

Application Type Renewal
Facility Type Municipal
Major / Minor Major

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0020460
APS ID 1122137
Authorization IC 1500337

Applicant and Facility Information

Applicant Name	Pennridge Wastewater Treatment Authority	Facility Name	Pennridge WWTP
Applicant Address	180 Maple Avenue P O Box 31 Sellersville, PA 18960-0031	Facility Address	180 Maple Avenue P O Box 31 Sellersville, PA 18960-0031
Applicant Contact	Kevin Franks	Facility Contact	Kevin Franks
Applicant Phone	(215) 257-6355	Facility Phone	(215) 257-6355
Client ID	74734	Site ID	449655
Ch 94 Load Status	Not Overloaded	Municipality	West Rockhill Township
Connection Status	No Limitations	County	Bucks
Date Application Received	September 3, 2024	EPA Waived?	No
Date Application Accepted		If No, Reason	, DEP Discretion
Purpose of Application			

Summary of Review

This is a redraft permit as the following changes have been made to the initial draft permit (issued on 6/13/2025).

Changes to the initial draft permit:

- Effluent limits for Free Cyanide are less stringent with higher concentration (from 0.006 to 0.010 mg/L)
- No limits for Zinc (just monitoring requirement)
- CBOD5 and NH3-N limit were brought back up to the limits from the previous renewal
- No monitoring requirements for Total Boron, Dissolved Iron, Total Iron, and chloroform
- WET limits for Ceriodaphnia are updated to 2.56 TUC
- Hardness monitoring was removed from Part A of the Permit
- Stormwater inspection frequency was updated to annually (from semi-annual)
- The interim period will be 24 months from the permit insurance. (if necessary)

The above changes are based on the water quality models which were rerun with Q7-10 of 10.5 cfs.

Per DRBC Docket NO. D-1969-210 CP-15, the Q7-10 flow represents the minimum flow required to be augmented from the Bradshaw Reservoir / Point Pleasant Pump Station diversion.

The Department has received the written comments from the applicant and EPA. This redraft permit should address most of the comments from both parties.

Approve	Deny	Signatures	Date
X		<i>Charley Yang</i> Charley Yang / Environmental Engineering Specialist	August 20, 2025
X		<i>Pravin Patel</i> Pravin C. Patel, P.E. / Environmental Engineer Manager	08/21/2025

Summary of Review

Comments from the applicant:

1. **There is no demonstrated need to tighten the limits for CBOD₅ and NH₃, which should be maintained at the current level.** Carbonaceous biochemical oxygen demand (CBOD₅) and ammonia-nitrogen (NH₃) are regulated primarily because they decrease oxygen in the stream, potentially causing toxic impacts on aquatic life. The DEP Fact Sheet indicates that “the existing limits and design flows were input into the model and confirm that the limits are protective of dissolved oxygen, but limits for CBOD₅ and ammonia-nitrogen are being adjusted.” DEP has conceded that there is no need to tighten the limits for CBOD₅ and NH₃.
2. **WET limits are incorrectly listed in the draft permit.** The current NPDES permit limits whole effluent toxicity (WET) to a chronic toxicity unit (TUc) of 2.56 (or target in-stream waste concentration (TIWC) of 39%). Part A of the draft permit limits restricts the WET to a TUc of 1.4 (or TIWC of 71%). Contrarily, Part C.IV of the draft permit specifies a TIWC of 39% and the DEP Fact Sheet calculates TUc of 2.56.
3. **Quarterly WET testing should not be specified in the permit.** Part A of the draft permit requires quarterly testing of WET, presumably due to a recent failed test. Upon receipt of the results, the PWTa implemented the protocol described in Part C.IV of the permit and began quarterly monitoring of WET. Conversely, standard protocol provides for the return to annual monitoring in the event that four consecutive quarterly tests have passing results. Part A should have a reference to Part C.IV.
4. **Monitoring for PFAS compounds varies in Parts A and C of the permit.** Part A of the draft permit requires quarterly monitoring of 4 specific PFAS compounds, including the two most common. Monitoring for these 4 specific PFAS compounds may be discontinued “if the results in 4 consecutive monitoring periods indicate non-detect results.”
Part C of the draft permit requires “quarterly influent, effluent, and sludge analysis for 40 PFAS parameters.” This monitoring may only be discontinued “after 12 consecutive quarterly

sampling events have been conducted.' This monitoring is more extensive since it includes not only the effluent, but also the influent and sludge.

DEP cites SOP BCW-PivIT-033 (revised February 5, 2024) in its Fact Sheet as the regulatory basis for the requirements in the draft permit. However, that SOP suggests only the monitoring in Part A. The SOP does not appear to require the monitoring in Part C.

5. **Numerical limits for zinc should be deleted from Part A.** The draft permit includes proposed numerical limits for zinc. Numerical limits for zinc were deleted in the NPDES permit issued in 1993. During the development of the 2003 permit, the PADEP determined that zinc is not a "pollutant of concern" and deleted the monitoring requirement from the permit. Extensive effluent monitoring for zinc since 1993, as presented in Figure 1 and summarized below, indicates that it remains a pollutant without concern.

Time Period	Effluent Zinc Data	
	Conc. (mg/l)	No. Samples
All Data (1993 - 2023)	0.059	251
Proposed NPDES Limit	0.33	

As shown, the long-term average effluent zinc concentration has been less than 0.05% of the proposed limit. During the almost 30-year record since 1993, there has only been one daily result that exceeded the proposed average monthly limit. The daily spike in May 2020 is considered aberrant data and/or potentially faulty laboratory results.

6. **Hardness should be deleted from Part A.** Monitoring for hardness is required as a component of metal criteria. Both copper and zinc are not pollutants of concern. Consequently, in the absence of metal criteria, the inclusion of hardness in Part A is not required.
7. **Local Limits analysis and addition is redundant and is not needed.** Local limits were recently adopted by the contributing municipalities in 2024. There is no apparent need to undertake this exercise less than a year later.
8. **Stormwater inspections should be done annually as previously required.** The draft permit has increased the requirements for stormwater inspections to semi-annual inspections, rather than the current annual inspections. Part C of the draft permit requires that areas contributing to a stormwater discharge "shall be inspected on a semiannual basis." However, DEP had previously agreed to stormwater inspections on an annual basis because the PWTAP plant does not have any stormwater inlets, piping or BMPs. The inspections should be revised from semiannual to annual in the final version of the permit.
9. **DEP stream analysis may have used an inaccurate value.** The DEP Fact Sheet indicates that the determination of effluent limits used a low stream flow (Q₁₀) of 10.0 cfs. The correct value should be 10.5 cfs, or 0.5 cfs for the stream plus 10 cfs from Brackshavv Reservoir augmentation.
10. **Part A of the permit refers to an undefined "Interim Period 1."** Different effluent limits apply for certain pollutants before and after the "End of Interim Period 1." This period needs to be defined.

