pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0261262**
Facility Type	**Municipal**	APS ID	**684570**
Major / Minor	**Major**	Authorization ID	**1445726**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**North Londonderry Township Authority**	Facility Name	**North Londonderry Township STP**
Applicant Address	655 E Ridge Road	Facility Address	980 W Main Street
	Palmyra, PA 17078-9308		Annville, PA 17003-9063
Applicant Contact	Michael Booth	Facility Contact	Eric Stokes
Applicant Phone	(717) 838-1373	Facility Phone	(717) 507-8781
Client ID	140480	Site ID	717029
Ch 94 Load Status	Not Overloaded	Municipality	South Annville Township
Connection Status	No Limitations	County	Lebanon
Date Application Received	June 30, 2023	EPA Waived?	No
Date Application Accepted	July 10, 2023	If No, Reason	Major Facility, Significant CB Discharge

Purpose of Application: Renewal of permit to discharge treated sewage.

Summary of Review

1.0 General Discussion

This fact sheet supports the renewal of an existing NPDES permit for discharge of treated domestic wastewater from North Londonderry Township (Authority) wastewater treatment plant. The Authority owns, operates, and maintains the wastewater treatment plant. The facility is located in South Annville Township, Lebanon County. The facility is a Schreiber countercurrent biological nutrient removal treatment system that services Palmyra Borough (47% flow) and North Londonderry Township (53% flow). The sewer collection system is not combined, and no bypasses or overflows are approved in the collection system. The treatment plant has a hydraulic design capacity of 2.0 MGD and an annual average design capacity of 1.5 MGD. The organic design capacity of the facility is 5,705lbs/day- BOD_5. The facility discharge to Killinger Creek which is classified for Trout Stocking (TSF). The existing NPDES permit was issued on December 27, 2018 with an effective date of January 1, 2019 and expiration date of December 31, 2023. The applicant submitted a timely NPDES permit renewal application to the Department and is currently 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 discharge locations is presented in attachment A and the treatment plant process flow diagram is presented in attachment E.

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	May 10, 2024
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	May 15, 2024
X		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Program Manager	May 15, 2024

Summary of Review

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

Waste activated sludge is pumped to an aerobic digester. Digested sludge is then pumped to a centrifuge for dewatering. Dewatered biosolids are stored on a covered sludge storage pad and hauled offsite to the Greater Lebanon Refuse Authority landfill for disposal.

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.

1.4 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	1.5
Latitude	40º 19' 14.20"	Longitude	-76º 33' 18.78"
Quad Name	Palmyra	Quad Code	1633
Wastewater Description:	Sewage Effluent		
Receiving Waters	Killinger Creek	Stream Code	09705
NHD Com ID	56399247	RMI	1.120
Drainage Area	13.44	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	1.88	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Nutrients, Pathogens		
Source(s) of Impairment	Agriculture, Source Unknown		
TMDL Status	Final	Name	Quittapahilla Creek Watershed

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	PA American Water Company		
PWS Waters	Swatara Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	13

Changes Since Last Permit Issuance: None

1.4.1 Water Supply Intake

The nearest downstream water supply intake is approximately 13 miles downstream by PA American Water Co. on Swatara Creek in South Hanover Twp., Dauphin Co. No impact is expected from this discharge.

1.5 Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0
Latitude	40º 19' 13.02"	Longitude	-76º 33' 19.09"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		
Receiving Waters	Killinger Creek	Stream Code	09705
NHD Com ID	56399247	RMI	
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Nutrients, Pathogens		
Source(s) of Impairment	Agriculture, Source Unknown		
TMDL Status	Final	Name	Quittapahilla Creek Watershed

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake			
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Changes Since Last Permit Issuance: None

1.5.1 Stormwater

The facility has one stormwater Outfall 002 (40°19’13”/76°33’19”) part C of the permit will require compliance with the standard requirements applicable to stormwater outfalls for 002.

2.0 Treatment Facility Summary				
Treatment Facility Name: North Londonderry Township Authority STP				
WQM Permit No.	**Issuance Date**			
3810401	2/14/2011			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Tertiary	Counter Current With Solids Removal	Ultraviolet	1.5
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
2	5705	Not Overloaded	Aerobic Digestion	Combination of methods

Changes Since Last Permit Issuance: None

2.1 Treatment Facility

The treatment plant consists of comminutor, 3 influent pumps, Lakeside fine screen unit, aerated grit chamber, mixing chamber, splitter box, two Schreiber aeration tanks, two secondary clarifiers, 2 Aqua-aerobic disk filters, one aerobic digester, a centrifuge for sludge dewatering, 3 UV disinfection units and a post aeration cascade. There is a Septage receiving station but not in use.

Wastewater flows from Palmyra Borough and Londonderry Township through a comminutor to the influent pump station of wastewater treatment plant. The influent is then pumped with grinder pumps to headworks that houses a fine screening unit (Lakeside fine screen) and grit/grease removal system. The wastewater from the grit system go through a mixing chamber to a splitter box and directed to the two Schreiber tanks. The Schreiber tanks are designed to operate in anoxic/oxic mode to nitrify and denitrify. Treated effluent flows to the 2 final clarifiers via splitter box. Alum is added to the effluent from the clarifiers and mixed in a floc tank prior to the disc filters. Filtered effluent is disinfected using UV system and discharged through a post aeration cascade to outfall 001 on Killinger Creek. Waste activated sludge is pumped to the aerobic sludge digester for digestion and dewatered using centrifuge. Centrate is returned to the influent pump station.

3.0 Existing Effluent Limitations and Monitoring Requirements

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		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	250	375	XXX	20	30	40	2/week	24-Hr Composite
CBOD5 May 1 - Oct 31	125	188	XXX	10	15	20	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	125	188	XXX	10	15	20	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/week	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Ammonia Nov 1 - Apr 30	88	XXX	XXX	7.0	XXX	14	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	31	XXX	XXX	2.5	XXX	5	2/week	24-Hr Composite
Total Phosphorus	25	XXX	XXX	2.0	XXX	4	2/week	24-Hr Composite
Total Copper	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Zinc	1.88	XXX	XXX	0.15	XXX	0.37	1/week	24-Hr Composite
Chronic WET - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	1.8 Daily Max	XXX	XXX	See Permit	See Permit

3.1 Chesapeake Bay Limitation.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Net Total Nitrogen	Report	25,936	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	3,458	XXX	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: Outfall 001

3.2 Compliance History

3.2.1 DMR Data for Outfall 001 (from April 1, 2023 to March 31, 2024)

Parameter	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23
Flow (MGD) Average Monthly	0.8119	0.7750	0.8428	0.8104	0.7559	0.7436	0.7510	0.7467	0.7707	0.7376	0.738	0.7623
Flow (MGD) Daily Maximum	1.4940	0.9308	1.8974	1.8701	1.5041	1.1545	1.1491	0.8665	1.1847	0.9889	0.8663	1.2767
pH (S.U.) Daily Minimum	6.8	6.6	6.8	6.8	6.8	6.9	6.8	7.0	7.0	6.9	6.0	6.9
pH (S.U.) Daily Maximum	7.6	7.4	7.6	7.3	7.2	7.2	7.1	7.5	7.1	7.1	7.3	7.2
DO (mg/L) Daily Minimum	6.9	6.6	7.4	6.6	6.9	6.2	5.2	5.3	5.5	5.9	6.1	6.3
CBOD5 (lbs/day) Average Monthly	25	18	< 14	< 20	< 16	< 18	< 22	< 19	< 12	< 11	11	< 11
CBOD5 (lbs/day) Weekly Average	38	23	17	28	34	< 18	39	32	13	29	15	15
CBOD5 (mg/L) Average Monthly	4	3	< 2	< 3	< 2	< 3	< 4	< 3	< 2	< 2	2	< 2
CBOD5 (mg/L) Weekly Average	6	3	3	3	5	< 3	7	5	2	5.0	3	2
BOD5 (lbs/day) Raw Sewage Influent Ave. Monthly	1971	2278	2124	2318	2393	2490	1907	2232	2237	2147	2345	2677
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	2751	2532	2818	3046	3246	3275	2292	2906	2810	2688	2686	3252
BOD5 (mg/L) Raw Sewage Influent Ave. Monthly	302	346	327	361	359	401	317	366	357	357	379	432
TSS (lbs/day) Average Monthly	29	29	23	24	< 25	< 20	17	16	13	17	39	14
TSS (lbs/day) Raw Sewage Influent Ave. Monthly	2198	2088	2128	2127	2344	2521	1961	2219	2577	2485	2490	2849
TSS (lbs/day) Raw Sewage Influent Daily Maximum	2950	2372	2624	3315	2936	3621	2077	2627	3953	3385	2934	3803
TSS (lbs/day) Weekly Average	35	37	29	41	< 38	22	19	22	16	22	97	15

