Pennsylvania Department of Environmental Protection

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Amendment, Major**	Application No.	**PA0088781 A-1**
Facility Type	**Industrial**	APS ID	**1139936**
Major / Minor	**Major**	Authorization ID	**1531511**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Calpine Mid Merit II LLC**	Facility Name	**York Energy Center Block 2**
Applicant Address	1055 Pikes Peak Road	Facility Address	1597 Atom Road
	Delta, PA 17314-9239		Delta, PA 17314-9250
Applicant Contact	JoAnn Edgar	Facility Contact	JoAnn Edgar
Applicant Phone	(717) 456-2446	Facility Phone	(717) 456-2446
Client ID	393510	Site ID	543800
SIC Code	4911	Municipality	Peach Bottom Township
SIC Description	Trans. & Utilities - Electric Services	County	York
Date Application Received	June 16, 2025	EPA Waived?	No
Date Application Accepted	June 25, 2025	If No, Reason	DEP Discretion

Purpose of Application: NPDES permit amendment to remove from Block 1 to Block 2 and change owner name to Calpine Mid-Merit II, LLC (York Energy Center, Block 2).

Summary of Review

ASA Analysis & Communication, Inc., on behalf of Calpine Mid Merit, LLC, applied to the Pennsylvania Department of Environmental Protection (DEP) for an NPDES permit transfer major amendment. The application proposes a modification of existing NPDES permit PA0088781 to remove from Block 1 to Block 2 and change owner name to Calpine Mid-Merit II, LLC (York Energy Center, Block 2).

The NPDES permit No. PA0088781 last reissuance was on November 7, 2024, for the stream discharge, it became effective December 1, 2024, and will expire on November 30, 2029.

York Energy Center, Block 2, will be owned by Calpine Mid-Merit II, LLC, a combined cycle electric generation facility. The facility is located on an industrially zoned site surrounded by residential and agricultural land. The primary electric generating equipment includes two combustion turbines, two Heat Recovery Steam Generators, and one steam turbine. The facility generates approximately 828-megawatt (MW). The primary fuel is natural gas with low sulfur distillate as a backup.

The design flow is 3.31 MGD.

The outfall Nos. are follows.

1. Outfall 001B – Primary cooling tower blowdown (Noncontact Cooling Water (NCCW));
2. Outfall 003 (portion of) – Stormwater; and
3. Outfall 004 - Stormwater

And:

Outfall 001B:

1. The “reports” Quarterly & Daily maximum concentration & mass monitoring requirements of Total Aluminum, Total Copper, & Total Zinc.

Approve	Deny	Signatures	Date
X		Hilaryle Hilary H. Le / Environmental Engineering Specialist	August 22, 2025
X		*Daniel W. Martin* Daniel W. Martin, P.E. / Environmental Engineer Manager	November 10, 2025

Summary of Review

2. Temperature reports changed as follows.
   a. 110 °F from Jan – Nov 15;
   b. 105.5 °F from Nov 16 – 30; and
   c. 108.4 °F from Dec 1 -31.
3. The report requirement of Free Cyanide to the Group 2 pollutant table for Industrial Wastewater and Industrial Stormwater is updated, *reference to see email below*. It is added in the proposed permit Part C, I, item H.

Outfall 003:

The yearly monitoring of pH, TSS, Oil & Grease, Total Copper, Total Iron, Total Nickel, and Total Zinc requirements.

Based on the review, it is recommended that the NPDES permit be drafted and published in the *Pennsylvania Bulletin* for public comments for 30 days since this is a major amendment.

FW: Free Cyanide

Martin, Daniel
To EP-SCCWPermits

Reply | Reply All | Forward | ...
Tue 7/22/2025 8:01 AM

From: Hawley, Harmonie <hhawley@pa.gov>
Sent: Tuesday, July 22, 2025 7:39 AM
To: EP-WQM Permits Chiefs <EP-wqmpermitschiefs@pa.gov>
Cc: Steckler, Zachary <zsteckler@pa.gov>
Subject: Free Cyanide

Good Morning
Just letting everyone know that the applications for Industrial Wastewater and Industrial Stormwater were updated to add Free Cyanide to the Group 2 pollutant table. The updated forms on available on eLibrary.
Harmonie

