D.O. to the effluent without making significant modifications to the treatment system. DEP inspections indicate that D.O. increases by natural aeration in the channel that flows into the mitigated wetland. The effluent D.O. levels are not adversely impacting the mitigated wetland. The large amount of dilution afforded by Wiconisco Creek ensures that there will be no impacts on the receiving stream. This is verified by the attached printout from WQM 7.0. It shows that secondary treatment is adequate even with an effluent D.O. of 0 mg/l. Therefore, monitor and report for D.O. will be continued with this renewal since treatment process and units are the same.

#### **4.4.7 Total Suspended Solids(TSS)**

There is no water quality criteria for TSS. A limit of 30 mg/l AML will be required based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1) and an AWL of 45mg/l per 40CFR 133.102(b)(2) and 25 PA § 92a.47(a)(2)

Mass based AML (lb/day) = 30 (mg/L) × 0.05(mgd) × 8.34 = 12.5

Mass based AWL (lb/day) = 45(mg/L) × 0.05(mgd) × 8.34 = 18.7

#### **4.4.8 Total Residual Chlorine**

The discharge does not have the reasonable potential to cause or contribute to a water quality standards violation for total residual chlorine since the permittee does not add chlorine to the wastewater for disinfection. Therefore, the proposed permit does not contain effluent limits for total residual chlorine. UV monitoring will not be required in the permit because there is no monitor for the UV. The permit has condition in Part C.E requiring routine check and maintenance of UV to ensure UV efficiency.

#### **4.4.9 Toxics**

A reasonable potential (RP) analysis was done for pollutants in the discharge. The discharge consists entirely of domestic wastewater with no pollutants of concern that needs further analysis.

#### **4.4.10 Fecal Coliform and E. Coli**

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. In March of 2021, EPA approved DEP's Triennial Review of Water Quality Standards, which included a new swimming season criterion for E. coli. As a result, DEP is including monitoring requirements for E. Coli in new and renewed sewage permits above 2000gpd. Monitoring frequency is based on annual average flow as follows: 1/month for design flows >= 1 MGD, 1/quarter for design flows >= 0.05 and < 1 MGD and 1/year for design flows of 0.002 and < 0.05 MGD. Your discharge of 0.05MGD requires 1/quarter monitoring as included in the permit.

#### **4.4.11 Chesapeake Bay Strategy:**

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by DEP based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers received annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mgd) are required to monitor and report TN and TP during permit renewal and any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. EPA published Chesapeake Bay TMDL in December of 2010. In order to address the TMDL, Pennsylvania developed Chesapeake Watershed Implementation Plan (WIP) Phase 1, Phase 2 and currently Phase 3 WIP and a supplement to the WIPs to be implemented with the original Chesapeake Bay Strategy.

As outlined in the current Phase 3 WIP and the current supplement to the WIP, re-issuing permits for significant dischargers would follow the same phased approach formulated in the original Bay strategy whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewals

As outlined in the current Phase 3 WIP and the current supplement to the WIP, re-issuing permits for significant dischargers would follow the same phased approach formulated in the original Bay strategy whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewals. This facility is classified as a phase 5, and has been monitoring Total Phosphorus, Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen, and will continue to monitor and report the daily maximum concentration during the next permit cycle 1/quarter.

**4.4.12 Influent BOD and TSS Monitoring**

The permit will include influent BOD5 and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements.

**4.4.13 Stormwater**

There is no stormwater outfall associated with this facility.

**4.4.14 Industrial Users**

This Wastewater Treatment Plant does not receive wastewater from any significant industrial users.

**4.4.15 Pretreatment Requirements**

The design annual average flow of the treatment plant is 0.05 MGD and the facility receives no flow from significant Industrial users. EPA does not require development of pretreatment program for facilities with design flow less than 5MGD. However, the permit contains standard conditions requiring the permittee to monitor and control industrial users if applicable.