TSS (mg/L) Average Monthly	4	5	4	4	< 4	< 3	3	3	2	3	6	2
TSS (mg/L) Raw Sewage Influent Ave. Monthly	338	326	329	327	354	406	327	353	406	377	3.89	462
TSS (mg/L) Weekly Average	6	6	5	5	< 4	4	3	4	3	4	15	3
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 1	< 1	< 1	< 1	< 4	< 2	< 3	< 2	< 3	< 2
Fecal Coliform (No./100 ml) Instant. Maximum	3	2	1	1	< 1	< 1	16.4	13.1	15	20.1	< 1	15
UV Transmittance (%) Daily Minimum	97	83	95	86	89	85	90	90	83	86	86	95
Nitrate-Nitrite (mg/L) Average Monthly	1.11	1.17	1.27	1.15	1.1	1.14	0.99	0.90	0.85	0.87	9.32	0.35
Nitrate-Nitrite (lbs) Total Monthly	224.3	218	258.8	239.5	224.2	221.3	181.3	177.8	172.2	172.8	1839	63.2
Total Nitrogen (mg/L) Average Monthly	4.12	4.55	3.81	3.04	2.95	2.65	< 2.25	2.49	2.13	2.52	15.19	2.51
Total Nitrogen (lbs) Effluent Net Total Monthly	837.9	849.8	769.3	634.2	616	512.3	< 413.6	493.1	431.2	498.7	2962.7	454
Total Nitrogen (lbs) Total Monthly	837.9	849.8	769.3	634.2	616	512.3	< 413.6	493.1	431.2	498.7	2962.7	454
Total Nitrogen (lbs) Effluent Net Total Annual							< 9113					
Total Nitrogen (lbs) Total Annual							< 9113					
Ammonia (lbs/day) Average Monthly	6	8.0	7	2.0	< 4	< 0.8	< 1	< 1	0.9	3	14	1
Ammonia (mg/L) Average Monthly	0.9	1.2	0.9	0.3	< 0.5	< 0.1	< 0.20	< 0.2	0.1	0.5	2.2	0.2
Ammonia (lbs) Total Monthly	277.3	207.6	218.3	69.6	< 108.4	< 24.2	< 29.9	< 31.3	28.2	100.8	419.7	44.3
Ammonia (lbs) Total Annual							< 1733					
TKN (mg/L) Average Monthly	3.01	3.38	2.54	1.90	1.86	1.51	< 1.26	1.59	1.28	1.66	5.86	2.16
TKN (lbs) Total Monthly	613.7	631.9	510.4	394.8	391.8	291	< 232.2	315.3	258.9	325.9	1123.7	390.8

Total Phosphorus (lbs/day) Average Monthly	5	6	2	2.0	2	2	2	5	2	5.0	10	3
Total Phosphorus (mg/L) Average Monthly	0.77	0.88	0.36	0.22	0.22	0.31	0.32	0.76	0.28	0.74	1.58	0.41
Total Phosphorus (lbs) Effluent Net Total Monthly	156.3	165.8	72.7	46.2	48.2	59.2	60.8	150.3	56.4	141.7	311.1	75.2
Total Phosphorus (lbs) Total Monthly	156.3	165.8	72.7	46.2	48.2	59.2	60.8	150.3	56.4	141.7	311.1	75.2
Total Phosphorus (lbs) Effluent Net Total Annual							1226					
Total Phosphorus (lbs) Total Annual							1226					
Total Copper (lbs/day) Average Monthly	0.04	0.04	0.03	0.040	0.02	0.04	0.040	0.020	0.40	0.030	0.03	0.040
Total Copper (mg/L) Average Monthly	0.006	0.006	0.005	0.006	0.004	0.006	0.006	0.004	0.002	0.004	0.005	0.006
Total Zinc (lbs/day) Average Monthly	0.70	0.90	0.70	0.70	0.80	0.60	0.50	0.60	0.60	0.70	1.00	0.70
Total Zinc (mg/L) Average Monthly	0.10	0.13	0.11	0.10	0.12	0.10	0.08	0.09	0.088	0.10	0.15	0.11
Chronic WET - Ceriodaphnia Reproduction (TUc) Daily Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG

3.2.2 Summary of DMRs:

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.2.1 indicates permit limits have been met consistently. No effluent violations noted during the period reviewed.

3.2.3 Summary of Inspections:

The facility has been inspected a couple of times during the previous permit cycle. No effluent violations were found during plant inspections. The facility is operated and maintained well.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 1.5
Latitude 40º 19' 14.00" **Longitude** -76º 33' 18.00"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

In general, the Clean Water Act (CWA) 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
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: TRC is not applicable, UV disinfection is utilized.

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:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34

4.4 Water Quality-Based Limitations

4.4.1 WQM 7.0 Stream Model

WQM 7.0 is a water quality model DEP utilizes to establish appropriate effluent limits for $CBOD_5$, NH_3-N and DO in permits. The model simulates mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits

4.4.2 Receiving Stream

The receiving stream is the Killinger Creek. According to 25 PA § 93.9o, this stream is protected for Trout Stocking Fishery (TSF). It is located in Drainage List o and State Watershed 7-D. It has been assigned stream code 09705. According to the Department's Integrated Water Quality Monitoring and Assessment Report, Killinger Creek is impaired for pathogens and nutrients. Source is unknown and agriculture, respectively. TMDL is completed and approved by EPA in 2001. See 303d listed streams section 5.6 of the report for further discussion.

4.4.3 Stream flows

The Technical Support Document for Water Quality-Based Toxics Control (TSD) (EPA, 1991) and the Pennsylvania Water Quality Standards PA WQS) recommend the flow conditions to use in calculating water quality-based effluent limits (WQBELs) using steady-state modeling. The TSD and the PA WQS state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years ($Q_{7\text{-}10}$) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years ($Q_{1\text{-}10}$) for acute criteria. However, because the chronic criterion for ammonia is a 30-day average concentration not to be exceeded more than once every three years, EPA has used the $Q_{30\text{-}10}$ for the chronic ammonia criterion instead of the $Q_{7\text{-}10}$. The $Q_{30\text{-}10}$ is a biologically based design flow intended to ensure an excursion frequency of once every three years for a 30-day average flow rate. These flows were determined by correlating with the yield of USGS gage No. 01573560 on Swatara Creek near Hershey. The $Q_{7\text{-}10}$ and drainage area at the gage is 67.7ft3/s and 483mi^2 respectively. The resulting yields are as follows:

- $Q_{7\text{-}10}$ = (67.7ft^3/s)/483 mi^2 = 0.14ft^3/s/ mi^2
- $Q_{30\text{-}10}$ / $Q_{7\text{-}10}$ = 0.89
- $Q_{1\text{-}10}$ / $Q_{7\text{-}10}$ = 1.23

The drainage area at the point of discharge taken from the previous protection report is 13.44 mi^2.