Summary of Review

Comments from EPA:

1. The WET analysis spreadsheets on pages 46-49 of the factsheet show the date of completion for what appears to be the latest set of quarterly WET tests to have taken place in June 2024. These test results are listed right after the March 17, 2025, WET tests. It is unclear whether the date entered for the last set of tests was a typo and should have read “6/24/2025”, or whether the test results do in fact correspond to June 2024, and were listed out of order on the factsheet. Please provide clarification.
2. On page 14 of the factsheet, under “Results since last renewal” the “No” box has been checked, indicating that there has not been reasonable potential for an excursion above water quality standards based on the WET test results. However, failure(s) were reported for the *Ceriodaphnia dubia* species endpoints in the last 4 consecutive WET tests. Please edit the factsheet to indicate that the WET tests have demonstrated reasonable potential.
3. Page 15 of the factsheet under “permit recommendations” provides an incorrect value for the recommended TIWC and the corresponding dilution series. The TIWC applicable to this permit is 39%, not 69%, as calculated on page 14 of the factsheet and as listed on page 30 of the draft permit. The corresponding dilution series is 10%, 20%, 39%, 70%, and 100%. Moreover, the factsheet indicates that the incorrect TIWC value of 69% was used to calculate a TUC limit corresponding to *C. dubia* which resulted in a permit limit value of 1.45. This permit limit is therefore incorrect. The permit should instead have a TUC limit is 2.56, which is derived from the TIWC value of 39%. Please make corrections to page 6 of the permit to reflect the correct TUC limit of 2.56 for both *Ceriodaphnia dubia* species endpoints, and to pages 14-15 of the factsheet to reflect the correct TIWC and dilution series values.
4. Page 24 of the factsheet provides WQM output values corresponding to ammonia limits which seem to reflect the summer season (May 1 to Oct 31) as the analysis temperature (on page 23) was 23.5 degrees Celsius (or 74 degrees Fahrenheit) and the values obtained from the model loosely match the average and maximum daily limits corresponding to ammonia-nitrogen (May 1 - Oct 31) on the draft permit. The model produced 30-day and maximum effluent limits of 2.41 mg/L and 4.82 mg/L, respectively, but the draft permit proposes slightly less stringent limits of 2.5 and 5 mg/L, respectively. Please clarify whether this discrepancy is due to DEP’s rounding procedures. Also, there doesn’t seem to be WQM model results corresponding to conditions specific to the winter season (Nov 1 through April 30) on the factsheet. Did DEP do a separate WQM model run reflecting winter conditions? If so, please share with us the results for the winter season. If not, please explain how the ammonia-nitrogen (Nov 1 – Apr 30) average monthly and instant maximum limits of 7.5 and 15 mg/l, respectively, were determined.
5. The draft permit lists the minimum measurement frequency for parameters with reporting requirements at outfall 002 (stormwater outfall) as “upon request”. Please clarify the basis for making the minimum frequency of monitoring for these parameters “upon request” as opposed to applying an annual or biannual frequency. Please also clarify whether there are any applicable stormwater benchmark values that should be applied to outfall 002.

DEP’s response:

Regarding the winter months from EPA’s comment 4, a seasonal multiplier of 3 times the summertime average monthly limit was established per SOP No. BCW-PMT-033 (Establishing Effluent Limitations for Individual Sewage Permits)

Summary of Review

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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>001</u>	Design Flow (MGD)	<u>4.325</u>
Latitude	<u>40° 21' 14.52"</u>	Longitude	<u>-75° 18' 47.85"</u>
Quad Name	<u></u>	Quad Code	<u></u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>East Branch Perkiomen Creek (TSF, MF)</u>	Stream Code	<u>01168</u>
NHD Com ID	<u>25999662</u>	RMI	<u>16.0300</u>
Drainage Area	<u>29.5</u>	Yield (cfs/mi ²)	<u>0.017</u>
Q ₇₋₁₀ Flow (cfs)	<u>10.5</u>	Q ₇₋₁₀ Basis	<u></u>
Elevation (ft)	<u></u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>3-E</u>	Chapter 93 Class.	<u>TSF, MF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u></u>	Name	<u></u>
Background/Ambient Data		Data Source	
pH (SU)	<u></u>		<u></u>
Temperature (°F)	<u></u>		<u></u>
Hardness (mg/L)	<u></u>		<u></u>
Other:	<u></u>		<u></u>
Nearest Downstream Public Water Supply Intake <u></u>			
PWS Waters	<u></u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u></u>	Distance from Outfall (mi)	<u></u>

Changes Since Last Permit Issuance: None

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>002</u>	Design Flow (MGD)	<u>0</u>
Latitude	<u>40° 21' 14.56"</u>	Longitude	<u>-75° 18' 47.67"</u>
Quad Name	<u></u>	Quad Code	<u></u>
Wastewater Description: <u>Stormwater</u>			
Receiving Waters	<u>East Branch Perkiomen Creek (TSF, MF)</u>	Stream Code	<u>01168</u>
NHD Com ID	<u>25999662</u>	RMI	<u>16.0400</u>
Drainage Area	<u></u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u></u>	Q ₇₋₁₀ Basis	<u></u>
Elevation (ft)	<u></u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>3-E</u>	Chapter 93 Class.	<u>TSF, MF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u></u>	Name	<u></u>
Background/Ambient Data		Data Source	
pH (SU)	<u></u>	<u></u>	
Temperature (°F)	<u></u>	<u></u>	
Hardness (mg/L)	<u></u>	<u></u>	
Other:	<u></u>	<u></u>	
Nearest Downstream Public Water Supply Intake <u></u>			
PWS Waters	<u></u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u></u>	Distance from Outfall (mi)	<u></u>

Changes Since Last Permit Issuance: None

Other Comments:

Treatment Facility Summary				
Treatment Facility Name: Pennridge WWTP				
WQM Permit No.		Issuance Date		
0900421		12/19/2022		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia and Phosphorus	Trickling Filter with Settling	Ultraviolet	4.325
Hydraulic Capacity (MGD)	Organic Capacity (lbs./day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
5.41	9018	Not Overloaded		

Changes Since Last Permit Issuance: None

Other Comments: WQM amendment was issued on 12/19/2022

Compliance History	
Summary of DMRs:	
Summary of Inspections:	Overall, the site seems to be in good condition. There were Fecal I-Max exceedances. The facility is planning to install a new Wedco UV disinfection system. The facility may utilize Chlorine gas for disinfection since the UV unit is aging and in need of replacement. TRC is monitored in house when used onsite and the monitoring results submitted as a DMR attachment as per Part C,1,D of the NPDES Permit. As of May 2025, the operator is waiting for the shipment of the new system, and it is expected to be installed later this year.

Other Comments: **None**

Compliance History

DMR Data for Outfall 001 (from April 1, 2024 to March 31, 2025)

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Flow (MGD) Average Monthly	2.801	2.98	1.908	2.826	1.962	1.601	2.104	2.101	2.101	2.102	2.431	3.297
Flow (MGD) Daily Maximum	4.784	9.763	3.601	6.163	3.322	2.173	2.311	2.209	2.282	2.204	4.595	12.705
pH (S.U.) Instantaneous Minimum	6.6	6.6	6.6	6.5	6.7	6.7	6.6	6.8	6.7	6.8	6.8	6.8
pH (S.U.) Instantaneous Maximum	7.2	7.65	7.0	7.0	7.1	7.1	7.0	7.1	7.3	7.5	7.1	7.1
DO (mg/L) Instantaneous Minimum	8.4	8.1	8.4	7.1	6.8	6.6	6.4	6.3	6.2	7.0	7.4	7.7
CBOD5 (lbs/day) Average Monthly	142	< 64	82	107	< 42	< 42	< 66	< 61	< 60	105	< 65	< 109
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	3401	3074	3193	3818	3061	2807	3365	3705	3661	3315	3382	6750
CBOD5 (lbs/day) Weekly Average	158	< 108	114	153	< 53	< 66	78	93	< 81.0	148	115	313
CBOD5 (mg/L) Average Monthly	5.0	< 3.0	5.0	4.0	< 2.0	< 3.0	< 4.0	< 3.0	< 3.0	6.0	< 3.0	< 3.0
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	142.6	153.4	199.1	166.5	188	205	190	212	210	192	163.2	379.2
CBOD5 (mg/L) Weekly Average	7.0	< 3.0	8.0	5.0	4.0	< 4.0	4.0	5.0	< 5.0	8.0	4.0	5.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	3866	3460	3445	4176	4262	3285	4222	4655	3941	3544	3830	3597
BOD5 (mg/L) Raw Sewage Influent Average Monthly	158.6	172.6	216	182	243	235	239	267	226	206	183	179.6
TSS (lbs/day) Average Monthly	< 93	< 33.0	< 52	< 72	< 40	< 41	69	< 31	40	< 59	< 52	< 118