Harmonie Hawley, PhD, PE | Environmental Engineer Manager
Department of Environmental Protection
Bureau of Clean Water | NPDES Permitting Division
2 East Main Street | Norristown, PA 19401
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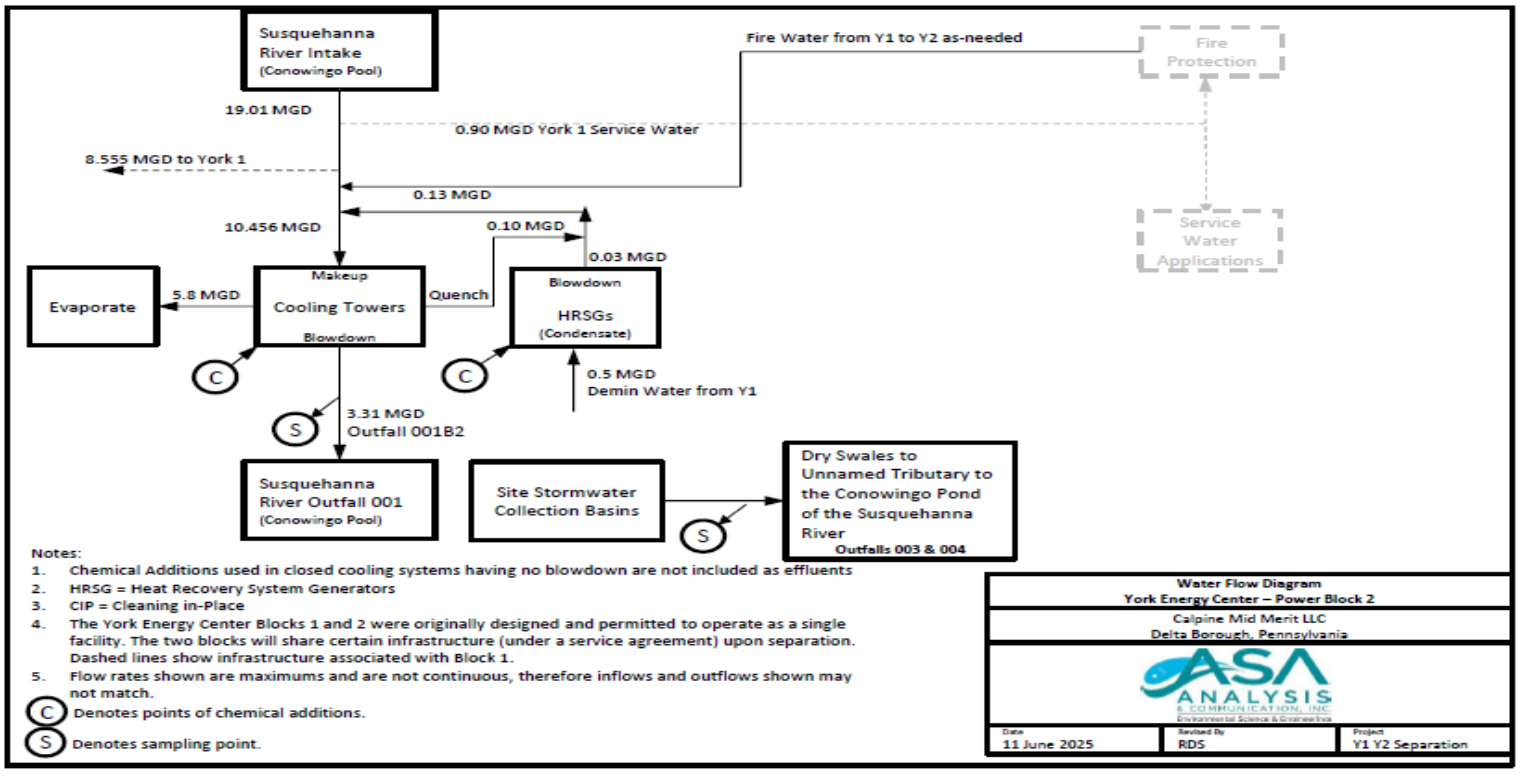

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001B	Design Flow (MGD)	3.31
Latitude	39º 46' 5"	Longitude	-76º 16' 6"
Quad Name	Holtwood	Quad Code	
Wastewater Description:	Noncontact Cooling Water (NCCW)		
Receiving Waters	Susquehanna River (WWF, MF)	Stream Code	06685
NHD Com ID	57472377	RMI	4.25
Drainage Area	26,900 mi.^{2}	Yield (cfs/mi^2)	0.13
Q_{7-10} Flow (cfs)	3500	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	99	Slope (ft/ft)	
Watershed No.	7-K	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Polychlorinated Biphenyls (PCBs)		
Source(s) of Impairment	Source Unknown		
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Chester Water Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	Approximate 2.25 miles

Changes Since Last Permit Issuance:

Drainage Area
The discharge is to Susquehanna River at RMI 4.25 miles. The drainage area upstream of the point of discharge is 26,900 sq.mi, according to USGS PA StreamStats (https://water.usgs.gov/osw/streamstats/pennsylvania.html).

Stream Flow
York Energy Center's discharge is to Conowingo Pond, a 14-mile portion of the Susquehanna River which is bounded upstream by Holtwood Dam and impounded downstream by Conowingo Dam. Considering the abnormal flow processes in this portion of the river, an accurate Q_{7-10} low flow value cannot be obtained. However, for the modeling purposes for this NPDES permit, a Q_{7-10} value will be used as a conservative approach for protecting the Lower Susquehanna River. Various data sources were examined in order to arrive at an appropriate result.

The United States Geologic Survey (USGS) maintains a stream gaging station on the Susquehanna River at Marietta (No. 01576000), which is the Susquehanna River gage that is nearest to the proposed discharge point. Evaluation of the Marietta gage's low flow statistics reveals a Q_{7-10} low flow yield of 0.146 cfs/mi^2 for the post-regulation period of 1972-1996 (derived from a flow of 3800 cfs and a drainage area of 25,990 sq. mi.) (*reference the 2015 fact sheet*).

StreamStats' watershed delineation tool, when used at the discharge point for York Energy Center Block 2, produces a Q_{7-10} value of 3,590 cfs, with a drainage area of 26,900 mi^2 (resulting in a low flow yield of 0.13 cfs/mi^2). However, since the flow in the pond is regulated by flow from upstream and downstream dams, the low flow must be examined further. According to SRBC's 2006 Conowingo Pond Management Plan, the release rates from both the Conowingo and Holtwood dams reach a minimum of 3,500 cfs during the lower flow months of July-November. Since it is a close match, the StreamStats Q_{7-10} low flow for modeling purposes will be rounded to 3,500 cfs. This information is used to obtain a chronic or 30-day (Q_{30-10}), and an acute or 1-day (Q_{1-10}) exposure stream flow for the discharge point as follows (Guidance No. 391-2000-023):

Q_{7-10} = 3,500 cfs
Low Flow Yield = 3,500 cfs / 26,900 mi^2 ≈ 0.130 cfs/mi^2

$Q_{30\text{-}10}$ = 1.36 * 3,500 cfs ≈ 4,760 cfs
$Q_{1\text{-}10}$ = 0.64 * 3,500 cfs ≈ 2,240 cfs
The resulting $Q_{7\text{-}10}$ dilution ratio is: Q_{stream} / $Q_{discharge}$ = 3,500 cfs / [3.31 MGD * (1.547 cfs/MGD)] = 684:1

Public Water Supply
The nearest downstream public water supply intake is the Chester Water Authority on Susquehanna River in Lancaster County. It is approximately 2.25 miles. Due to the distance, dilution, and proposed effluent limits the discharge is not expected to impact the water supply.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	003 (portion of) / 004	Design Flow (MGD)	0
Latitude	39º 44' 20" / 39º 44' 15"	Longitude	-76º 18' 25" / -76º 18' 10"
Quad Name	Delta	Quad Code	
Wastewater Description:	Stormwater		
Receiving Waters	Unnamed Tributary to Susquehanna River (WWF, MF)	Stream Code	07245
NHD Com ID	57473691	RMI	3.31 / 4.02
Drainage Area		Yield (cfs/mi^2)	
$Q_{7\text{-}10}$ Flow (cfs)		$Q_{7\text{-}10}$ Basis	USGS StreamStats
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-I	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Changes Since Last Permit Issuance:

Other Comments:

Compliance History	
Summary of DMRs:	A summary of past 12-month DMRs is presented on next pages.
Summary of Inspections:	**7/31/2024:** Mr. Lesitsky, DEP's WQS, conducted a compliance evaluation inspection. There were no violations identified during inspection. The field test results were within permit limits. Recommendation was ensuring all pH buffers are within current expiration dates.
Other Comments:	There are no open violations associated with the permittee or the facility.