The summer $Q_{7\text{-}10}$ at discharge = 13.44 mi^2 x 0.14 ft^3/s/mi^2 = 1.88 ft^3/s.
The winter $Q_{7\text{-}10}$ = 2 x summer $Q_{7\text{-}10}$ = 3.76 ft^3/s.

4.4.4 NH_3N Calculations

NH_3N 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_3N criteria used in the WQM model of the stream:

- Discharge pH = 7.1 (DMR median)
- Discharge Temperature = 25 ^{o} C (Default)
- Stream pH = 7.8 (WQN Station on Quittapahilla Creek)
- Stream Temperature = 19 ^{o}C (WQN Station on Quittapahilla Creek)
- Background NH_3-N = 0.0 (default)

4.4.5 $CBOD_5$

Due to their proximities, Londonderry Township STP, Campbelltown East STP and Vanderhomes STP discharges were modeled together. The attached WQM 7.0 stream model results presented in attachment B indicates a limit of 25 mg/l for $CBOD_5$ for Londonderry Township STP discharge is adequate to protect the water quality of the stream. This limit is less stringent than the existing permit and will not be written in the permit due to anti-backsliding restrictions. The existing summer limit of 10mg/l AML, 15mg/l average weekly limit (AWL) and

20 mg/l IMAX and the existing winter limit of 20 mg/L AML,30mg/L AWL and 40 mg/L IMAX will remain in the renewed permit. DMR and inspection reports show the STP has been consistently complying with these limitations.

Mass limits are calculated as follows:

Mass based AML (lb/day) for summer months = 10 (mg/L) × 1.5(mgd) × 8.34 = 125

Mass based AML (lb/day) for winter months = 20 (mg/L) × 1.5(mgd) × 8.34 = 250

Mass based AWL (lb/day) for summer months = 15(mg/L) × 1.5 (mgd) × 8.34 = 188

Mass based AWL (lb/day) for winter months = 30 (mg/L) × 1.5(mgd) × 8.34 = 375.5

4.4.6 NH_3-N

The attached results of the WQM 7.0 stream model (attachment B) indicates that a summer AML of 2.5 mg/l for NH_3-N is necessary to protect aquatic life from toxicity effects. The recommended summer limit is consistent with the existing permit and will remain the permit with the existing winter AML of 7.0 mg/l for NH_3-N. The facility is complying with the limitations.

Mass limits are calculated as follows:

Mass based summer AML (lb/day) = 2.5 (mg/L) × 1.5(mgd) × 8.34 = 31

Mass based winter AML (lb/day) = 7.0 (mg/L) × 1.5(mgd) × 8.34 = 88

4.4.7 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement.

4.4.8 Total Suspended Solids (TSS):

There is no water quality criterion for TSS. The existing best professional judgment AML of 10 mg/L and AWL of 15mg/l based on the minimum level of effluent quality attainable by tertiary treatment. will remain in the permit. The facility is meeting the limitation

Mass based AML (lb/day) = 10 (mg/L) × 1.5(mgd) × 8.34 = 125

Mass based AWL (lb/day) = 15(mg/L) × 1.5(mgd) × 8.34 = 188

4.4.9 Phosphorus

Phosphorus limitation of 2mg/L to control phosphorus discharges to Killiger creek and the Lower Susquehanna River Basin was established in the previous permit to enhance Killinger basin restoration. This limitation will remain in the renewed permit.

4.4.10 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 0.2mdg) 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.

Phase 3 WIP and the supplement to the WIP, indicates renewing 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 falls in phase 1 of the strategy and is required to meet a total maximum annual Total Nitrogen Cap load of 25,936 lbs/year based on a design annual wasteflow of 1.42 MGD (design flow of the decommissioned Palmyra Plant) and 6 mg/l total nitrogen and a TP cap load of 3,458 lbs/year based on annual wasteflow of 1.42 MGD and 0.8 mg/l total phosphorus.

4.4.11 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 no longer add chlorine to the wastewater for disinfection. Therefore, the proposed permit does not contain effluent limits for total residual chlorine. UV transmittance monitoring will be required in the permit.

4.4.12 Toxics

A reasonable potential (RP) analysis was done for pollutant Groups 1 to 5 submitted with the application. All pollutants that were presented in the application sampling data were entered into the Toxics Management Spreadsheet (TMS) to calculate WQBELs. WQBELs recommended by the TMS are presented in attachment C. The discharge levels for all parameters analyzed in exception of Total Aluminum, Total Boron, Free Cyanide, Total Copper and Total Zinc were well below DEP's target quantitation limits (TQL) and calculated WQBELs, therefore no limitation or monitoring is required in the permit. Monitoring is recommended for Total Aluminum, Total Boron and Total Copper and Limitation was recommended for Total Zinc and Free Cyanide. Monthly monitoring of Total Aluminum, Total Boron and Total Copper is required in the permit. A monthly average limitation of 0.007mg/L and instantaneous maximum limitation of 0.018mg/L are recommended for Free cyanide. The recommended limitation for Total Zinc is less stringent than the existing limit and will not be written in the permit due to anti-backsliding restrictions. The existing monthly average limitation of 0.15mg/L and instantaneous maximum limitation of 0.37mg/L for Total Zinc will remain the permit.

The recommended limits follow the logic presented in DEPs SOP, to establish limits in the permit where the maximum reported concentration exceeds 50% of the WQBEL, or for non-conservative pollutants to establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL, or to establish monitoring requirements for conservative pollutants where the maximum reported concentration is between 10% - 50% of the WQBEL.

4.4.13 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 1.5MGD requires 1/month monitoring as included in the permit.

4.4.14 PFAS Monitoring Strategy:

PFAS, also known as 'forever chemicals,' are prevalent in the environment. They are a category of chemicals used since the 1940s to repel oil and water and resist heat, which makes them useful in everyday products such as nonstick cookware, stain resistant clothing, and firefighting foam. Exposure to certain PFAS over a long period of time can cause cancer, adverse health impacts and other illnesses. EPA categorized the following activities it believes are the main sources of PFAS: organic chemicals, plastics & synthetic fibers; metal finishing; electroplating; electric and electronic components; landfills; pulp, paper & paperboard; leather tanning & finishing; plastics molding & forming; textile mills; paint formulating, and airports. DEP is implementing PFAS monitoring program to investigate and address PFAS discharges and pollution. Under the plan, all new industrial and some major sewage permit applicants are required to test for 4 of the PFAS parameters, PFOA, PFOS, HFPO-DA and PFBS during permit applications. If the results of the tests are non-detect using screening level at or below DEP's Target QLs, an annual monitoring will be required and if there are detections or non-detects above the TQLs a quarterly monitoring will be required in the permit. Applications received without the tests and applications already received will be drafted with quarterly monitoring if an industrial facility falls under EPA categories or if a major sewage facility receives flow from one of EPA categories. If an industrial facility does not fall under or a major sewage facility does not receive flow any EPA categories, annual monitoring will be required in the draft permit. This major sewage facility does not receive any flow from EPA categories therefore, annual monitoring of PFOA, PFOS, HFPO-DA, and PFBS is required in the permit. The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detect results at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees shall enter a No Discharge Indicator (NODI) Code of "GG" on DMRs.

4.4.15 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.

4.4.16 Industrial Users

The wastewater treatment plant receives wastewater from the following industries: ASK Foods Inc. (Hetrick Ave. Plant), ASK Foods Inc., (Locust St. Plant), Hillwood Palmyra L.P (Warehouse), Palmyra Bologna Company, Inc. Three of the industries are listed as significant industrial users and should have localized limit with the treatment plant.