**NPDES Permit Fact Sheet
Pennridge WWTP**

NPDES Permit No. PA0020460

TSS (lbs/day) Raw Sewage Influent Average Monthly	3475	1858	2331	3463	2708	2458	3176	3237	2894	2292	1992	3072
TSS (lbs/day) Weekly Average	55	< 46.0	79	170	74	61	89	< 61	53	88	91	458
TSS (mg/L) Average Monthly	< 3.0	< 2.0	< 3.0	< 2.0	< 2.0	< 3.0	4.0	< 2.0	2.0	< 3.0	< 2.0	< 2.0
TSS (mg/L) Raw Sewage Influent Average Monthly	132	94	149	155	165	175	180	185	166	133	97.0	118
TSS (mg/L) Weekly Average	3.0	< 2.0	5.0	4.0	5.0	4.0	5.0	< 4.0	3.0	5.0	4.0	6.0
Total Dissolved Solids (mg/L) Average Quarterly	1088			967			948			808		
Fecal Coliform (No./100 ml) Geometric Mean	182	72	277	< 22	< 6.0	< 6.0	< 4.0	< 3.0	< 5.0	< 11.0	< 8.0	< 25
Fecal Coliform (No./100 ml) Instantaneous Maximum	2000	260	20000	143	30	60	118	15	4100	955	220	1203
UV Transmittance (%) Daily Minimum	75	75	75	75	75	75	75	75	75	75	75	75.0
Total Nitrogen (lbs/day) Average Monthly	231	276	327	< 321	< 304	< 482	< 541	< 438	< 293	300	343	311
Total Nitrogen (mg/L) Average Monthly	15.25	16.95	18.01	< 23.8	< 24	< 27.5	< 30.1	< 25.3	< 17	18.04	20.57	12.74
Ammonia (lbs/day) Average Monthly	100	100	42	58	64	40	15	27	26	39	97	82
Ammonia (mg/L) Average Monthly	3.5	4.6	2.7	1.8	3.9	3.1	0.9	1.6	1.5	2.2	5.0	4.2
Total Phosphorus (lbs/day) Average Monthly	33	11.0	13	20	25	14	23	13	20	17	18	14
Total Phosphorus (mg/L) Average Monthly	1.2	0.6	0.80	0.8	1.6	1.0	1.3	0.8	1.2	1.0	0.9	0.6
Total Copper (mg/L) Average Quarterly	0.010			0.005			0.012			0.010		
Free Cyanide (mg/L) Average Quarterly	0.004			< 0.001			0.003			0.001		

NPDES Permit Fact Sheet
Pennridge WWTP

NPDES Permit No. PA0020460

Total Zinc (mg/L) Average Quarterly	0.058			0.034			0.055			0.068		
Chronic WET - Ceriodaphnia Survival (TUc) Daily Maximum	5.00			1.00			1.00			1.00		
Chronic WET - Ceriodaphnia Reproduction (TUc) Daily Maximum	5.00			1.00			1.40			1.00		
Chronic WET - Pimephales Survival (TUc) Daily Maximum	1.00			1.00			1.00			1.00		
Chronic WET - Pimephales Growth (TUc) Daily Maximum	1.00			1.00			1.00			1.00		

DMR Data for Outfall 002 (from April 1, 2024 to March 31, 2025)

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
pH (S.U.) Daily Maximum				GG								
CBOD5 (mg/L) Daily Maximum				GG								
COD (mg/L) Daily Maximum				GG								
TSS (mg/L) Daily Maximum				GG								
Oil and Grease (mg/L) Daily Maximum				GG								
Fecal Coliform (No./100 ml) Daily Maximum				GG								
TKN (mg/L) Daily Maximum				GG								
Total Phosphorus (mg/L) Daily Maximum				GG								
Dissolved Iron (mg/L) Daily Maximum				GG								

Compliance History

Effluent Violations for Outfall 001, from: May 1, 2024 To: March 31, 2025

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	01/31/25	Geo Mean	277	No./100 ml	200	No./100 ml
Fecal Coliform	01/31/25	Geo Mean	277	No./100 ml	200	No./100 ml
Fecal Coliform	07/31/24	IMAX	4100	No./100 ml	1000	No./100 ml
Fecal Coliform	03/31/25	IMAX	2000	No./100 ml	1000	No./100 ml
Fecal Coliform	01/31/25	IMAX	20000	No./100 ml	1000	No./100 ml
Fecal Coliform	01/31/25	IMAX	20000	No./100 ml	1000	No./100 ml
Ammonia	05/31/24	Avg Mo	5.0	mg/L	3.0	mg/L
Ammonia	10/31/24	Avg Mo	3.1	mg/L	3.0	mg/L
Chronic WET - Ceriodaphnia Survival	03/31/25	Daily Max	5.00	TUc	2.56	TUc
Chronic WET - Ceriodaphnia Survival	03/31/25	Daily Max	5.00	TUc	2.56	TUc
Chronic WET - Ceriodaphnia Survival	03/31/25	Daily Max	5.00	TUc	2.56	TUc
Chronic WET - Ceriodaphnia Survival	03/31/25	Daily Max	5.00	TUc	2.56	TUc
Chronic WET - Ceriodaphnia Reproduction	03/31/25	Daily Max	5.00	TUc	2.56	TUc
Chronic WET - Ceriodaphnia Reproduction	03/31/25	Daily Max	5.00	TUc	2.56	TUc
Chronic WET - Ceriodaphnia Reproduction	03/31/25	Daily Max	5.00	TUc	2.56	TUc
Chronic WET - Ceriodaphnia Reproduction	03/31/25	Daily Max	5.00	TUc	2.56	TUc

Summary of Inspections:

Other Comments:

Development of Effluent Limitations

Outfall No. 001
Latitude 40° 21' 15.00"
Wastewater Description: Sewage Effluent

Design Flow (MGD) 4.325
Longitude -75° 18' 48.00"

Technology-Based Limitations

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

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

Water Quality-Based Limitations

PARAMETER	EFFLUENT LIMITS (AV. MO in Mg/l)	BASIS
CBOD ₅ (5/1 to 10/31)	15	WQM 7.0 Model
CBOD ₅ (11/1 to 4/30)	25	WQM 7.0 Model, SOP BCW-PMT-033
Ammonia-Nitrogen (5/1 to 10/31)	3.0	WQM 7.0 Model
Ammonia-Nitrogen (11/1 to 4/30)	9.0	WQM 7.0 Model, SOP BCW-PMT-033
Total Suspended Solids	20	25 Pa Code 92a.47
Dissolved Oxygen	5.0	WQM 7.0 Model
pH (S.U.)	6.0 to 9.0 SU	25 Pa Code 92a.47, 95.2
Fecal Coliform (#/100 ml)	200 (Geo Mean)	25 Pa Code 92a.47
Total Dissolved Solids	Report	25 Pa Code 95.10, and DRBC
UV Light Transmittance (%)	Report	25 Pa Code 92a.47-48
Total Phosphorus (5/1 to 10/31)	1.5	25 Pa Code 92a.61
Total Phosphorus (11/1 to 4/30)	2.0	25 Pa Code 92a.61
Cyanide Free	0.010	TMS
Zinc	Report	TMS
Chronic Toxicity (TUc)	2.56	1/TIWC
Total Nitrogen	Report	25 Pa Code 92a.61

Conventional Pollutants

The existing effluent limits for CBOD₅ and Ammonia-Nitrogen are adjusted as they were verified using DEP's WQM 7.0. The existing limits and design flows were input into the model and confirm that the limits are protective of dissolved oxygen, CBOD₅ and ammonia-nitrogen.

Regarding the winter months, a seasonal multiplier of 3 times the summertime average monthly limit was established per SOP No. BCW-PMT-033 (Establishing Effluent Limitations for Individual Sewage Permits)

The Q7-10 flow used in the WQM model was 10.5-cfs and the discharge flow was 4.325-MGD. The Q7-10 flow represents the minimum flow required to be augmented from the Bradshaw Reservoir / Point Pleasant Pump Station diversion under the DRBC docket NO. D-1969-210 CP-15. Should the augmented stream flow cease, the Q7-10 at Pennridge WWTP reverts to 0.5-cfs and the modeled effluent limits are no longer valid. In such a situation, the permit would need to be amended to reflect limits based on 0.5-cfs.