Compliance History

DMR Data for Outfall 001 (from July 1, 2024 to June 30, 2025)

Parameter	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24
Flow (MGD) Average Monthly	1.4021	1.7804	1.2474	1.7602	1.7926	1.7780	7.4074	0.9172	1.7922	1.6618	1.5800	1.4979
Flow (MGD) Daily Maximum	1.9529	2.0268	1.8925	2.0934	2.0349	2.1403	8.4083	1.9060	2.0068	1.9827	1.9548	1.8748
pH (S.U.) Daily Minimum	7.2	7.7	7.7	7.1	7.3	7.5	7.4					
pH (S.U.) Minimum								7.0	7.6	7.7	7.4	7.4
pH (S.U.) Instantaneous Maximum	7.9	8.1	8.0	7.8	8.5	7.8	8.4	8.5	7.9	8.5	0.1	7.8
Free Available Chlorine (mg/L) Daily Maximum	0.17	0.14	0.06	0.16	0.13	0.12	0.13	0.11	0.16	0.15	0.18	0.16
Temperature (ºF) Daily Maximum	89.3	78.9	84.0	78.0	75.5	75.7	76.2	79.0	83.9	84.5	87.1	88.2
TSS (mg/L) Effluent Net Average Monthly	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 9.82	< 1.0	< 1.0	< 28.0	< 1.0
TSS (mg/L) Effluent Net Daily Maximum	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	18.64	< 1.0	< 1.0	55.0	< 1.0
Total Dissolved Solids (mg/L) Daily Maximum	423.4			398			1055.5			1530		
Total Aluminum (lbs/day) Average Quarterly	7.85			7.69			7.48			5.35		
Total Aluminum (lbs/day) Daily Maximum	7.85			7.69			7.48			5.35		
Total Aluminum (mg/L) Average Quarterly	0.68			0.46			0.52			0.46		
Total Aluminum (mg/L) Daily Maximum	0.68			0.46			0.52			0.46		
Total Copper (lbs/day) Average Quarterly	0.0477			0.0601			0.088					

Total Copper (lbs/day) Daily Maximum	0.0477			0.0601			0.088					
Total Copper (mg/L) Average Quarterly	0.0041			0.0036			0.006					
Total Copper (mg/L) Daily Maximum	0.0041			0.0036			0.006					
Sulfate (mg/L) Daily Maximum	172.68			169.78			525.49			660.78		
Chloride (mg/L) Daily Maximum	71.21			71.10			139.18			203.68		
Bromide (mg/L) Daily Maximum	1.5			< 1.06			< 2.15			< 2.5		

DMR Data for Outfall 002 (from July 1, 2024 to June 30, 2025)

Parameter	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24
pH (S.U.) Daily Maximum							8.0					
TSS (mg/L) Daily Maximum							5.0					
Oil and Grease (mg/L) Daily Maximum							1.5					
Total Copper (mg/L) Daily Maximum							0.0096					
Total Iron (mg/L) Daily Maximum							0.098					
Total Nickel (mg/L) Daily Maximum							0.0094					
Total Zinc (mg/L) Daily Maximum							0.091					

DMR Data for Outfall 100 (from July 1, 2024 to June 30, 2025)

Parameter	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24
Flow (MGD) Average Monthly	0.1745	0.1356	0.0927	0.0762	0.0818	0.0779	0.1183	0.0453	0.1302	0.1573	0.1573	0.1473
Flow (MGD) Daily Maximum	0.4818	0.1817	0.3595	0.1262	0.1155	0.1077	0.1898	0.1824	0.1780	0.1931	0.1931	0.2124
TSS (mg/L) Effluent Net Average Monthly	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TSS (mg/L) Effluent Net Daily Maximum	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Oil and Grease (mg/L) Effluent Net Average Monthly	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.7	< 1.0	< 1.0	< 2.8	< 1.0
Oil and Grease (mg/L) Effluent Net Daily Maximum	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.6	< 1.0	< 1.0	1.7	< 1.0

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 001B, Effective Period: Permit Effective Date through **November 30, 2029**.

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		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Free Available Chlorine	XXX	XXX	XXX	XXX	0.2	0.5	1/day	Grab
Temperature (ºF) Nov 16 - 30	XXX	XXX	XXX	XXX	Report	105.5	Continuous	I-S
Temperature (ºF) Nov 1 - 15	XXX	XXX	XXX	XXX	Report	110	Continuous	I-S
Temperature (ºF) Jan 1 - Oct 31	XXX	XXX	XXX	XXX	Report	110	Continuous	I-S
Temperature (ºF) Dec 1 - 31	XXX	XXX	XXX	XXX	Report	108.4	Continuous	I-S
TSS Effluent Net	XXX	XXX	XXX	30.0	60.0	75.0	2/month	Grab
Oil and Grease Effluent Net	XXX	XXX	XXX	15.0	20.0	30.0	2/month	Grab
Total Aluminum	Report Avg Qrtly	Report Daily Max	XXX	Report Avg Qrtly	Report	XXX	1/quarter	Grab
Total Copper	Report Avg Qrtly	Report Daily Max	XXX	Report Avg Qrtly	Report	XXX	1/quarter	Grab
Total Zinc	Report Avg Qrtly	Report Daily Max	XXX	Report Avg Qrtly	Report	XXX	1/quarter	Grab
Total Dissolved Solids	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Sulfate	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Chloride	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Bromide	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

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 003, Effective Period: Permit Effective Date through November 30, 2029.