4.4.17 Pretreatment Requirements

The design annual average flow of the treatment plant is 1.5 MGD and the facility receives flow from 3 significant Industrial users. There is no approved pretreatment program for the facility, however, the permit contains standard conditions requiring the permittee to monitor and control industrial users if applicable.

5.0 Other Considerations and Requirements

5.1 The permit contains the following special conditions:

1. Stormwater Prohibition. 2. Approval Contingencies, 3. Proper Waste/solids Management, 4. Restriction on receipt of hauled in waste under certain conditions.

5.2 Biosolids Management

Waste activated sludge is pumped to the aerobic sludge digester, polymer added to enhanced settling. Digested sludge is dewatered using centrifuge and stored on sludge pads and hauled out to Greater Lebanon Refuse Authority landfill for disposal.

5.3 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.

5.4 Class A Wild Trout Fisheries

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

5.6 303d Listed Streams

The discharge is located on a stream segment that is designated on the 303(d) list as impaired, and the impairment is due to nutrients from agricultural activities in the watershed. TMDL was approved in 2000 but, no waste load was allocated to Borough of Palmyra discharge. The rationale document stated that, the discharge goes to a poured concrete channel, where no level of nutrient reduction from agricultural or point sources below RMI 0.7 miles will help Killinger Creek to support its designated use. Since, North Londonderry discharges to the same concrete channel and replaces Palmyra discharge, it will be treated as the existing Palmyra discharge with no wasteload allocation. If further reduction in point source loadings below current permit levels are required in future, the permit will be re-opened to address it.

5.7 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).

5.8 Effluent Monitoring

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 Whole Effluent Toxicity (WET)

6.1 For Outfall 001, ☐ Acute ☒ Chronic WET Testing was completed:

☒ For the permit renewal application (4 tests).
☐ Quarterly throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☐ Other:

The dilution series used for the tests was: 100%, 78%, 55%, 28%, and 14%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 55%.

6.2 Summary of Four Most Recent Test Results

6.2.1 TST Data Analysis

WET Summary and Evaluation

Facility Name	North Londonderry Twp
Permit No.	PA0261262
Design Flow (MGD)	1.5
Q_{7-10} Flow (cfs)	1.88
PMF_a	1
PMF_c	1

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	10/6/20	4/29/21	7/5/22	4/4/23
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	10/6/20	4/29/21	7/5/22	4/4/23
Pimephales	Growth	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	10/6/20	4/29/21	7/5/22	4/4/23
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	10/6/20	4/29/21	7/5/22	4/4/24
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**
TIWC	**55** % Effluent
Dilution Series	**14, 28, 55, 78, 100** % Effluent
Permit Limit	**None**
Permit Limit Species	

See attachment D for additional results of DEP WET Analysis Spreadsheet

6.3 Evaluation of Test Type, IWC and Dilution Series for Renewed Permit

Acute Partial Mix Factor (PMFa): **1** Chronic Partial Mix Factor (PMFc): **1**

6.3.1. Determine IWC – Acute (IWCa):

$(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$

[(1.5 MGD x 1.547) / ((1.88cfs x 1) + (1.5 MGD x 1.547))] x 100 = **55.2%**

Is IWCa < 1%? ☐ **YES** ☒ **NO (YES - Acute Tests Required OR NO - Chronic Tests Required)**

If the discharge is to the tidal portion of the Delaware River, indicate how the type of test was determined:

Type of Test for Permit Renewal: **Chronic**

6.3.2a. Determine Target IWCa (If Acute Tests Required)

TIWCa = IWCa / 0.3 = **%**

6.3.2b. Determine Target IWCc (If Chronic Tests Required)

$(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$

[(1.5 MGD x 1.547) / ((1.88cfs x 1) + (1.5 MGD x 1.547))] x 100 = **55.2%**

6.3.3. Determine Dilution Series

(NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).

Dilution Series = 100%, 78%, 55%, 28%, and 14%.

6.4 WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

Will WET limits be established in the permit? ☐ YES ☒ NO

If WET limits will be established, identify the species and the limit values for the permit (TU).

Not applicable this permit cycle. The existing WET limit will be discontinued, the facility's effluent did not show any toxicity concerns during last permit cycle.

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:

N/A

7.0 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" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	250	375	XXX	20	30	40	2/week	24-Hr Composite
CBOD5 May 1 - Oct 31	125	188	XXX	10	15	20	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	125	188	XXX	10	15	20	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	88	XXX	XXX	7.0	XXX	14	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	31	XXX	XXX	2.5	XXX	5	2/week	24-Hr Composite
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	25	XXX	XXX	2.0	XXX	4	2/week	24-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Aluminum, Total	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Boron, Total	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Copper, Total	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Cyanide, Free	0.09	XXX	XXX	0.007	XXX	0.018	1/week	24-Hr Composite
Zinc, Total	1.88	XXX	XXX	0.15	XXX	0.37	1/week	24-Hr Composite
PFOA (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
PFOS (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
PFBS (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

Compliance Sampling Location: At Outfall 001

7.1 Proposed Effluent Limitations and Monitoring Requirements

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

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

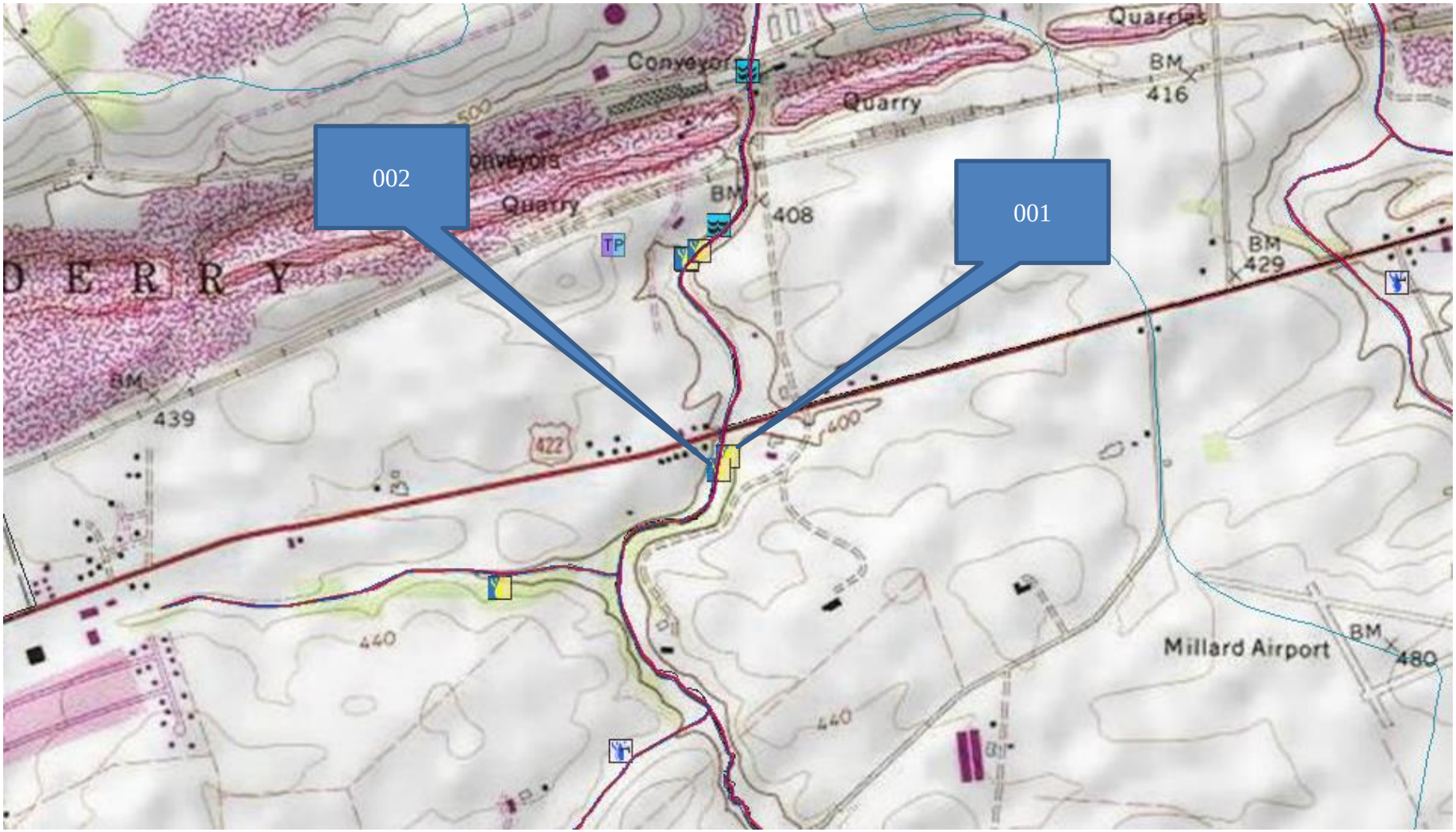
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen (lbs) Effluent Net	XXX	25,936 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs) Effluent Net	XXX	3,458 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: At Outfall 001