Toxic Pollutants

Effluent limits for Free Cyanide were calculated using TMS Model with same stream data used in the WQM 7.0 Model. TMS was run with the sampling results from eDMR per SOP.

The existing permit has quarterly monitoring requirement for Copper, Zinc, and Free Cyanide. Copper and Zinc will continue to have quarterly monitoring requirement.

Phosphorus, total

The permit renewal will continue with total phosphorus limit of 1.5 mg/l (May – October) and 2.0 mg/l (November – April). Note that prior to the Point Pleasant Pump Station water diversion, the total phosphorus limit was 0.5 mg/l. Therefore, the total phosphorus limit is contingent on the continued augmentation to East Branch Perkiomen Creek of a minimum stream flow of 10-cfs. Otherwise, the Q7-10 design flow is 0.5-cfs, and the total phosphorus limit reverts to 0.5 mg/l.

Total Nitrogen

PADEP's SOP BCW-PMT-033 recommends monitoring for Total Nitrogen for facilities with design flow more than 2000-GPD, which is also supported by Pa Code 25 Ch. 92a.61. Monitoring for Total Nitrogen is being added.

PFOA, PFOS, HFPO-DA and PFBS

Per SOP BCW-PMT-03 (revised February 5, 2024), a quarterly monitoring will be added with the following footnote:

"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 must enter a No Discharge Indicator (NODI) Code of "GG" on DMRs."

Whole Effluent Toxicity (WET)

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: **Annual**

The dilution series used for the tests was: 100%, 70%, 39%, 20%, and 10%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 39%.

Summary of Four Most Recent Test Results.

Whole Effluent Toxicity (WET) Testing Summary

Sample Date	Sample Type	WET Test Results (%)			
		<u>Pimephales promelas (NOEC)</u>		<u>Ceriodaphnia dubia (NOEC)</u>	
		Survival	Growth	Survival	Repro.
16-May-17	Annual	100	100	Stopped: Excess Control Mortality	
19-Jun-17	Re-Test	Not Tested	Not Tested	39	< 10
8-Aug-17	Re-Test	Not Tested	Not Tested	100	< 39
13-Mar-18	Quarterly	100	100	39	20
1-May-18	Quarterly	100	100	100	70
31-Jul-18	Quarterly	100	100	100	70
30-Oct-18	Quarterly	100	100	20	20
5-Feb-19	Quarterly	100	100	100	70
7-May-19	Quarterly	100	100	100	100
23-Jul-19	Quarterly	100	100	100	100
13-Nov-19	Quarterly	100	100	100	100
13-Nov-20	Annual	100	100	100	39
19-Oct-21	Annual	100	100	100	100
20-Sep-22	Annual	100	100	100	39 *
22-Nov-22	Re-Test	Not Tested	Not Tested	100	100
27-Jul-23	Annual	100	100	100	20
14-Sep-23	Re-Test	Not Tested	Not Tested	100	10
10-Nov-23	Quarterly	100	100	100	70
1-Mar-24	Quarterly	100	100	39	20
17-Jun-24	Quarterly	100	100	100	100
20-Sep-24	Quarterly	100	100	100	70
6-Dec-24	Quarterly	100	100	100	100
14-Mar-25	Quarterly	100	100	20	20
NPDES Limits		100	39	100	39

Notes:

- NPDES permit limits for WET are based on Chronic Toxic Units (TUC) = 2.56 Target
Instream Wastestream Concentration (in %) = $100\% / 2.56 \text{ (TUC)} = 39\%$
- Values in **RED** indicate WET test failures.
* - This value was considered a failure based on the underlying statistical data for this test

Results since last renewal:

NOEC/LC50 Data Analysis

Test Date	Ceriodaphnia Results (% Effluent)			Pimephales Results (% Effluent)			Pass? *
	NOEC Survival	NOEC Reproduction	LC50	NOEC Survival	NOEC Growth	LC50	
10/19/2021	100%	100%		100%	100%		Pass
11/22/2022	100%	100%		100%	100%		Pass
7/27/2023	100%	20%		100%	100%		Fail
1/19/2024	100%	70%		100%	100%		Pass
4/11/2024	39%	20%		100%	100%		Fail
6/17/2024	100%	100%		100%	100%		Pass

* A "passing" result is that which is greater than or equal to the TIWC value.

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).

☒ YES ☐ NO

Comments: Due to the consecutive failed WET test for Ceri daphnia, Phase I TRE was triggered. Phase II Toxicity Reduction Evaluation should be implemented.

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

Acute Partial Mix Factor (PMFa): 1

Chronic Partial Mix Factor (PMFc): 1

1. Determine IWC – Acute (IWCa):

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

$$[(4.325 \text{ MGD} \times 1.547) / ((10.5 \text{ cfs} \times 1) + (4.325 \text{ MGD} \times 1.547))] \times 100 = 39\%$$

Is IWCa < 1%? ☐ YES ☒ NO

Type of Test for Permit Renewal: Chronic

2. Determine Target IWCc (If Chronic Tests Required)

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

$$[(4.325 \text{ MGD} \times 1.547) / ((10.5 \text{ cfs} \times 1) + (4.325 \text{ MGD} \times 1.547))] \times 100 = 39\%$$

3. Determine Dilution Series

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

Dilution Series = 100%, 70%, 39%, 20%, and 10%.

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).

$TU_c = 1/TWIC = 1/0.39 = 2.546$ Quarterly WET Testing for Permit Renewal

Per WET spreadsheet.

Permit Recommendations

Test Type	Chronic
TIWC	39 % Effluent
Dilution Series	10, 20, 39, 70, 100 % Effluent
Permit Limit	2.6 TU _c
Permit Limit Species	Ceriodaphnia dubia

Anti-Backsliding

Anti-backsliding prohibition is justified in sections where an exception is justified for the affected pollutant(s). For remaining pollutants, this prohibition isn't applicable since the proposed limits are at least as stringent as were in current permit.

The permittee did phase I TIE/TRE, report is attached



WET-Ph1report.pdf

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 **End of Interim Period 1**.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Free Cyanide	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location:

Other Comments:

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: **End of Interim Period 1** 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	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Free Cyanide	XXX	XXX	XXX	0.010	0.018	0.026	1/month	24-Hr Composite

Compliance Sampling Location:

Other Comments:

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	Daily Maximum	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	900	1440	XXX	25 Avg Mo	40	50	2/week	24-Hr Composite
CBOD5 Raw Sewage Influent	Report	XXX	XXX	Report Avg Mo	XXX	XXX	2/week	24-Hr Composite
CBOD5 May 1 - Oct 31	541	830	XXX	15.0 Avg Mo	23.0	30	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report Avg Mo	XXX	XXX	2/week	24-Hr Composite
TSS	721	1082	XXX	20 Avg Mo	30	40	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report Avg Mo	XXX	XXX	2/week	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000*	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

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	Daily Maximum	Weekly Average	Instant. Maximum		
Total Nitrogen	Report	XXX	XXX	Report Avg Mo	XXX	XXX	2/week	Calculation
Ammonia-Nitrogen Nov 1 - Apr 30	325	XXX	XXX	9.0 Avg Mo	XXX	18	2/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	108	XXX	XXX	3.0 Avg Mo	XXX	6	2/week	24-Hr Composite
Total Phosphorus Nov 1 - Apr 30	72	XXX	XXX	2.0 Avg Mo	XXX	4	2/week	24-Hr Composite
Total Phosphorus May 1 - Oct 31	54	XXX	XXX	1.5 Avg Mo	XXX	3	2/week	24-Hr Composite
Total Copper	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	24-Hr Composite
Total Zinc	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	24-Hr Composite
PFOA (ug/L)	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	Grab
PFOS (ug/L)	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	Grab
PFBS (ug/L)	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	Grab
HFPO-DA (ug/L)	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	Grab
Chronic WET - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	2.56	XXX	XXX	See Permit**	24-Hr Composite
Chronic WET - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	2.56	XXX	XXX	See Permit**	24-Hr Composite
Chronic WET - Pimephales Survival (TUc)	XXX	XXX	XXX	Report	XXX	XXX	See Permit**	24-Hr Composite
Chronic WET - Pimephales Growth (TUc)	XXX	XXX	XXX	Report	XXX	XXX	See Permit**	24-Hr Composite