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		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
TSS	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Total Copper	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Total Iron	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Total Nickel	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Total Zinc	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab

Compliance Sampling Location:

Other Comments:

Development of Effluent Limitations

Outfall No.	001B	**Design Flow (MGD)**	3.31
Latitude	39º 46' 5.00"	**Longitude**	-76º 16' 6.00"
Wastewater Description:	Noncontact Cooling Water (NCCW)		

Technology-Based Limitations / Water Quality-Based Limitations / Best Professional Judgment (BPJ) Limitations / Additional Considerations

Effluent Limitations Guidelines:
This facility is regulated by an Effluent Limitation Guideline (ELG) from the Code of Federal Regulations 40 CFR Part 423 Steam Electric Power Generating Point Source Category. Limits have been applied in the permit based on Part 423.15 – New Source Performance Standards (NSPS).

pH:
The effluent discharge pH should remain above 6 and below 9 standard units according to 25 Pa Code § 95.2(1).

Free available Chlorine (Total Residual Chlorine (TRC):
The ELG Part 423.15(b)(10)(i) requires limits for free available chlorine in cooling tower blowdown. The requirement is a concentration of 0.2 mg/L as an average concentration, and a concentration of 0.5 mg/L as a maximum concentration. DEP's Guidance Document No.362-2183-004 "Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry" states that the average FAC limit from the ELG should be included in the permit as a maximum daily, and the maximum limit should be included as an IMAX. This is consistent with the existing limits, which will remain in the permit. Additionally, the Guidance 362-2183-004 and ELG Part 423 requires the following language to be included in Part C of the NPDES permit:

> "The term maximum daily concentration as it relates to chlorine discharge means the average analyses made over a single period of chlorine release which does not exceed two hours."
>
> "The term 'free available chlorine' shall mean the value obtained using the amperometric titration method for free available chlorine described in "Standard methods for the Examination of Water and Wastewater," page 112 (13th edition)."
>
> "Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or state, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

This additional language will be included in Part C of the NPDES permit, which is consistent with the existing permit.

Polychlorinated Biphenyls (PCBs):
The ELG Part 423.15(b)(2) states "There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid." This statement will be included in the Part C conditions of the NPDES permit, which is consistent with the existing permit.

Total Suspended Solids (TSS):
The ELG Part 423.15(b)(3) requires limits for TSS in low volume waste sources. The requirement is an average monthly limit of 30.0 mg/L, and a daily maximum limit of 100.0 mg/L. Multipliers of 2.0 and 2.5 will be used for the daily maximum and instantaneous maximum (IMAX) in accordance with DEP's Guidance 362-0400-001. This results in a daily maximum limit of 60.0 mg/L, and an IMAX limit of 75.0 mg/L. These limits will be included, which is consistent with the existing permit. The existing permit has a minimum monitoring frequency of 2/month and sample type of "grab" will remain in the proposed permit.

Oil and Grease:
The ELG Part 423.15(b)(3) requires limits for oil and grease in low volume waste sources. The requirement is an average monthly limit of 15.0 mg/L, and a daily maximum limit of 20.0 mg/L. Additionally, 25 Pa Code § 95.2(2)(ii) requires an IMAX limit of 30.0 mg/L for oil and grease. These limits will be included, which is consistent with the existing permit limits. The existing permit has a minimum monitoring frequency of 2/month and sample type of "grab" will remain in the proposed permit.

Total Chromium/Total Zinc:
The ELG Part 423.15(b)(10)(i) requires limits for Total Chromium and Total Zinc. The requirement for Total Chromium is an average monthly limit of 0.2 mg/L and a maximum daily limit of 0.2 mg/L. The requirement for Total Zinc is an average monthly limit of 1.0 mg/L and a maximum daily limit of 1.0 mg/L.

DEP recognizes the intent of the ELG and determines that since Calpine doesn't use chemicals containing Total Chromium or Total Zinc for cooling tower maintenance or otherwise add Zinc or Chromium to the effluent, the ELG (40 CFR § 423.15) may not be applicable. This is also explained in the Federal Registry Volume 47 No. 224 page 52295. Therefore, no Total Chromium and Total Zinc limits monitoring are required in the existing permit and it will remain in the proposed permit.

Priority Pollutants:
The ELG Part 423.15(b)(10)(i) requires that any of the 126 Priority Pollutants contained in chemicals added for cooling tower maintenance should not be detectable, except for Total Zinc and total Chromium. In accordance with DEP's Guidance No. 362-2183-004, it is not always necessary to require monitoring for priority pollutants, and can be handled with a narrative condition instead. Since the chemical additives used at the facility do not contain any of the Priority Pollutants, a narrative condition was included in Part C of the permit. This is consistent with the existing permit. The Part C condition states:

> "Cooling tower blowdown discharges shall contain no detectable amounts of the 126 Priority Pollutants listed in 40 CFR Part 423, Appendix A, with the exception of Total Chromium and Total Zinc. When requested by DEP, the permittee shall conduct monitoring or submit engineering calculations to demonstrate compliance with 40 CFR 423.13(d)(a)."

The report requirement of Free Cyanide to the Group 2 pollutant table for Industrial Wastewater and Industrial Stormwater is updated. It is added in the proposed permit Part C, I, item H.

Total Dissolved Solids (TDS):
Total Dissolved Solids and its major constituents including Bromide, Chloride, and Sulfate have become statewide pollutants of concern and threats to DEP's mission to prevent violations of water quality standards. The requirement to monitor these pollutants must be considered under the criteria specified in 25 Pa. Code § 95.10 and the following January 23, 2014 DEP Central Office Directive:

For point source discharges and upon issuance or reissuance of an individual NPDES permit:

- Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

- Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/L.

YEC Block 2 reported a maximum effluent concentration of 1,340 mg/L for TDS. Based upon the data provided in the application, monitoring of TDS, Bromide, Chloride, and Sulfate will be required. These monitoring requirements were included in the existing permit, and will remain in the amendment. The existing permit has a minimum monitoring frequency of 1/quarter and sample type of "grab" will remain in the proposed permit.