8.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☒	Toxics Management Spreadsheet (see Attachment **C**)
☐	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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☒	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☒	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☒	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: WET Testing and Establishing effluent limitation for individual sewage permit.
☒	Other: WIP 3 and Supplement

9. Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07D	9705	KILLINGER 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)
4.050	Camp. East Plt	PA0087700	0.210	CBOD5	25		
				NH3-N	2.84	5.68	
				Dissolved Oxygen			5

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
3.800	Vanderhomes MHP	PA0033065	0.036	CBOD5	25		
				NH3-N	8.18	16.36	
				Dissolved Oxygen			5

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)
1.120	North Lond TA	PA0261262	1.500	CBOD5	25		
				NH3-N	2.81	5.62	
				Dissolved Oxygen			5

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
07D	9705	KILLINGER CREEK	**4.050**	423.00	2.01	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	0.140	0.00	0.00	0.000	0.000	0.0	0.00	0.00	19.00	7.80	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
Camp. East Plt	PA0087700	0.2100	0.2100	0.2100	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

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
07D	9705	KILLINGER CREEK	**3.800**	420.00	2.20	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	0.140	0.00	0.00	0.000	0.000	0.0	0.00	0.00	19.00	7.80	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
Vanderhomes MHP	PA0033065	0.0360	0.0360	0.0360	0.000	25.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07D	9705	KILLINGER CREEK	1.120	408.00	13.44	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	0.140	0.00	0.00	0.000	0.000	0.0	0.00	0.00	19.00	7.80	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
North Lond TA	PA0261262	1.5000	1.5000	1.5000	0.000	25.00	7.10

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
07D	9705	KILLINGER CREEK	**0.010**	389.00	16.20	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	0.140	0.00	0.00	0.000	0.000	0.0	0.00	0.00	19.00	7.80	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	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07D	9705	KILLINGER CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
4.050	0.28	0.00	0.28	.3249	0.00227	.476	9.98	20.95	0.13	0.120	22.22	6.85
3.800	0.31	0.00	0.31	.3806	0.00085	.503	11.07	22.03	0.12	1.324	22.32	6.87
1.120	1.88	0.00	1.88	2.7011	0.00324	.639	26.71	41.77	0.27	0.253	22.54	7.18
Q1-10 Flow												
4.050	0.25	0.00	0.25	.3249	0.00227	NA	NA	NA	0.12	0.123	22.39	6.83
3.800	0.27	0.00	0.27	.3806	0.00085	NA	NA	NA	0.12	1.362	22.49	6.85
1.120	1.67	0.00	1.67	2.7011	0.00324	NA	NA	NA	0.26	0.259	22.70	7.17
Q30-10 Flow												
4.050	0.35	0.00	0.35	.3249	0.00227	NA	NA	NA	0.13	0.113	21.90	6.89
3.800	0.38	0.00	0.38	.3806	0.00085	NA	NA	NA	0.13	1.253	22.01	6.91
1.120	2.31	0.00	2.31	2.7011	0.00324	NA	NA	NA	0.28	0.240	22.23	7.21

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	0.89	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.23	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07D	9705	KILLINGER CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
4.050	Camp. East Plt	15.71	27.82	15.71	25.48	2	8
3.800	Vanderhomes M	8.92	50	15.29	45.8	2	8
1.120	North Lond TA	10.19	17.54	11.37	17.54	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
4.050	Camp. East Plt	1.73	3.58	1.73	2.84	2	21
3.800	Vanderhomes M	1.32	10.31	1.71	8.18	2	21
1.120	North Lond TA	1.4	2.81	1.48	2.81	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)		
4.05	Camp. East Plt	25	25	2.84	2.84	5	5	0	0
3.80	Vanderhomes MHP	25	25	8.18	8.18	5	5	0	0
1.12	North Lond TA	25	25	2.81	2.81	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9705	KILLINGER CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
4.050	0.210	22.215	6.848
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
9.981	0.476	20.953	0.128
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
14.32	1.393	1.52	0.830
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.505	22.691	Owens	5
Reach Travel Time (days)			
0.120			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.012	14.06	1.51	6.65
0.024	13.80	1.49	6.76
0.036	13.55	1.48	6.85
0.048	13.30	1.46	6.93
0.060	13.06	1.45	7.00
0.072	12.82	1.44	7.05
0.084	12.59	1.42	7.10
0.096	12.36	1.41	7.15
0.108	12.13	1.39	7.19
0.120	11.91	1.38	7.22

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.800	0.246	22.316	6.874
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
11.074	0.503	22.031	0.124
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
12.58	1.191	1.88	0.837
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.082	20.178	Owens	5
Reach Travel Time (days)			
1.324			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.132	10.56	1.68	7.33
0.265	8.86	1.50	7.55
0.397	7.44	1.35	7.73
0.530	6.24	1.21	7.88
0.662	5.24	1.08	7.90
0.794	4.39	0.97	7.90
0.927	3.69	0.86	7.90
1.059	3.09	0.77	7.90
1.192	2.60	0.69	7.90
1.324	2.18	0.62	7.90

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9705	KILLINGER CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.120	1.746	22.536	7.182
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
26.707	0.639	41.773	0.268
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
13.67	1.374	1.51	0.851
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.549	8.780	Tsivoglou	5
Reach Travel Time (days)			
0.253			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.025	13.15	1.48	6.15
0.051	12.65	1.45	5.86
0.076	12.16	1.42	5.66
0.101	11.70	1.39	5.52
0.126	11.25	1.36	5.44
0.152	10.82	1.33	5.40
0.177	10.41	1.30	5.39
0.202	10.01	1.27	5.41
0.227	9.62	1.25	5.45
0.253	9.26	1.22	5.50

C. Toxic Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **North Londoderry Township** NPDES Permit No.: **PA0261262** Outfall No.: **001**

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

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
1.5	126	7						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		411									
	Chloride (PWS)	mg/L		123									
	Bromide	mg/L	<	0.2									
	Sulfate (PWS)	mg/L		61.1									
	Fluoride (PWS)	mg/L	<										
Group 2	Total Aluminum	µg/L		395									
	Total Antimony	µg/L		0.5									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		13									
	Total Beryllium	µg/L	<	0.4									
	Total Boron	µg/L		319									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L	<	1									
	Hexavalent Chromium	µg/L	<	0.1									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L		8									
	Free Cyanide	µg/L		4									
	Total Cyanide	µg/L		12									
	Dissolved Iron	µg/L		22									
	Total Iron	µg/L		26									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		22									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		2									
	Total Phenols (Phenolics) (PWS)	µg/L	<	19									
	Total Selenium	µg/L	<	2									
	Total Silver	µg/L	<	1									
	Total Thallium	µg/L	<	0.4									
	Total Zinc	µg/L	<	207									
	Total Molybdenum	µg/L		1									
	Acrolein	µg/L	<	1									
	Acrylamide	µg/L											
	Acrylonitrile	µg/L	<	0.5									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									