*DRBC 10% rule applied

**Part C IV. WHOLE EFFLUENT TOXICITY (WET)

Compliance Sampling Location: Outfall 001

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, 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 002, 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	Average Weekly	Minimum	Daily Maximum	Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	Upon Request	Grab
CBOD5	XXX	XXX	XXX	Report	XXX	XXX	Upon Request	Grab
COD	XXX	XXX	XXX	Report	XXX	XXX	Upon Request	Grab
TSS	XXX	XXX	XXX	Report	XXX	XXX	Upon Request	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	Upon Request	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	XXX	XXX	Upon Request	Grab
TKN	XXX	XXX	XXX	Report	XXX	XXX	Upon Request	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	Upon Request	Grab
Dissolved Iron	XXX	XXX	XXX	Report	XXX	XXX	Upon Request	Grab

Compliance Sampling Location:

Other Comments:

Tools and References Used to Develop Permit

☒	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 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:
☐	Other:

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
	03E	1168	EAST BRANCH PERKIOMEN CREEK	15.600	290.00	29.50	0.00000	0.00	☒

Stream Data												
Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.100	10.50	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data							
Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Pennridge WWTP	PA0020460	4.3250	0.0000	0.0000	0.000	25.00	7.00

Parameter Data				
Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	15.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	3.00	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
	03E	1168	EAST BRANCH PERKIOMEN CREEK	12.500	265.00	38.50	0.00000	0.00	☒

Stream Data												
Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.100	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data							
Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data				
Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
03E		1168				EAST BRANCH PERKIOMEN CREEK						
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
Q7-10 Flow												
15.600	10.50	0.00	10.50	6.6908	0.00153	.778	49.7	63.9	0.44	0.426	21.95	7.00
Q1-10 Flow												
15.600	6.72	0.00	6.72	6.6908	0.00153	NA	NA	NA	0.39	0.490	22.49	7.00
Q30-10 Flow												
15.600	14.28	0.00	14.28	6.6908	0.00153	NA	NA	NA	0.50	0.381	21.60	7.00

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	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☒
D.O. Saturation	90.00%	Use Balanced Technology	☒
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
03E	1168	EAST BRANCH PERKIOMEN 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
15.600	Pennridge WWT	13.63	6	13.63	6	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
15.600	Pennridge WWT	1.7	3	1.7	3	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
15.60	Pennridge WWTP	15	15	3	3	5	5	0	0

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>			
03E	1168	EAST BRANCH PERKIOMEN CREEK			
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>		<u>Analysis pH</u>	
15.600	4.325	21.946		7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>		<u>Reach Velocity (fps)</u>	
49.701	0.778	63.900		0.445	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>		<u>Reach Kn (1/days)</u>	
7.06	1.154	1.17		0.813	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>		<u>Reach DO Goal (mg/L)</u>	
6.981	4.854	Tsivoglou		5	
<u>Reach Travel Time (days)</u>	Subreach Results				
0.426	TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)	
	0.043	6.69	1.13	6.66	
	0.085	6.34	1.09	6.44	
	0.128	6.01	1.05	6.28	
	0.170	5.69	1.02	6.19	
	0.213	5.40	0.98	6.14	
	0.256	5.11	0.95	6.12	
	0.298	4.85	0.92	6.13	
	0.341	4.59	0.89	6.17	
	0.383	4.35	0.85	6.22	
	0.426	4.12	0.83	6.28	

WQM 7.0 Effluent Limits

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>					
03E	1168	EAST BRANCH PERKIOMEN 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)
15.600	Pennridge WWTP	PA0020460	4.325	CBOD5	15		
				NH3-N	3	6	
				Dissolved Oxygen			5

Discharge Information

Instructions

Discharge

Stream

Facility: **Pennridge Wastewater Treatment Authority**

NPDES Permit No.: **PA0900421**

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 _n
4.325	253	7.1						

				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											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		9									
	Total Antimony	µg/L		0.7									
	Total Arsenic	µg/L		1									
	Total Barium	µg/L		66									
	Total Beryllium	µg/L		1									
	Total Boron	µg/L		400									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L		2.1									
	Hexavalent Chromium	µg/L		0.25									
	Total Cobalt	µg/L		0.6									
	Total Copper	µg/L		13.9			0.27						
	Free Cyanide	µg/L		8.67			0.86						
	Total Cyanide	µg/L		17									
	Dissolved Iron	µg/L		60									
	Total Iron	µg/L		320									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		65									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		18.1									
	Total Phenols (Phenolics) (PWS)	µg/L		58									
	Total Selenium	µg/L	<	1									
	Total Silver	µg/L	<	0.4									
	Total Thallium	µg/L	<	0.3									
	Total Zinc	µg/L		184.43			0.71						
	Total Molybdenum	µg/L		5									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	2									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									
	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	<	5									

Group 3	Chloroform	µg/L	<	2.2									
	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	<	5									
	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	<	5									
	2,4-Dichlorophenol	µg/L	<	5									
	2,4-Dimethylphenol	µg/L	<	5									
	4,6-Dinitro-o-Cresol	µg/L	<	5									
	2,4-Dinitrophenol	µg/L	<	10									
	2-Nitrophenol	µg/L	<	10									
	4-Nitrophenol	µg/L	<	5									
	p-Chloro-m-Cresol	µg/L	<										
	Pentachlorophenol	µg/L	<	10									
	Phenol	µg/L	<	5									
	2,4,6-Trichlorophenol	µg/L	<	5									
Group 5	Acenaphthene	µg/L	<	2.5									
	Acenaphthylene	µg/L	<	2.5									
	Anthracene	µg/L	<	2.5									
	Benzidine	µg/L	<	50									
	Benzo(a)Anthracene	µg/L	<	2.5									
	Benzo(a)Pyrene	µg/L	<	2.5									
	3,4-Benzofluoranthene	µg/L	<	2.5									
	Benzo(ghi)Perylene	µg/L	<	2.5									
	Benzo(k)Fluoranthene	µg/L	<	2.5									
	Bis(2-Chloroethoxy)Methane	µg/L	<	5									
	Bis(2-Chloroethyl)Ether	µg/L	<	5									
	Bis(2-Chloroisopropyl)Ether	µg/L	<										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5									
	4-Bromophenyl Phenyl Ether	µg/L	<	5									
	Butyl Benzyl Phthalate	µg/L	<	5									
	2-Chloronaphthalene	µg/L	<	5									
	4-Chlorophenyl Phenyl Ether	µg/L	<	5									
	Chrysene	µg/L	<	2.5									
	Dibenzo(a,h)Anthracene	µg/L	<	2.5									
	1,2-Dichlorobenzene	µg/L	<	0.5									
	1,3-Dichlorobenzene	µg/L	<	0.5									
	1,4-Dichlorobenzene	µg/L	<	0.5									
	3,3-Dichlorobenzidine	µg/L	<	5									
	Diethyl Phthalate	µg/L	<	5									
	Dimethyl Phthalate	µg/L	<	2.5									
	Di-n-Butyl Phthalate	µg/L	<	5									
	2,4-Dinitrotoluene	µg/L	<	5									
	2,6-Dinitrotoluene	µg/L	<	5									
	Di-n-Octyl Phthalate	µg/L	<	5									
	1,2-Diphenylhydrazine	µg/L	<	5									
	Fluoranthene	µg/L	<	2.5									
	Fluorene	µg/L	<	2.5									
	Hexachlorobenzene	µg/L	<	5									
	Hexachlorobutadiene	µg/L	<	0.5									
	Hexachlorocyclopentadiene	µg/L	<	5									
	Hexachloroethane	µg/L	<	2.5									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5									