Toxics:

☑ ***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	38.4	60.0	1,392	2,172	3,481	µg/L	1,392	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	46.5	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	376	AFC	Discharge Conc > 10% WQBEL (no RP)

Effluent sample results for toxic pollutants reported on the renewal application were entered into DEP's Toxics Management Spreadsheet Version 1.0 to develop appropriate permit requirements for toxic pollutants of concern. The Toxics Management Spreadsheet combines the functions of PENTOXSD and DEP's Toxics Screening Analysis. Based on effluent sample results reported on the application, the Toxics Management Spreadsheet recommended a limit for Total Aluminum, and monitoring for Total Copper & Total Zinc. A discharge hardness of 418 mg/L was used in the Spreadsheet, taken from the application. And pH of 7.0 default was used for calculation.

The TMS output provided specific partial mix factors for each criteria. These partial mix factors were multiplied by 2, to account for the fact that mixing occurs on two sides of the plume. The width and depth of the river at the point of discharge were stated in the previous permit application to be approximately 5,620 ft. and 10 ft., respectively. Additionally, elevations were provided in the previous application for the outfall location and at the PA/MD border. These values were all used in the TMS, and are consistent with how modeling was performed for the existing permit.

Stream pH and hardness inputs for the spreadsheet were based on data acquired from the National Water Quality Monitoring Council website. Data was analyzed from the Water Quality Network (WQN) Station ID 201 on the Susquehanna River. A 90th percentile analysis was performed on the data and resulted in a Stream pH of 7.0 and a Stream Hardness of 63 mg/L.

This data was analyzed based on the guidelines found in DEP's Water Quality Toxics Management Strategy (Document No. 361-0100-003) and DEP's SOP No. BPNPSM-PMT-033. Spreadsheet results are attached to this fact sheet. The Toxics Management Spreadsheet uses the following logic:

a. Establish average monthly and IMAX limits in the draft permit where the maximum reported concentration exceeds 50% of the WQBEL.
b. For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.
c. For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10%-50% of the WQBEL.

Since the reported maximum concentration for Total Aluminum was greater than or equal 50% of its WQBEL, the TMS produced an effluent limit. However, the maximum concentration reported in the application for Total Aluminum was based on a non-detect result of 1,900 µg/L. The parameters concentration of 1,392 ug/L AML, 2,172 ug/L MDL, & 3,481 ug/L IMAX and mass of 38.4 lbs/day AML & 60.0 lbs/day MDL were required from TMS and due to not enough data, therefore, the "Reports" Average Quarterly & Daily Maximum concentration & mass will be included in the permit as monitoring requirements with a sample frequency of 1/quarter. These parameters will be re-evaluated again during the next permit cycle to determine if they will remain or can be removed from the permit.

The reported maximum concentration for Total Copper & Total Zinc were greater than 10% of its WQBEL, the TMS produced an effluent limit. However, the maximum concentration reported in the application for Total Copper & Zinc were based on a non-detect result of 10.0 µg/L & 42 µg/L. Therefore, the "Reports" Average Quarterly & Daily Maximum concentration & mass will be included in the permit as monitoring requirements with a sample frequency of 1/quarter. These parameters will be re-evaluated again during the next permit cycle to determine if they will remain or can be removed from the permit.

Chesapeake Bay Total Maximum Daily Load (TMDL)
The discharge of TN and TP from this facility is consistent with and covered under the Chesapeake Bay TMDL aggregate WLA for non-significant wastewater discharges.

This is a non-significant industrial discharge facility that does not require nitrogen or phosphorus monitoring. The facility discharges non-contact cooling water and stormwater without any chemical additives containing significant amounts of nitrogen or phosphorus. The Supplement to Phase II Watershed Implementation Plan states the following:

> "For non-significant IW facilities, monitoring and reporting of TN and TP will be required throughout the permit term in renewed or amended permits anytime the facility has the potential to introduce a net TN or TP increase to the load contained within the intake water used in processing. In general, facilities that discharge groundwater and cooling water with no addition of chemicals containing N or P do not require monitoring."

No TN or TP monitoring requirements are currently needed in the permit.

316(b) Cooling Water Intake Requirements:
The 2025 permit amendment application indicates that the facility York Energy Center (YEC) – Block 2 withdraws 19.01 MGD (0.04 %) from Susquehanna River.

Section 316(b) of the Clean Water Act (CWA) requires that the location, design, construction, and capacity of cooling water intake structures (CWISs) reflect the best technology available (BTA) for minimizing adverse environmental

impacts. Under Section 316(b) of the CWA, EPA developed regulations which are divided into three phases: Phase I for new facilities, Phase II for existing large electric-generating facilities, and Phase III for certain existing facilities and new offshore oil and gas extraction facilities.

York Energy Center's existing permit applied the Phase I 316(b) requirements for new facilities (codified in 40 CFR § 125, Subpart I), since the facility was constructed after January 17, 2002.

Per the application, the facility has closed-cycle cooling, and the intake structure consists of six 4-millimeter slot wedgewire cylinder screens. Additionally, the YECs WWS are designed for a through-slot velocity (TSV) of less than 0.5 ft/s and are located offshore within the Conowingo Pool.

The Part C language included in the existing permit for CWISs will remain in the proposed permit.

Chemical Additives:
The term chemical additive means a chemical product introduced into a waste stream that is used for cleaning, disinfecting, or maintenance and which may be detected in effluent discharged to waters of the Commonwealth. Generally, the term "chemical additive" excludes chemicals used for neutralization of waste streams, the production of goods, and treatment of wastewater. The following chemical additives will be used at the facility and will replace the chemical additives currently used.