**5.0 Other Requirements**

**5.1 Anti-backsliding**

Not applicable to this permit

**5.2 Anti-Degradation (93.4)**

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

**5.3 Class A Wild Trout Fisheries**

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

**5.4 303d Listed Streams**

The discharge is located on a 303d listed stream segment as impaired due to Acid Mine Drainage (AMD). A TMDL was approved for Wiconisco Creek Watershed which set allowable loadings for Iron, Manganese, Aluminum and Acidity in Wiconisco Creek. In addition, allowable loads for sediment and nutrients were set for Little Wiconisco Creek and several unnamed tributaries. The TMDL does not set allowable loads for nutrients in Wiconisco Creek. AMD type of impairment can only be mitigated under a mine drainage program therefore, no sewage treatment plants were included in the TMDL. The facility has been monitoring Total Aluminum, Total Iron and Total Manganese quarterly and does not appear to contribute significantly to the impairment, but will continue quarterly monitoring of Total Aluminum, Total Iron and Total Manganese during the permit cycle to ensure discharge levels remains low.

**5.5 Special Permit Conditions**

The permit contains the following special conditions:

- Stormwater Prohibition, Approval Contingencies, Solids Management and Restriction on receipt of hauled in waste under certain conditions and chlorine minimization requirement.

### **5.6 Basis for Effluent and Surface Water Monitoring**

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

### **5.7 Effluent Monitoring Frequency**

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

**6.0 Proposed Effluent Limitations and Monitoring Requirements**

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the “NPDES Permit Writer’s Manual” (362-0400-001), SOPs and/or BPJ.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Daily Min	XXX	XXX	XXX	1/day	Grab
CBOD5	10.4	16.6	XXX	25	40	50	2/month	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS	12.5	18.7	XXX	30	45	60	2/month	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Calculation
Ammonia	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
TKN	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Aluminum	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Iron	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Manganese	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

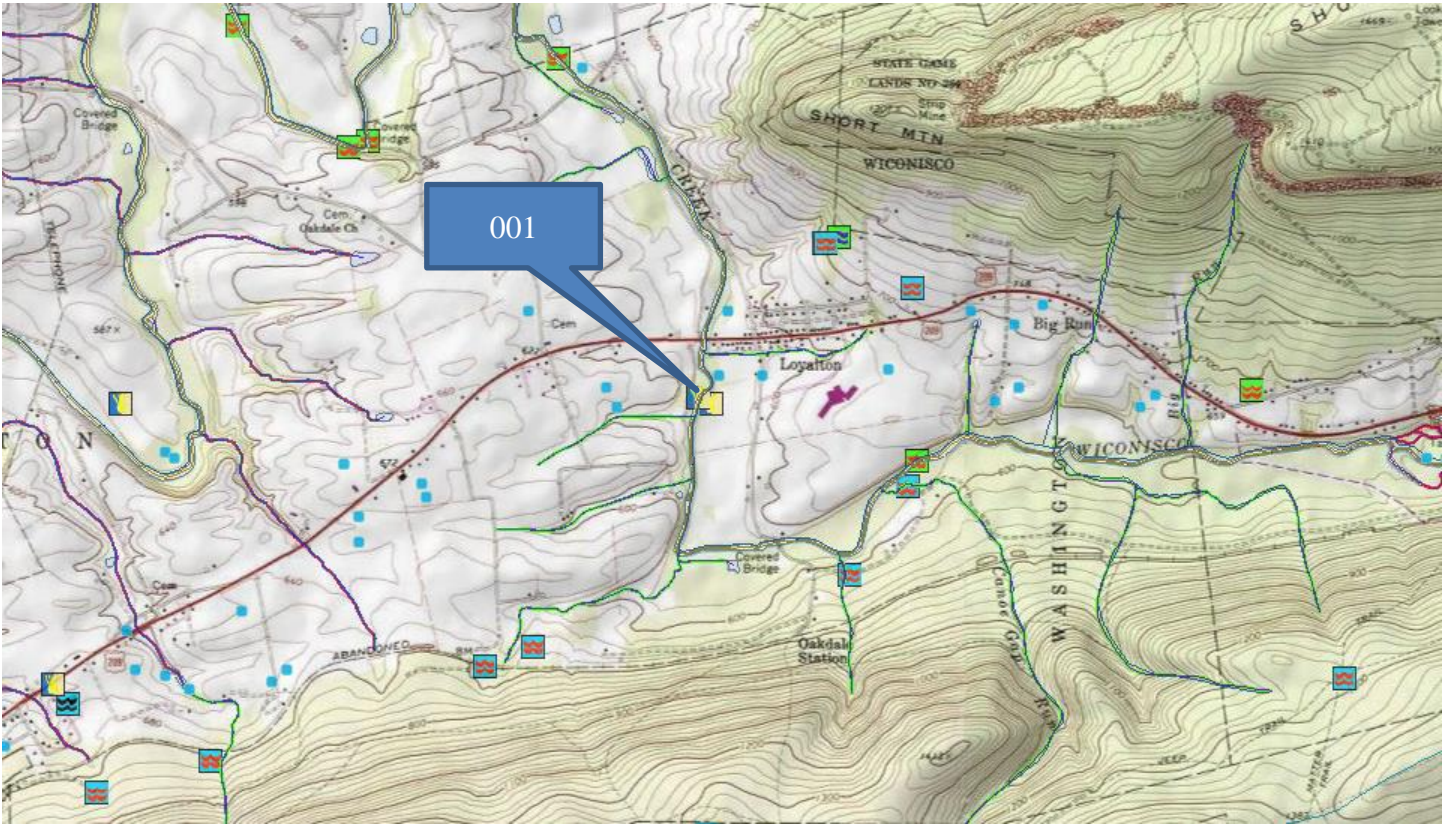
Compliance Sampling Location: Outfall 001