Group 3	Carbon Tetrachloride	µg/L	<	0.5									
	Chlorobenzene	µg/L		0.5									
	Chlorodibromomethane	µg/L	<	0.5									
	Chloroethane	µg/L	<	0.5									
	2-Chloroethyl Vinyl Ether	µg/L	<	0.5									
	Chloroform	µg/L	<	0.5									
	Dichlorobromomethane	µg/L	<	0.5									
	1,1-Dichloroethane	µg/L	<	0.5									
	1,2-Dichloroethane	µg/L	<	0.5									
	1,1-Dichloroethylene	µg/L	<	0.5									
	1,2-Dichloropropane	µg/L	<	0.5									
	1,3-Dichloropropylene	µg/L	<	0.5									
	1,4-Dioxane	µg/L	<	0.98									
	Ethylbenzene	µg/L	<	0.5									
	Methyl Bromide	µg/L	<	0.5									
	Methyl Chloride	µg/L	<	0.5									
	Methylene Chloride	µg/L	<	0.5									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5									
	Tetrachloroethylene	µg/L	<	0.5									
	Toluene	µg/L	<	0.5									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.5									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.5									
	Vinyl Chloride	µg/L	<	0.5									
Group 4	2-Chlorophenol	µg/L	<	0.169									
	2,4-Dichlorophenol	µg/L	<	0.21									
	2,4-Dimethylphenol	µg/L	<	0.354									
	4,6-Dinitro-o-Cresol	µg/L	<	1.14									
	2,4-Dinitrophenol	µg/L	<	1.77									
	2-Nitrophenol	µg/L	<	0.216									
	4-Nitrophenol	µg/L	<	1.33									
	p-Chloro-m-Cresol	µg/L	<	0.243									
	Pentachlorophenol	µg/L	<	0.47									
	Phenol	µg/L	<	0.188									
	2,4,6-Trichlorophenol	µg/L	<	0.214									
Group 5	Acenaphthene	µg/L	<	0.33									
	Acenaphthylene	µg/L	<	0.328									
	Anthracene	µg/L	<	0.308									
	Benzidine	µg/L	<	0.575									
	Benzo(a)Anthracene	µg/L	<	0.255									
	Benzo(a)Pyrene	µg/L	<	0.234									
	3,4-Benzofluoranthene	µg/L	<	0.255									
	Benzo(ghi)Perylene	µg/L	<	0.387									
	Benzo(k)Fluoranthene	µg/L	<	0.315									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.221									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.254									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.254									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	1.49									
	4-Bromophenyl Phenyl Ether	µg/L	<	0.372									
	Butyl Benzyl Phthalate	µg/L	<	0.982									
	2-Chloronaphthalene	µg/L	<	0.331									
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.321									
	Chrysene	µg/L	<	0.48									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.389									
	1,2-Dichlorobenzene	µg/L	<	0.183									
	1,3-Dichlorobenzene	µg/L	<	0.402									
	1,4-Dichlorobenzene	µg/L	<	0.439									
	3,3-Dichlorobenzidine	µg/L	<	0.701									
	Diethyl Phthalate	µg/L	<	0.8									
	Dimethyl Phthalate	µg/L	<	0.481									
	Di-n-Butyl Phthalate	µg/L		2.98									
	2,4-Dinitrotoluene	µg/L	<	0.437									

	2,6-Dinitrotoluene	µg/L	<	1.77									
	Di-n-Octyl Phthalate	µg/L	<	0.725									
	1,2-Diphenylhydrazine	µg/L	<	0.496									
	Fluoranthene	µg/L	<	0.59									
	Fluorene	µg/L	<	0.292									
	Hexachlorobenzene	µg/L	<	0.393									
	Hexachlorobutadiene	µg/L	<	0.25									
	Hexachlorocyclopentadiene	µg/L	<	0.379									
	Hexachloroethane	µg/L	<	0.446									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.369									
	Isophorone	µg/L	<	0.241									
	Naphthalene	µg/L	<	0.241									
	Nitrobenzene	µg/L	<	0.228									
	n-Nitrosodimethylamine	µg/L	<	0.225									
	n-Nitrosodi-n-Propylamine	µg/L	<	0.397									
	n-Nitrosodiphenylamine	µg/L	<	0.348									
	Phenanthrene	µg/L	<	0.396									
	Pyrene	µg/L	<	0.555									
	1,2,4-Trichlorobenzene	µg/L	<	0.257									
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

North Londoderry Township , NPDES Permit No. PA0261262, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Killinger Creek**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	009705	1.12	368.5	13.4			Yes
End of Reach 1	009705	0.75	366.62	13.97			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	1.12	0.14										260	7		
End of Reach 1	0.75	0.14													

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	1.12														
End of Reach 1	0.75														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

North Londoderry Township , NPDES Permit No. PA0261262, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 12.799 PMF: 1 Analysis Hardness (mg/l): 185.9 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	1,356	
Total Antimony	0	0		0	1,100	1,100	1,989	
Total Arsenic	0	0		0	340	340	615	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	37,977	
Total Boron	0	0		0	8,100	8,100	14,648	
Total Cadmium	0	0		0	3.678	4.01	7.25	Chem Translator of 0.918 applied
Total Chromium (III)	0	0		0	946.762	2,996	5,418	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	29.5	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	172	
Total Copper	0	0		0	24.104	25.1	45.4	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	39.8	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	125.961	180	325	Chem Translator of 0.701 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	2.98	Chem Translator of 0.85 applied
Total Nickel	0	0		0	791.191	793	1,434	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	9.345	11.0	19.9	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	118	
Total Zinc	0	0		0	198.163	203	366	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	5.43	

Acrylonitrile	0	0		0	650	650	1,175	
Benzene	0	0		0	640	640	1,157	
Bromoform	0	0		0	1,800	1,800	3,255	
Carbon Tetrachloride	0	0		0	2,800	2,800	5,064	
Chlorobenzene	0	0		0	1,200	1,200	2,170	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	32,552	
Chloroform	0	0		0	1,900	1,900	3,436	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	27,127	
1,1-Dichloroethylene	0	0		0	7,500	7,500	13,563	
1,2-Dichloropropane	0	0		0	11,000	11,000	19,893	
1,3-Dichloropropylene	0	0		0	310	310	561	
Ethylbenzene	0	0		0	2,900	2,900	5,244	
Methyl Bromide	0	0		0	550	550	995	
Methyl Chloride	0	0		0	28,000	28,000	50,637	
Methylene Chloride	0	0		0	12,000	12,000	21,701	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,808	
Tetrachloroethylene	0	0		0	700	700	1,266	
Toluene	0	0		0	1,700	1,700	3,074	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	12,297	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	5,425	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	6,149	
Trichloroethylene	0	0		0	2,300	2,300	4,159	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,013	
2,4-Dichlorophenol	0	0		0	1,700	1,700	3,074	
2,4-Dimethylphenol	0	0		0	660	660	1,194	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	145	
2,4-Dinitrophenol	0	0		0	660	660	1,194	
2-Nitrophenol	0	0		0	8,000	8,000	14,468	
4-Nitrophenol	0	0		0	2,300	2,300	4,159	
p-Chloro-m-Cresol	0	0		0	160	160	289	
Pentachlorophenol	0	0		0	8.723	8.72	15.8	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	832	
Acenaphthene	0	0		0	83	83.0	150	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	543	
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.9	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	54,253	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	8,138	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	488	
Butyl Benzyl Phthalate	0	0		0	140	140	253	