Identify all chemical additives that have been introduced to any waste stream over the past two years.			
Chemical Additives Name	**Purpose**	**Maximum Usage (lbs/day)**	**Usage Frequency**
Sulfuric Acid	pH control	As required	As required
Sodium Hypochlorite (NaClO)	pH and TRC control	As required	As required
Sodium Hydroxide (Caustic Soda)	Neutralization/pH control	As required	As required
Steamate NA 1324	Steam condensate treatment	60	As required
Steamate PAP7000	Steam Condensate treatment	200	Daily
Foamtrol AF 1440	Foam Control	13	Daily
Optisperse HP54434	Internal Boiler treatment	As required	As required
Optisperse HP3100	Internal Boiler treatment	As required	As required
Steamate NA0240	Anti-corrosion; neutralizing amine	7.2	As required
Spectrus CT1300	Microbial control agent	94	As required
Gengard GN7004	Dispersant	37	As required
List all chemical additives that the applicant is requesting approval to use upon issuance of the permit by DEP.			
Chemical Additives Name	**Purpose**	**Proposed Maximum Usage (lbs/day)**	**Proposed Usage Frequency**
Sulfuric Acid	Neutralization	As required	As required
Sodium Hypochlorite	pH and TRC control	As required	As required
Steamate NA 1324	Steam Condensate treatment	275.5 (33 gal/day)	As required
Steamate PAP7000	Steam Condensate treatment	58.4 (7 gal/day)	As required
Sodium Hydroxide (Caustic Soda)	Neutralization/pH control	As required	As required
Foamtrol AF 1440	Foam control in each cooling tower	1367 (163.9 gal/day)	Daily

These chemicals are included on DEP's Approved List of Chemical Additives. No limits or monitoring requirements will be necessary for these chemicals. The permittee will be required to provide the usage rates of all chemical additives used at the site on a monthly basis and will report these results on DEP's Chemical Additives Usage Form. The permit will include Part C conditions for chemical additive usage and reporting requirements.

Temperature Limitations:
A reasonable potential (RP) analysis was performed for temperature which is the main pollutant of concern for the NCCW. Effluent limitations for temperature were calculated using DEP's Temperature Spreadsheet Model which uses DEP's Guidance No. 391-2000-017 for Temperature Criteria. In the Temperature Spreadsheet, per the previous fact sheet, a Q_{7-}

$_{10}$ multiplier of 1.0 was used for each more in the spreadsheet. This was done to be conservative due to the nature of the low flows in the Conowingo Pond.

The stream Q_{7-10} of 40.57 cfs (calculated acute partial mixing factor (PMF_a) of 0.0113 ((0.003 x 2) + 0.00534)) was multiplied by the Q_{7-10} flow of 3,590 cfs for the entire river to give the Q_{7-10} flow relevant for the temperature model used in this fact sheet was used in the Temperature Spreadsheet to account for the partial mixing of the discharge plume. The design intake flow is 19.01 MGD or 0.04 percent of the Susquehanna River.

The effluent limitations were analyzed using the Case 2 Thermal Worksheet for WWF streams. The worksheet recommended permit limits of 110°F for Jan – Nov 15 months, 105.5 °F for Nov 16 -30, and 108.4 °F for Dec 1-31. A printout of the worksheet is attached.

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Instructions | *Inputs*

Facility: Calpine Mid-Merit II, LLC Block 2 — Permit No.: PA0088781 A-1

Stream Name: Susquehanna River — Analyst/Engineer: Hilary Le

Stream Q7-10 (cfs)*: 40.6 — Outfall No.: 001 — Analysis Type*: WWF

Facility Flows

Semi-Monthly Increment	Intake (Stream) (MGD)*	Intake (External) (MGD)*	Consumptive Loss (MGD)*	Discharge Flow (MGD)
Jan 1-31	19.01	0	15.7	3.31
Feb 1-29	19.01	0	15.7	3.31
Mar 1-31	19.01	0	15.7	3.31
Apr 1-15	19.01	0	15.7	3.31
Apr 16-30	19.01	0	15.7	3.31
May 1-15	19.01	0	15.7	3.31
May 16-31	19.01	0	15.7	3.31
Jun 1-15	19.01	0	15.7	3.31
Jun 16-30	19.01	0	15.7	3.31
Jul 1-31	19.01	0	15.7	3.31
Aug 1-15	19.01	0	15.7	3.31
Aug 16-31	19.01	0	15.7	3.31
Sep 1-15	19.01	0	15.7	3.31
Sep 16-30	19.01	0	15.7	3.31
Oct 1-15	19.01	0	15.7	3.31
Oct 16-31	19.01	0	15.7	3.31
Nov 1-15	19.01	0	15.7	3.31
Nov 16-30	19.01	0	15.7	3.31
Dec 1-31	19.01	0	15.7	3.31

Stream Flows

Q7-10 Multipliers (Default Shown)	PMF	Seasonal Stream Flow (cfs)	Downstream Stream Flow (cfs)
3.2	1.00	129.82	105.54
3.5	1.00	142.00	117.71
7	1.00	283.99	259.70
9.3	1.00	377.30	353.01
9.3	1.00	377.30	353.01
5.1	1.00	206.91	182.62
5.1	1.00	206.91	182.62
3	1.00	121.71	97.42
3	1.00	121.71	97.42
1.7	1.00	68.97	44.68
1.4	1.00	56.80	32.51
1.4	1.00	56.80	32.51
1.1	1.00	44.63	20.34
1.1	1.00	44.63	20.34
1.2	1.00	48.68	24.40
1.2	1.00	48.68	24.40
1.6	1.00	64.91	40.62
1.6	1.00	64.91	40.62
2.4	1.00	97.37	73.08

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Thermal Limits Spreadsheet
Version 1.0, April 2024

Instructions | *WWF Results*

Recommended Limits for Case 1 or Case 2

Semi-Monthly Increment	WWF Target Maximum Stream Temp. (°F)	Case 1 Daily WLA (Million BTUs/day)	Case 2 Daily WLA (°F)
Jan 1-31	40	2,844	110.0
Feb 1-29	40	3,172	110.0
Mar 1-31	46	8,399	110.0
Apr 1-15	52	9,514	110.0
Apr 16-30	58	9,514	110.0
May 1-15	64	5,906	110.0
May 16-31	72	9,843	110.0
Jun 1-15	80	6,826	110.0
Jun 16-30	84	6,826	110.0
Jul 1-31	87	2,890	110.0
Aug 1-15	87	2,278	110.0
Aug 16-31	87	2,278	110.0
Sep 1-15	84	1,425	110.0
Sep 16-30	78	1,425	110.0
Oct 1-15	72	1,578	110.0
Oct 16-31	66	1,578	110.0
Nov 1-15	58	2,190	110.0
Nov 16-30	50	1,752	105.5
Dec 1-31	42	1,970	108.4

Additional Considerations

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

303(d) Listed Streams
The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is a fish consumption impairment for polychlorinated biphenyls and pH due to an unknown source. The permit has a condition that states there shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid, and contains a limit for pH.