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

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Attachments

A. Topographical Map





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B. WQM 7.0 Model Results

**WQM 7.0 Effluent Limits**

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>					
06C	16855	WICONI SCO CREEK					
RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
32.400	Williamstown STP	PA0021491	0.450	CBOD5	15.01		
				NH3-N	4.49	8.98	
				Dissolved Oxygen			5
27.600	Lykens Boro STP	PA0043575	0.410	CBOD5	25		
				NH3-N	11.82	23.64	
				Dissolved Oxygen			5
23.500	Washington Twp	PA0086185	0.050	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5
15.950	Elizabethville	PA0037737	0.400	CBOD5	25		
				NH3-N	15.76	31.52	
				Dissolved Oxygen			5

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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
06C	16895	WICONISCO CREEK	32.400	695.00	21.80	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.040	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Williamstown STP	PA0021491	0.4500	0.4500	0.4500	0.000	22.00	6.80

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
COD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0086185

**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
06C	16895	WICONISCO CREEK	27.600	645.00	60.00	0.00000	0.00	<input checked="" type="checkbox"/>

**Stream Data**

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.040	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

**Discharge Data**

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Lykens Baro STP	PA0043575	0.4100	0.4100	0.4100	0.000	25.00	7.00

**Parameter Data**

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0086185

**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
06C	16895	WICONISCO CREEK	23.500	580.00	66.00	0.00000	0.00	<input checked="" type="checkbox"/>

**Stream Data**

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.040	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

**Discharge Data**

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Washington Twp	PA0086185	0.0500	0.0500	0.0500	0.000	25.00	6.60

**Parameter Data**

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0086185

**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
06C	16895	WICONISCO CREEK	15.950	518.00	80.49	0.00000	0.00	<input checked="" type="checkbox"/>

**Stream Data**

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.040	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

**Discharge Data**

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Elizabethville	PA0037737	0.4000	0.4000	0.4000	0.000	25.00	7.00

**Parameter Data**

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0086185

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
06C	16895	WICONISCO CREEK	7.420	450.00	89.60	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.040	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Dauphin Meadows	PA0080187	0.0500	0.0500	0.0500	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
COD5	50.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	50.00	0.00	0.00	0.70

### WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>							
06C	16895	WCONISCO CREEK							
<b>NH3-N Acute Allocations</b>									
RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction		
32.400	Williamstown STP	16.87	32.56	16.87	32.56	0	0		
27.600	Lykens Boro STP	15.03	50	15.52	50	0	0		
23.500	Washington Twp	16.85	50	15.64	50	0	0		
15.950	Elizabethville	15.39	50	15.02	50	0	0		
<b>NH3-N Chronic Allocations</b>									
RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction		
32.400	Williamstown STP	1.86	5.28	1.86	5.28	0	0		
27.600	Lykens Boro STP	1.8	11.82	1.8	11.82	0	0		
23.500	Washington Twp	1.88	25	1.8	25	0	0		
15.950	Elizabethville	1.82	15.76	1.77	15.76	0	0		
<b>Dissolved Oxygen Allocations</b>									
RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
32.40	Williamstown STP	15.01	15.01	4.49	4.49	5	5	0	0
27.60	Lykens Boro STP	25	25	11.82	11.82	5	5	0	0
23.50	Washington Twp	25	25	25	25	5	5	0	0
15.95	Elizabethville	25	25	15.76	15.76	5	5	0	0

**WQM 7.0 D.O. Simulation**

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>	
06C	16895	WCONISCO CREEK	

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<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
32.400	0.450	20.887	6.900	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
21.429	0.577	37.171	0.127	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
7.77	0.565	1.99	0.749	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
6.805	2.433	Tsivoglou	5	
<u>Reach Travel Time (days)</u>	<b>Subreach Results</b>			
2.308	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.231	6.76	1.67	5.53
	0.462	5.92	1.41	5.12
	0.692	5.17	1.18	5.16
	0.923	4.51	1.00	5.41
	1.154	3.94	0.84	5.76
	1.385	3.44	0.71	6.12
	1.615	3.00	0.59	6.48
	1.846	2.62	0.50	6.80
	2.077	2.29	0.42	7.10
	2.308	2.00	0.35	7.36

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<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
27.600	0.860	21.221	6.955	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
32.565	0.670	48.580	0.171	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
5.90	0.675	2.15	0.769	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
7.320	5.027	Tsivoglou	5	
<u>Reach Travel Time (days)</u>	<b>Subreach Results</b>			
1.464	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.146	5.32	1.92	6.82
	0.293	4.79	1.72	6.71
	0.439	4.32	1.54	6.79
	0.586	3.89	1.37	6.94
	0.732	3.50	1.23	7.11
	0.878	3.15	1.10	7.29
	1.025	2.84	0.98	7.45
	1.171	2.56	0.88	7.60
	1.317	2.31	0.78	7.74
	1.464	2.08	0.70	7.86





Permit No. PA0086185

### WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.74	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.47	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

**WQM 7.0 Hydrodynamic Outputs**

<u>SWP Basin</u>		<u>Stream Code</u>			<u>Stream Name</u>							
06C		16895			WCONI SCO CREEK							
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
<b>Q7-10 Flow</b>												
32.400	0.87	0.00	0.87	.6962	0.00197	.577	21.43	37.17	0.13	2.308	20.89	6.90
27.600	2.41	0.00	2.41	1.3304	0.00300	.67	32.56	48.58	0.17	1.464	21.22	6.96
23.500	2.65	0.00	2.65	1.4078	0.00156	.692	35.27	50.98	0.17	2.777	21.22	6.95
15.950	3.23	0.00	3.23	2.0266	0.00151	.722	39.7	55.02	0.18	2.842	21.53	6.96
<b>Q1-10 Flow</b>												
32.400	0.65	0.00	0.65	.6962	0.00197	NA	NA	NA	0.12	2.519	21.04	6.88
27.600	1.78	0.00	1.78	1.3304	0.00300	NA	NA	NA	0.15	1.622	21.47	6.95
23.500	1.96	0.00	1.96	1.4078	0.00156	NA	NA	NA	0.15	3.082	21.47	6.94
15.950	2.39	0.00	2.39	2.0266	0.00151	NA	NA	NA	0.17	3.133	21.82	6.95
<b>Q30-10 Flow</b>												
32.400	1.29	0.00	1.29	.6962	0.00197	NA	NA	NA	0.14	2.026	20.70	6.92
27.600	3.54	0.00	3.54	1.3304	0.00300	NA	NA	NA	0.20	1.262	20.94	6.97
23.500	3.89	0.00	3.89	1.4078	0.00156	NA	NA	NA	0.19	2.391	20.93	6.96
15.950	4.74	0.00	4.74	2.0266	0.00151	NA	NA	NA	0.21	2.466	21.19	6.97