[illegible]

Group 7

Stream / Surface Water Information

Pennridge Wastewater Treatment Authority, NPDES Permit No. PA0900421, Outfall 001

Instructions

Discharge

Stream

Receiving Surface Water Name: **East Branch Perkionmen 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	001168	15.6	290	29.4			Yes
End of Reach 1	001168	12.5	265	38.5			Yes

Q₇₋₁₀

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	15.6	0.1	10.5									355	7		
End of Reach 1	12.5	0.1													

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	15.6														
End of Reach 1	12.5														

Model Results

Pennridge Wastewater Treatment Authority, NPDES Permit No. PA0900421, Outfall 001

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

☒ All ☐ Inputs ☐ Results ☐ Limits

☐ Hydrodynamics

☒ Wasteload Allocations

☒ AFC

CCT (min): 15

PMF: 0.565

Analysis Hardness (mg/l): 300.92

Analysis pH: 7.05

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	750	750	1,414	
Total Antimony	0	0		0	1,100	1,100	2,075	
Total Arsenic	0	0		0	340	340	641	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	39,605	
Total Boron	0	0		0	8,100	8,100	15,276	
Total Cadmium	0	0		0	5.870	6.54	12.3	Chem Translator of 0.898 applied
Total Chromium (III)	0	0		0	1404.563	4,445	8,383	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	30.7	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	179	
Total Copper	0	0		0	37.946	39.5	74.5	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	41.5	
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	209.247	332	626	Chem Translator of 0.63 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	3.11	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1189.130	1,192	2,247	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	21.397	25.2	47.5	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	123	
Total Zinc	0	0		0	298.018	305	575	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	5.66	
Acrylonitrile	0	0		0	650	650	1,226	
Benzene	0	0		0	640	640	1,207	
Bromoform	0	0		0	1,800	1,800	3,395	
Carbon Tetrachloride	0	0		0	2,800	2,800	5,281	
Chlorobenzene	0	0		0	1,200	1,200	2,263	

Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	33,947	
Chloroform	0	0		0	1,900	1,900	3,583	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	28,289	
1,1-Dichloroethylene	0	0		0	7,500	7,500	14,145	
1,2-Dichloropropane	0	0		0	11,000	11,000	20,746	
1,3-Dichloropropylene	0	0		0	310	310	585	
Ethylbenzene	0	0		0	2,900	2,900	5,469	
Methyl Bromide	0	0		0	550	550	1,037	
Methyl Chloride	0	0		0	28,000	28,000	52,807	
Methylene Chloride	0	0		0	12,000	12,000	22,631	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,886	
Tetrachloroethylene	0	0		0	700	700	1,320	
Toluene	0	0		0	1,700	1,700	3,206	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	12,825	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	5,658	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	6,412	
Trichloroethylene	0	0		0	2,300	2,300	4,338	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,056	
2,4-Dichlorophenol	0	0		0	1,700	1,700	3,206	
2,4-Dimethylphenol	0	0		0	660	660	1,245	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	151	
2,4-Dinitrophenol	0	0		0	660	660	1,245	
2-Nitrophenol	0	0		0	8,000	8,000	15,088	
4-Nitrophenol	0	0		0	2,300	2,300	4,338	
Pentachlorophenol	0	0		0	9.174	9.17	17.3	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	868	
Acenaphthene	0	0		0	83	83.0	157	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	566	
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.94	
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	56,579	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	8,487	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	509	
Butyl Benzyl Phthalate	0	0		0	140	140	264	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	1,546	
1,3-Dichlorobenzene	0	0		0	350	350	660	
1,4-Dichlorobenzene	0	0		0	730	730	1,377	

3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	7,544	
Dimethyl Phthalate	0	0		0	2,500	2,500	4,715	
Di-n-Butyl Phthalate	0	0		0	110	110	207	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	3,018	
2,6-Dinitrotoluene	0	0		0	990	990	1,867	
1,2-Diphenylhydrazine	0	0		0	15	15.0	28.3	
Fluoranthene	0	0		0	200	200	377	
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	18.9	
Hexachlorocyclopentadiene	0	0		0	5	5.0	9.43	
Hexachloroethane	0	0		0	60	60.0	113	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	18,860	
Naphthalene	0	0		0	140	140	264	
Nitrobenzene	0	0		0	4,000	4,000	7,544	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	32,061	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	566	
Phenanthrene	0	0		0	5	5.0	9.43	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	245	

☒ **CFC**

CCT (min): **47.064**

PMF: **1**

Analysis Hardness (mg/l): **315.3**

Analysis pH: **7.04**

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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	565	
Total Arsenic	0	0		0	150	150	385	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	10,534	
Total Boron	0	0		0	1,600	1,600	4,111	
Total Cadmium	0	0		0	0.546	0.63	1.63	Chem Translator of 0.861 applied
Total Chromium (III)	0	0		0	189.828	221	567	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	26.7	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	48.8	
Total Copper	0	0		0	23.893	24.9	63.9	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	13.4	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	3,854	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	8.560	13.7	35.3	Chem Translator of 0.624 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	2.33	Chem Translator of 0.85 applied
Total Nickel	0	0		0	137.398	138	354	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	12.8	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	33.4	
Total Zinc	0	0		0	312.581	317	815	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	7.71	
Acrylonitrile	0	0		0	130	130	334	
Benzene	0	0		0	130	130	334	
Bromoform	0	0		0	370	370	951	
Carbon Tetrachloride	0	0		0	560	560	1,439	
Chlorobenzene	0	0		0	240	240	617	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	8,993	
Chloroform	0	0		0	390	390	1,002	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	7,965	
1,1-Dichloroethylene	0	0		0	1,500	1,500	3,854	
1,2-Dichloropropane	0	0		0	2,200	2,200	5,653	
1,3-Dichloropropylene	0	0		0	61	61.0	157	
Ethylbenzene	0	0		0	580	580	1,490	
Methyl Bromide	0	0		0	110	110	283	
Methyl Chloride	0	0		0	5,500	5,500	14,131	
Methylene Chloride	0	0		0	2,400	2,400	6,166	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	540	
Tetrachloroethylene	0	0		0	140	140	360	
Toluene	0	0		0	330	330	848	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	3,597	
1,1,1-Trichloroethane	0	0		0	610	610	1,567	
1,1,2-Trichloroethane	0	0		0	680	680	1,747	
Trichloroethylene	0	0		0	450	450	1,156	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	283	
2,4-Dichlorophenol	0	0		0	340	340	874	
2,4-Dimethylphenol	0	0		0	130	130	334	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	41.1	
2,4-Dinitrophenol	0	0		0	130	130	334	
2-Nitrophenol	0	0		0	1,600	1,600	4,111	
4-Nitrophenol	0	0		0	470	470	1,208	
Pentachlorophenol	0	0		0	7.039	7.04	18.1	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	234	
Acenaphthene	0	0		0	17	17.0	43.7	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	152	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.26	
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	15,416	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	2,338	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	139	

Butyl Benzyl Phthalate	0	0		0	35	35.0	89.9	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	411	
1,3-Dichlorobenzene	0	0		0	69	69.0	177	
1,4-Dichlorobenzene	0	0		0	150	150	385	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	2,055	
Dimethyl Phthalate	0	0		0	500	500	1,285	
Di-n-Butyl Phthalate	0	0		0	21	21.0	54.0	
2,4-Dinitrotoluene	0	0		0	320	320	822	
2,6-Dinitrotoluene	0	0		0	200	200	514	
1,2-Diphenylhydrazine	0	0		0	3	3.0	7.71	
Fluoranthene	0	0		0	40	40.0	103	
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	5.14	
Hexachlorocyclopentadiene	0	0		0	1	1.0	2.57	
Hexachloroethane	0	0		0	12	12.0	30.8	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	5,396	
Naphthalene	0	0		0	43	43.0	110	
Nitrobenzene	0	0		0	810	810	2,081	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	8,736	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	152	
Phenanthrene	0	0		0	1	1.0	2.57	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	66.8	