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

TMS model inputs 001B

Parameter	Value	Source
Discharge pH	7.0	(Default)
Discharge Hardness	418 mg/L	(2025 permit amendment application)
Stream pH	7	(Default)
Stream Hardness	63 mg/L	(sampled 11/17/2022)
River Width	5,620 ft	(Previous protection report)
River Depth	10 ft	(Previous protection report)
Slope	0.0001	(Previous protection report / Estimation via BPJ)

Partial Mixing Factors:
AFC = (0.003 x 2) + 0.00534 = 0.0113
CFC = (0.019 x 2) + 0.00534 = 0.0433
THH = (0.019 x 2) + 0.00534 = 0.0433
CRL = (0.027 x 2) + 0.00534 = 0.0593

Using an estimated slope of 0.0001:
Node 2 Elevation = Node 1 Elevation - [(19.25 mi – 15.001 mi) (5,280 ft)](0.0001)= 99 ft – 2.24 ft = 96.76 ft

Node 1: Discharge Point in Susquehanna River (06685)
- Elevation: 99 ft (USGS National Map Viewer / Estimation)
- Drainage Area: 26,900 mi^2 (USGS PA StreamStats)
- River Mile Index: 19.25 *(15 + 4.25)* (PA DEP eMapPA)
- Low Flow Yield: 0.13 cfs/mi^2
- Discharge Flow: 3.31 MGD (NPDES Application)

Node 2: Susquehanna River at Pennsylvania/Maryland Border
- Elevation: 96.76 ft
- Drainage Area: 27,000 mi^2 (USGS PA StreamStats)
- River Mile Index: 15.001 *(15 + 0.001)* (PA DEP eMapPA)
- Low Flow Yield: 0.13 cfs/mi^2
- Discharge Flow: 0.000 MGD

☑ ***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	38.4	60.0	1,392	2,172	3,481	µg/L	1,392	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	46.5	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	376	AFC	Discharge Conc > 10% WQBEL (no RP)

Development of Effluent Limitations

Outfall No.	003 / 004	**Design Flow (MGD)**	0
Latitude	39º 44' 20" / 39º 44' 15"	**Longitude**	-76º 18' 25" / -76º 18' 15"
Wastewater Description:	Stormwater		

Technology-Based Limitations / Water Quality-Based Limitations / Best Professional Judgment (BPJ) Limitations / Additional Considerations

The facility contains the following stormwater outfalls:

Outfall 003
Latitiude 39°44'20", Longitude 76°18'25"
UNT Susquehanna River (07245), RMI: 3.24 + *0.66 (No Stream Code)*

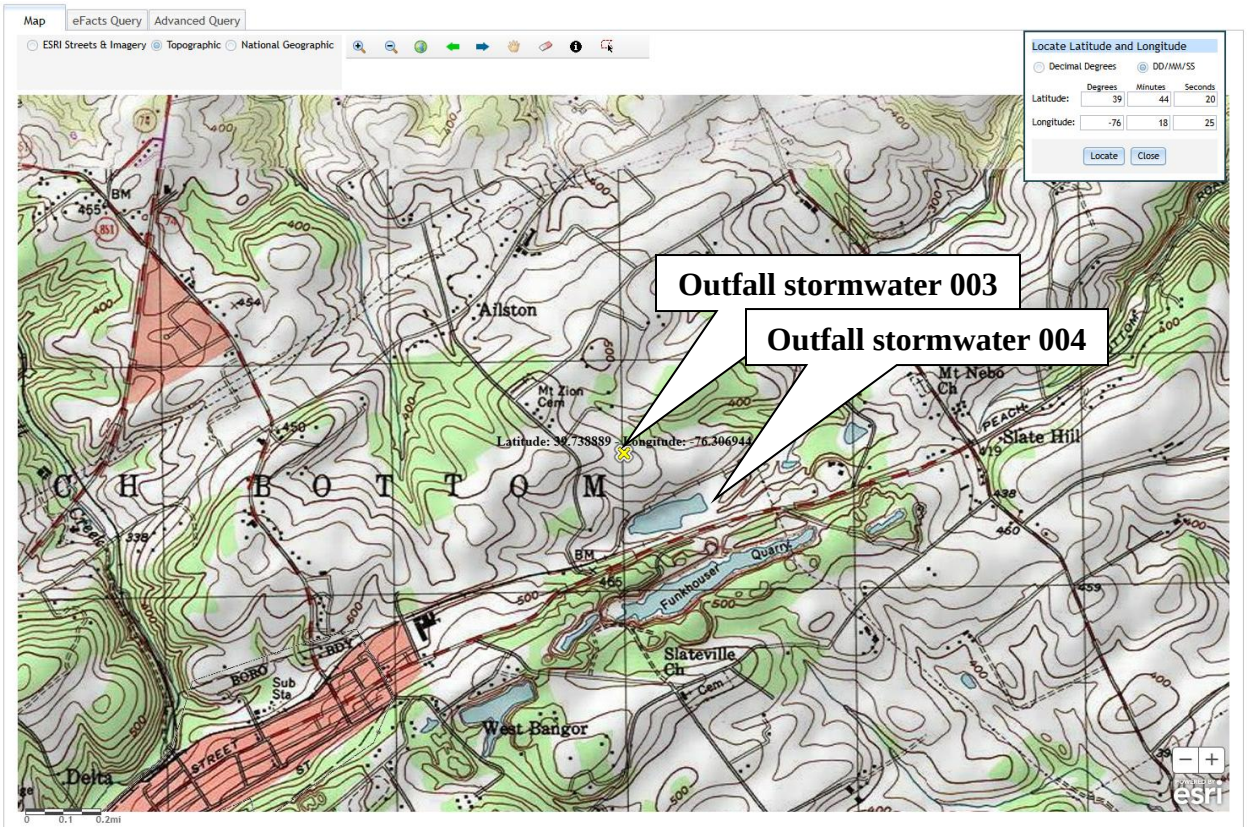
- Discharges via a retention basin for a drainage area of 12.6 acres (548,856 sq. ft.). The drainage area is 92% impervious. No artificial potential pollutant sources are listed.