2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	1,483	
1,3-Dichlorobenzene	0	0		0	350	350	633	
1,4-Dichlorobenzene	0	0		0	730	730	1,320	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	7,234	
Dimethyl Phthalate	0	0		0	2,500	2,500	4,521	
Di-n-Butyl Phthalate	0	0		0	110	110	199	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	2,894	
2,6-Dinitrotoluene	0	0		0	990	990	1,790	
1,2-Diphenylhydrazine	0	0		0	15	15.0	27.1	
Fluoranthene	0	0		0	200	200	362	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	18.1	
Hexachlorocyclopentadiene	0	0		0	5	5.0	9.04	
Hexachloroethane	0	0		0	60	60.0	109	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	18,084	
Naphthalene	0	0		0	140	140	253	
Nitrobenzene	0	0		0	4,000	4,000	7,234	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	30,744	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	543	
Phenanthrene	0	0		0	5	5.0	9.04	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	235	

☑ ***CFC*** CCT (min): 12.799 PMF: 1 Analysis Hardness (mg/l): 185.9 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	398	
Total Arsenic	0	0		0	150	150	271	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	7,415	
Total Boron	0	0		0	1,600	1,600	2,894	
Total Cadmium	0	0		0	0.378	0.43	0.77	Chem Translator of 0.883 applied
Total Chromium (III)	0	0		0	123.154	143	259	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	18.8	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	34.4	

Total Copper	0	0		0	15.213	15.8	28.7	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	9.4	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	2,713	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	4.909	7.01	12.7	Chem Translator of 0.701 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1.64	Chem Translator of 0.85 applied
Total Nickel	0	0		0	87.877	88.1	159	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	9.02	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	23.5	
Total Zinc	0	0		0	199.784	203	366	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	5.43	
Acrylonitrile	0	0		0	130	130	235	
Benzene	0	0		0	130	130	235	
Bromoform	0	0		0	370	370	669	
Carbon Tetrachloride	0	0		0	560	560	1,013	
Chlorobenzene	0	0		0	240	240	434	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	6,330	
Chloroform	0	0		0	390	390	705	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	5,606	
1,1-Dichloroethylene	0	0		0	1,500	1,500	2,713	
1,2-Dichloropropane	0	0		0	2,200	2,200	3,979	
1,3-Dichloropropylene	0	0		0	61	61.0	110	
Ethylbenzene	0	0		0	580	580	1,049	
Methyl Bromide	0	0		0	110	110	199	
Methyl Chloride	0	0		0	5,500	5,500	9,946	
Methylene Chloride	0	0		0	2,400	2,400	4,340	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	380	
Tetrachloroethylene	0	0		0	140	140	253	
Toluene	0	0		0	330	330	597	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	2,532	
1,1,1-Trichloroethane	0	0		0	610	610	1,103	
1,1,2-Trichloroethane	0	0		0	680	680	1,230	
Trichloroethylene	0	0		0	450	450	814	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	199	
2,4-Dichlorophenol	0	0		0	340	340	615	
2,4-Dimethylphenol	0	0		0	130	130	235	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	28.9	
2,4-Dinitrophenol	0	0		0	130	130	235	
2-Nitrophenol	0	0		0	1,600	1,600	2,894	

4-Nitrophenol	0	0		0	470	470	850	
p-Chloro-m-Cresol	0	0		0	500	500	904	
Pentachlorophenol	0	0		0	6.693	6.69	12.1	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	165	
Acenaphthene	0	0		0	17	17.0	30.7	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	107	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.18	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	10,851	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	1,646	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	97.7	
Butyl Benzyl Phthalate	0	0		0	35	35.0	63.3	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	289	
1,3-Dichlorobenzene	0	0		0	69	69.0	125	
1,4-Dichlorobenzene	0	0		0	150	150	271	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	1,447	
Dimethyl Phthalate	0	0		0	500	500	904	
Di-n-Butyl Phthalate	0	0		0	21	21.0	38.0	
2,4-Dinitrotoluene	0	0		0	320	320	579	
2,6-Dinitrotoluene	0	0		0	200	200	362	
1,2-Diphenylhydrazine	0	0		0	3	3.0	5.43	
Fluoranthene	0	0		0	40	40.0	72.3	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	3.62	
Hexachlorocyclopentadiene	0	0		0	1	1.0	1.81	
Hexachloroethane	0	0		0	12	12.0	21.7	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	3,798	
Naphthalene	0	0		0	43	43.0	77.8	
Nitrobenzene	0	0		0	810	810	1,465	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	6,149	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	107	
Phenanthrene	0	0		0	1	1.0	1.81	
Pyrene	0	0		0	N/A	N/A	N/A	

1,2,4-Trichlorobenzene	0	0		0	26	26.0	47.0	

☑ ***THH*** CCT (min): 12.799 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	10.1	
Total Arsenic	0	0		0	10	10.0	18.1	
Total Barium	0	0		0	2,400	2,400	4,340	
Total Boron	0	0		0	3,100	3,100	5,606	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	4	4.0	7.23	
Dissolved Iron	0	0		0	300	300	543	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	1,808	
Total Mercury	0	0		0	0.050	0.05	0.09	
Total Nickel	0	0		0	610	610	1,103	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.43	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	5.43	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	181	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	10.3	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	59.7	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	

1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	123	
Methyl Bromide	0	0		0	100	100.0	181	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	103	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	181	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	18,084	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	54.3	
2,4-Dichlorophenol	0	0		0	10	10.0	18.1	
2,4-Dimethylphenol	0	0		0	100	100.0	181	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	3.62	
2,4-Dinitrophenol	0	0		0	10	10.0	18.1	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	7,234	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	127	
Anthracene	0	0		0	300	300	543	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	362	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	0.18	
2-Chloronaphthalene	0	0		0	800	800	1,447	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	1,808	
1,3-Dichlorobenzene	0	0		0	7	7.0	12.7	
1,4-Dichlorobenzene	0	0		0	300	300	543	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	1,085	
Dimethyl Phthalate	0	0		0	2,000	2,000	3,617	

Di-n-Butyl Phthalate	0	0		0	20	20.0	36.2	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	36.2	
Fluorene	0	0		0	50	50.0	90.4	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	7.23	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	61.5	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	18.1	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	36.2	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.13	

☑ ***CRL*** CCT (min): 19.666 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	

Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	0.39	
Benzene	0	0		0	0.58	0.58	3.8	
Bromoform	0	0		0	7	7.0	45.8	
Carbon Tetrachloride	0	0		0	0.4	0.4	2.62	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	5.24	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	0.95	0.95	6.22	
1,2-Dichloroethane	0	0		0	9.9	9.9	64.8	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	5.89	
1,3-Dichloropropylene	0	0		0	0.27	0.27	1.77	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	131	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	1.31	
Tetrachloroethylene	0	0		0	10	10.0	65.5	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	3.6	
Trichloroethylene	0	0		0	0.6	0.6	3.93	
Vinyl Chloride	0	0		0	0.02	0.02	0.13	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	0.2	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	9.82	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	

Benzidine	0	0		0	0.0001	0.0001	0.0007	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.007	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.0007	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.007	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.065	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.2	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	2.1	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	0.79	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.0007	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	0.33	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	0.33	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.33	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.2	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.0005	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.065	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	0.65	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.007	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.005	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.033	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	21.6	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	869	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Boron	Report	Report	Report	Report	Report	µg/L	2,894	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	28.7	CFC	Discharge Conc > 10% WQBEL (no RP)
Free Cyanide	0.09	0.14	7.23	11.3	18.1	µg/L	7.23	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	2.94	4.58	235	366	587	µg/L	235	AFC	Discharge Conc ≥ 50% WQBEL (RP)