☒ **THH**

CCT (min): **47.064**

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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	14.4	
Total Arsenic	0	0		0	10	10.0	25.7	
Total Barium	0	0		0	2,400	2,400	6,166	
Total Boron	0	0		0	3,100	3,100	7,965	
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	10.3	
Dissolved Iron	0	0		0	300	300	771	
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	2,569	
Total Mercury	0	0		0	0.050	0.05	0.13	
Total Nickel	0	0		0	610	610	1,567	
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	0.62	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	7.71	
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	257	
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	14.6	
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	84.8	
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	175	
Methyl Bromide	0	0		0	100	100.0	257	
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	146	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	257	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	25,693	
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	77.1	
2,4-Dichlorophenol	0	0		0	10	10.0	25.7	
2,4-Dimethylphenol	0	0		0	100	100.0	257	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	5.14	
2,4-Dinitrophenol	0	0		0	10	10.0	25.7	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	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	10,277	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	180	
Anthracene	0	0		0	300	300	771	
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-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	0.26	
2-Chloronaphthalene	0	0		0	800	800	2,055	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	2,569	
1,3-Dichlorobenzene	0	0		0	7	7.0	18.0	
1,4-Dichlorobenzene	0	0		0	300	300	771	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	1,542	
Dimethyl Phthalate	0	0		0	2,000	2,000	5,139	
Di-n-Butyl Phthalate	0	0		0	20	20.0	51.4	
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	51.4	
Fluorene	0	0		0	50	50.0	128	
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	10.3	
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	87.4	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	25.7	
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	51.4	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.18	

☒ **CRL**

CCT (min):

PMF:

Analysis Hardness (mg/l):

Analysis pH:

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 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	0.58	
Benzene	0	0		0	0.58	0.58	5.61	
Bromoform	0	0		0	7	7.0	67.7	
Carbon Tetrachloride	0	0		0	0.4	0.4	3.87	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	7.74	
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	9.19	
1,2-Dichloroethane	0	0		0	9.9	9.9	95.7	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	8.7	
1,3-Dichloropropylene	0	0		0	0.27	0.27	2.61	
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	193	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	1.93	
Tetrachloroethylene	0	0		0	10	10.0	96.7	
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	5.32	
Trichloroethylene	0	0		0	0.6	0.6	5.8	
Vinyl Chloride	0	0		0	0.02	0.02	0.19	
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	
Pentachlorophenol	0	0		0	0.030	0.03	0.29	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	14.5	
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	0.001	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.01	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.001	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.01	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.097	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.29	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	3.09	
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	1.16	
Dibenzo(a,h)Anthracene	0	0		0	0.0001	0.0001	0.001	
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	0.48	
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	0.48	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.48	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.29	
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	0.0008	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.097	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	0.97	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.01	
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	0.007	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.048	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	31.9	
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

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Total Copper	Report	Report	Report	Report	Report	µg/L	39.5	AFC	Discharge Conc > 10% WQBEL (no RP)
Free Cyanide	0.37	0.66	10.3	18.4	25.7	µg/L	10.3	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	450	AFC	Discharge Conc > 10% WQBEL (no 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 Aluminum	907	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	14.4	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	25.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	6,166	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	4,111	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	N/A	N/A	Discharge Conc < TQL
Total Chromium (III)	567	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	19.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	48.8	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	771	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	3,854	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	35.3	µg/L	Discharge Conc < TQL
Total Manganese	2,569	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.13	µg/L	Discharge Conc < TQL
Total Nickel	354	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	12.8	µg/L	Discharge Conc < TQL
Total Silver	30.4	µg/L	Discharge Conc < TQL
Total Thallium	0.62	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.63	µg/L	Discharge Conc < TQL
Acrylonitrile	0.58	µg/L	Discharge Conc < TQL
Benzene	5.61	µg/L	Discharge Conc < TQL
Bromoform	67.7	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	3.87	µg/L	Discharge Conc < TQL
Chlorobenzene	257	µg/L	Discharge Conc < TQL

Chlorodibromomethane	7.74	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	8,993	µg/L	Discharge Conc < TQL
Chloroform	14.6	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	9.19	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	95.7	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	84.8	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	8.7	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	2.61	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	175	µg/L	Discharge Conc < TQL
Methyl Bromide	257	µg/L	Discharge Conc < TQL
Methyl Chloride	14,131	µg/L	Discharge Conc < TQL
Methylene Chloride	193	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	1.93	µg/L	Discharge Conc < TQL
Tetrachloroethylene	96.7	µg/L	Discharge Conc < TQL
Toluene	146	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	257	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	1,567	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	5.32	µg/L	Discharge Conc < TQL
Trichloroethylene	5.8	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.19	µg/L	Discharge Conc < TQL
2-Chlorophenol	77.1	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	25.7	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	257	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	5.14	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	25.7	µg/L	Discharge Conc < TQL
2-Nitrophenol	4,111	µg/L	Discharge Conc < TQL
4-Nitrophenol	1,208	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.29	µg/L	Discharge Conc < TQL
Phenol	10,277	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	14.5	µg/L	Discharge Conc < TQL
Acenaphthene	43.7	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	771	µg/L	Discharge Conc < TQL
Benzidine	0.001	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.01	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.001	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.01	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.097	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.29	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	3.09	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	139	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.26	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	2,055	µg/L	Discharge Conc < TQL

4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	1.16	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthracene	0.001	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	411	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	18.0	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	385	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	0.48	µg/L	Discharge Conc < TQL
Diethyl Phthalate	1,542	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	1,285	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	51.4	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	0.48	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.48	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.29	µg/L	Discharge Conc < TQL
Fluoranthene	51.4	µg/L	Discharge Conc < TQL
Fluorene	128	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.0008	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.097	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	2.57	µg/L	Discharge Conc < TQL
Hexachloroethane	0.97	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.01	µg/L	Discharge Conc < TQL
Isophorone	87.4	µg/L	Discharge Conc < TQL
Naphthalene	110	µg/L	Discharge Conc < TQL
Nitrobenzene	25.7	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.007	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.048	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	31.9	µg/L	Discharge Conc < TQL
Phenanthrene	2.57	µg/L	Discharge Conc < TQL
Pyrene	51.4	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.18	µg/L	Discharge Conc < TQL

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.39
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name	Pennridge WWTP
Permit No.	PA0020460

Test Completion Date		
Replicate	6/25/2024	
No.	Control	TIWC
1	0.684	0.48
2	0.518	0.56
3	0.626	0.67
4	0.502	0.494
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Mean	0.583	0.551
Std Dev.	0.087	0.087
# Replicates	4	4

T-Test Result	2.1019
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date		
Replicate	9/24/2024	
No.	Control	TIWC
1	0.482	0.562
2	0.451	0.543
3	0.548	0.478
4	0.476	0.44
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Mean	0.489	0.506
Std Dev.	0.041	0.057
# Replicates	4	4

T-Test Result	4.2945
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date		
Replicate	12/10/2024	
No.	Control	TIWC
1	0.471	0.564
2	0.562	0.505
3	0.547	0.472
4	0.53	0.526
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Mean	0.528	0.517
Std Dev.	0.040	0.039
# Replicates	4	4

T-Test Result	4.9652
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date		
Replicate	3/18/2025	
No.	Control	TIWC
1	0.426	0.48
2	0.356	0.364
3	0.43	0.399
4	0.436	0.448
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Mean	0.412	0.423
Std Dev.	0.038	0.051
# Replicates	4	4