☑ ***Other Pollutants without Limits or Monitoring***

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	10.1	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	4,340	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Cadmium	0.77	µg/L	Discharge Conc < TQL
Total Chromium (III)	259	µg/L	Discharge Conc < TQL
Hexavalent Chromium	18.8	µg/L	Discharge Conc < TQL
Total Cobalt	34.4	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	543	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	2,713	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	12.7	µg/L	Discharge Conc < TQL
Total Manganese	1,808	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.09	µg/L	Discharge Conc < TQL
Total Nickel	159	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	9.02	µg/L	Discharge Conc < TQL
Total Silver	12.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	0.43	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.48	µg/L	Discharge Conc < TQL
Acrylonitrile	0.39	µg/L	Discharge Conc < TQL
Benzene	3.8	µg/L	Discharge Conc < TQL
Bromoform	45.8	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	2.62	µg/L	Discharge Conc < TQL

Chlorobenzene	181	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	5.24	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	6,330	µg/L	Discharge Conc < TQL
Chloroform	10.3	µg/L	Discharge Conc < TQL
Dichlorobromomethane	6.22	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	64.8	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	59.7	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	5.89	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	1.77	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	123	µg/L	Discharge Conc < TQL
Methyl Bromide	181	µg/L	Discharge Conc < TQL
Methyl Chloride	9,946	µg/L	Discharge Conc < TQL
Methylene Chloride	131	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	1.31	µg/L	Discharge Conc < TQL
Tetrachloroethylene	65.5	µg/L	Discharge Conc < TQL
Toluene	103	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	181	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	1,103	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	3.6	µg/L	Discharge Conc < TQL
Trichloroethylene	3.93	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.13	µg/L	Discharge Conc < TQL
2-Chlorophenol	54.3	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	18.1	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	181	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	3.62	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	18.1	µg/L	Discharge Conc < TQL
2-Nitrophenol	2,894	µg/L	Discharge Conc < TQL
4-Nitrophenol	850	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	185	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.2	µg/L	Discharge Conc < TQL
Phenol	7,234	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	9.82	µg/L	Discharge Conc < TQL
Acenaphthene	30.7	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	543	µg/L	Discharge Conc < TQL
Benzidine	0.0007	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.007	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.0007	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.007	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.065	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS

Bis(2-Chloroethyl)Ether	0.2	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	362	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	2.1	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	97.7	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.18	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	1,447	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.79	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.0007	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	289	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	12.7	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	271	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	0.33	µg/L	Discharge Conc < TQL
Diethyl Phthalate	1,085	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	904	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	36.2	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrotoluene	0.33	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.33	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.2	µg/L	Discharge Conc < TQL
Fluoranthene	36.2	µg/L	Discharge Conc < TQL
Fluorene	90.4	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.0005	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.065	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	1.81	µg/L	Discharge Conc < TQL
Hexachloroethane	0.65	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.007	µg/L	Discharge Conc < TQL
Isophorone	61.5	µg/L	Discharge Conc < TQL
Naphthalene	77.8	µg/L	Discharge Conc < TQL
Nitrobenzene	18.1	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.005	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.033	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	21.6	µg/L	Discharge Conc < TQL
Phenanthrene	1.81	µg/L	Discharge Conc < TQL
Pyrene	36.2	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.13	µg/L	Discharge Conc < TQL

D. WET Testing Results

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.57
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: North Londonderry Twp

Permit No.: PA0261262

Test Completion Date: 10/6/2020

Replicate No.	Control	TIWC
1	10	10
2	10	10
3	10	9
4	9	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.500
Std Dev.	0.500	0.577
# Replicates	4	4

T-Test Result	5.3848
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 4/29/2021

Replicate No.	Control	TIWC
1	10	8
2	10	8
3	10	9
4	10	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	8.500
Std Dev.	0.000	0.577
# Replicates	4	4

T-Test Result	2.9072
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	PASS

Test Completion Date: 7/5/2022

Replicate No.	Control	TIWC
1	10	10
2	10	10
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	10.000
Std Dev.	0.000	0.000
# Replicates	4	4

T-Test Result	
Deg. of Freedom	
Critical T Value	
Pass or Fail	PASS

Test Completion Date: 4/4/2023

Replicate No.	Control	TIWC
1	9	10
2	10	10
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	10.000
Std Dev.	0.500	0.000
# Replicates	4	4

T-Test Result	12.5523
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.57
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: North Londonderry Twp

Permit No.: PA0261262

Test Completion Date: 10/6/2020

Replicate No.	Control	TIWC
1	0.314	0.324
2	0.327	0.305
3	0.273	0.266
4	0.271	0.282
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.296	0.294
Std Dev.	0.029	0.025
# Replicates	4	4

T-Test Result	4.3321
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 4/29/2021

Replicate No.	Control	TIWC
1	0.434	0.381
2	0.438	0.328
3	0.402	0.346
4	0.386	0.38
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.415	0.359
Std Dev.	0.025	0.026
# Replicates	4	4

T-Test Result	2.9442
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 7/5/2022

Replicate No.	Control	TIWC
1	0.442	0.418
2	0.42	0.417
3	0.44	0.402
4	0.472	0.441
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.444	0.420
Std Dev.	0.021	0.016
# Replicates	4	4

T-Test Result	7.6374
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 4/4/2023

Replicate No.	Control	TIWC
1	0.403	0.357
2	0.424	0.386
3	0.421	0.395
4	0.493	0.397
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.435	0.384
Std Dev.	0.040	0.018
# Replicates	4	4

T-Test Result	3.2776
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.57
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: North Londonderry Twp

Permit No.: PA0261262

Test Completion Date: 10/6/2020

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: PASS

Test Completion Date: 4/29/2021

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	0
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	0.900
Std Dev.	0.000	0.316
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: PASS

Test Completion Date: 7/5/2022

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: PASS

Test Completion Date: 4/4/2023

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.57
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: North Londonderry Twp

Permit No.: PA0261262

Test Completion Date: 10/6/2020

Replicate No.	Control	TIWC
1	37	33
2	34	10
3	35	32
4	17	34
5	27	28
6	29	25
7	35	34
8	37	32
9	29	33
10	28	40
11		
12		
13		
14		
15		
Mean	30.800	29.900
Std Dev.	6.161	8.157
# Replicates	10	10

T-Test Result	2.2937
Deg. of Freedom	15
Critical T Value	0.8662
Pass or Fail	PASS

Test Completion Date: 4/29/2021

Replicate No.	Control	TIWC
1	34	32
2	30	29
3	30	34
4	37	30
5	34	38
6	36	8
7	32	30
8	36	37
9	42	38
10	30	40
11		
12		
13		
14		
15		
Mean	34.100	31.600
Std Dev.	3.843	9.168
# Replicates	10	10

T-Test Result	1.9826
Deg. of Freedom	13
Critical T Value	0.8702
Pass or Fail	PASS

Test Completion Date: 7/5/2022

Replicate No.	Control	TIWC
1	13	36
2	28	33
3	40	40
4	32	36
5	37	28
6	23	38
7	28	38
8	10	36
9	36	39
10	36	37
11		
12		
13		
14		
15		
Mean	28.300	35.800
Std Dev.	10.231	3.994
# Replicates	10	10

T-Test Result	5.3278
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Test Completion Date: 4/4/2024

Replicate No.	Control	TIWC
1	35	39
2	35	40
3	38	41
4	36	40
5	35	35
6	35	40
7	36	37
8	26	38
9	35	40
10	34	40
11		
12		
13		
14		
15		
Mean	34.500	39.000
Std Dev.	3.171	1.826
# Replicates	10	10

T-Test Result	13.8430
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

E. Treatment Plant Process Flow Diagram

NLTA NPDES Renewal Application
Treatment Plant Process Information – Process Flow Diagram
June 6, 2023