T-Test Result	3.8805
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)	0.39
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name	Pennridge WWTP
Permit No.	PA0020460

Test Completion Date		
Replicate	6/24/2024	
No.	Control	TIWC
1	1	1
2	1	1
3	0	1
4	1	1
5	1	0
6	1	1
7	0	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		

Mean	0.800	0.900
Std Dev.	0.422	0.316
# Replicates	10	10

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

PASS

Test Completion Date		
Replicate	9/23/2024	
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		
Replicate	12/10/2024	
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		
Replicate	3/17/2025	
No.	Control	TIWC
1	1	0
2	1	1
3	1	1
4	1	0
5	1	0
6	1	0
7	1	0
8	1	0
9	1	0
10	1	0
11		
12		
13		
14		
15		

Mean	1.000	0.200
Std Dev.	0.000	0.422
# Replicates	10	10

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

FAIL

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.39
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name	Pennridge WWTP
Permit No.	PA0020460

Test Completion Date		
Replicate	6/25/2024	
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		
Replicate	9/24/2024	
No.	Control	TIWC
1	10	10
2	9	10
3	10	9
4	10	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
Deg. of Freedom
Critical T Value
Pass or Fail

5.3848

5

0.7267

PASS

Test Completion Date		
Replicate	12/10/2024	
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		
Replicate	3/18/2025	
No.	Control	TIWC
1	10	10
2	9	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
Deg. of Freedom
Critical T Value
Pass or Fail

12.5523

3

0.7649

PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.39
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name	Pennridge WWTP
Permit No.	PA0020460

Test Completion Date		
Replicate	6/24/2024	
No.	Control	TIWC
1	37	30
2	41	36
3	0	30
4	30	31
5	33	0
6	36	34
7	6	34
8	32	35
9	31	27
10	33	33
11		
12		
13		
14		
15		

Mean	27.900	29.000
Std Dev.	13.585	10.551
# Replicates	10	10

T-Test Result	1.7409
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Test Completion Date		
Replicate	9/23/2024	
No.	Control	TIWC
1	32	16
2	32	30
3	27	27
4	31	27
5	33	22
6	27	27
7	31	34
8	27	28
9	37	26
10	30	37
11		
12		
13		
14		
15		

Mean	30.700	27.400
Std Dev.	3.164	5.816
# Replicates	10	10

T-Test Result	2.2026
Deg. of Freedom	14
Critical T Value	0.8681
Pass or Fail	PASS

Test Completion Date		
Replicate	12/10/2024	
No.	Control	TIWC
1	23	25
2	18	26
3	23	26
4	20	21
5	28	30
6	22	23
7	26	23
8	23	22
9	21	30
10	24	27
11		
12		
13		
14		
15		

Mean	22.800	25.300
Std Dev.	2.860	3.129
# Replicates	10	10

T-Test Result	6.8360
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

Test Completion Date		
Replicate	3/17/2025	
No.	Control	TIWC
1	22	0
2	24	9
3	24	10
4	28	8
5	19	5
6	20	0
7	23	8
8	6	0
9	22	0
10	12	0
11		
12		
13		
14		
15		

Mean	20.000	4.000
Std Dev.	6.446	4.397
# Replicates	10	10

T-Test Result	-5.3228
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	FAIL

Instructions for Using PADEP WET Analysis Spreadsheet

This spreadsheet is designed to analyze Whole Effluent Toxicity (WET) test data using the statistical approach in EPA's "Test of Significant Toxicity" (TST) guidance document (EPA 833-R-10-003). Control replicate data are compared statistically with the target instream waste concentration (TIWC) replicate data. The intent is for permittees to provide an electronic or printed version of this spreadsheet with the NPDES permit renewal application that includes at least 16 endpoint results for chronic tests (4 tests, 4 endpoints each) or 8 endpoint results for acute tests (4 tests, 2 endpoints each) using the last four consecutive WET tests. The spreadsheet should also be used to determine whether an endpoint PASSES or FAILS specific tests during the permit term. Questions on the use of this form should be directed to DEP's Bureau of Clean Water at 717-787-5017.

Instructions:

Users can enter data into all cells with a green border, and can change the "TIWC" table header to a different value. Each worksheet is specific to one endpoint and can accommodate up to 4 test results for that endpoint. Four endpoint worksheets are provided ("Endpoint 1," "Endpoint 2," "Endpoint 3," and "Endpoint 4"). For chronic tests, all four worksheets should be used when reporting the last four consecutive test results for NPDES permit applications, and for acute tests, the first two worksheets should be used.

- 1 Enter the Facility Name and Permit No. for which the WET test(s) were completed.
Select, from the dropdown menus, the type of test (Chronic or Acute), the species tested (Ceriodaphnia dubia or Pimephales promelas), and the measured endpoint (survival, reproduction or growth). If you require a different option for a dropdown menu, contact DEP with your request.
- 2
- 3 Enter the Target Instream Waste Concentration (TIWC) value from the NPDES permit in decimal format. This is typically contained in the Part C condition for WET. The value of the TIWC itself is not critical for the TST calculations, but it is important that you enter the correct results associated with the TIWC dilution in the results table.
- 4 In the cell next to "No. per Replicate", enter the number of organisms used within each test condition replicate. Note that the numbers used in the results table cannot exceed this number for Survival endpoints.
- 5 Enter the Test Completion Date below the cell containing the same name.
- 6 Enter results for each replicate in the appropriate cells below the "Control" and "TIWC" table headers, corresponding to the number of organisms that survived at the end of the study, growth data, or reproduction data, corresponding to the endpoint selected above.

The mean, standard deviation and number of replicates are calculated below the results table. If there is no variability in both conditions, the T-test, degrees of freedom, and critical T-test results are not displayed, and the decision on whether a test passes or fails is based on the mean difference between the control and TIWC conditions (if less than the "b" value calculated above, the test passes, otherwise it fails). If there is variability in at least one condition, the T-test, degrees of freedom and critical T-test results are displayed, and the decision on whether a test passes or fails is based on a comparison of the T-test and critical T-test results (if the T-test result is greater than or equal to the critical T-test result, the test passes, otherwise it fails). In any case, if the mean result of the TIWC condition is greater than or equal to the mean result of the control condition, the test passes. Note that when the endpoint "Survival" is selected by the user, the results are transformed using an arcsine transformation in accordance with EPA's guidance, and the T-test, degrees of freedom, and critical T-test results are based on the arcsine transformed data.

In the event that a test condition that exceeds the TIWC condition would pass, the user may report that condition in lieu of the TIWC condition. If this is done, change the header above the results table accordingly. For example, if the TIWC value of 0.5 (50%) would fail, but a higher dilution of 0.75 (75%) would pass, change the table header from "TIWC" to "0.75".

The worksheet named "Evaluation" is generally used by DEP to evaluate Reasonable Potential and calculate WET limits, dilution series, and species as applicable for NPDES permits.

WET Summary and Evaluation

Facility Name	Pennridge WWTP
Permit No.	PA0020460
Design Flow (MGD)	4.325
Q₇₋₁₀ Flow (cfs)	10.5
PMF_a	1
PMF_c	1

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
		6/25/24		12/10/24	3/18/25
Pimephales	Growth	PASS	PASS	PASS	PASS

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
		6/24/24	9/23/24	12/10/24	3/17/25
Ceriodaphnia	Survival	PASS	PASS	PASS	FAIL

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
		6/25/24	9/24/24	12/10/24	3/18/25
Pimephales	Survival	PASS	PASS	PASS	PASS

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
		6/24/24		12/10/24	3/17/25
Ceriodaphnia	Reproduction	PASS	PASS	PASS	FAIL

Reasonable Potential? YES

Permit Recommendations

Test Type	Chronic
TIWC	39 % Effluent
Dilution Series	10, 20, 39, 70, 100 % Effluent
Permit Limit	2.6 TUC
Permit Limit Species	Ceriodaphnia dubia