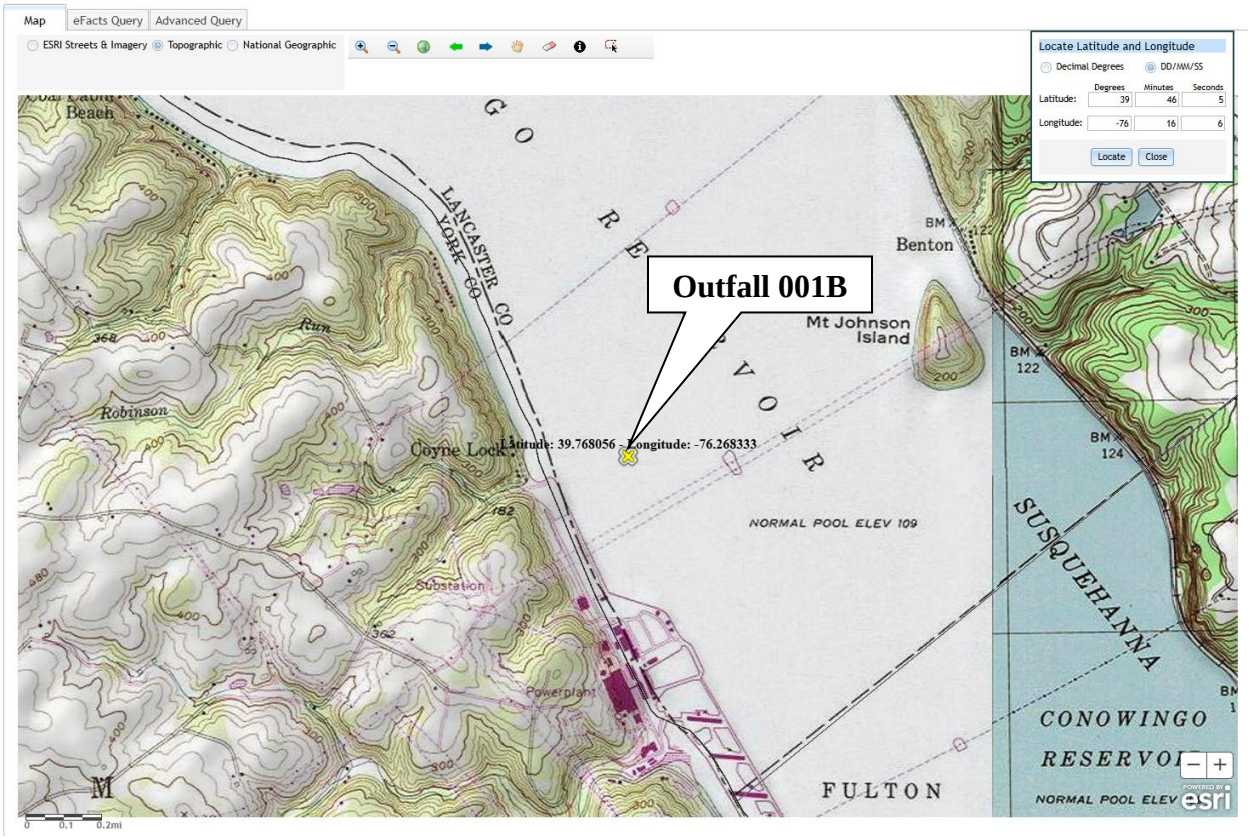
Outfall 004
Latitiude 39°44'15", Longitude 76°18'10"
UNT Susquehanna River (07245), RMI: 3.24 + *0.78 (No Stream Code)*

- Discharges via a retention basin for a drainage area of 31.5 acres (1,372,140 sq. ft.). The drainage area is 20% impervious. No artificial potential pollutant sources are listed.

The monitoring requirements for Outfall 003 match the current requirements for Steam Electric Power Generating Facilities listed in Appendix H of the PAG-03 permit for industrial stormwater discharges.

Recent DMR sampling data for the two basins indicate minimal amounts of pollutants. Due to Outfall 003 having the only listed artificial pollutant source (in addition to a relatively high impervious area of 11.6 acres), therefore, the yearly monitoring of pH, TSS, Oil & Grease, Total Copper, Total Iron, Total Nickel, and Total Zinc requirements will remain in the proposed permit.




Map
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Advanced Query
ESRI Streets & Imagery
Topographic
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Minutes
Seconds
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Longitude: -76 16 6
Locate
Close
Outfall 001B
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Coyne Lock
Benton
Mt Johnson Island
NORMAL POOL ELEV 109
SUSQUEHANNA
CONOWINGO
RESERVOIR
FULTON
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YORK CO
Substation
Powerplant
Robinson
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BM 124
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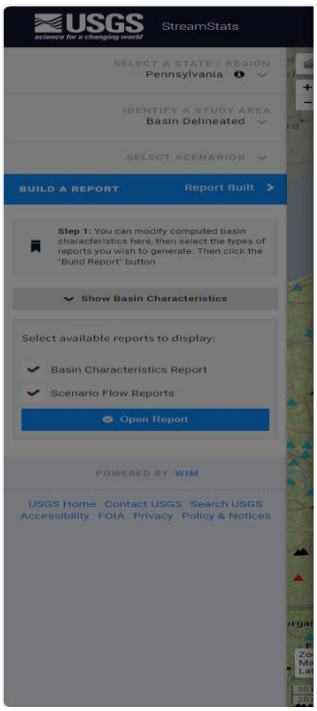
USGS
StreamStats
SELECT A STATE / REGION
Pennsylvania
IDENTIFY A STUDY AREA
Basin Delineated
SELECT SCENARIOS
BUILD A REPORT
Report Built
Step 1: You can modify computed basin characteristics here, then select the types of reports you wish to generate. Then click the "Build Report" button
Show Basin Characteristics
Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
Open Report
POWERED BY WIM
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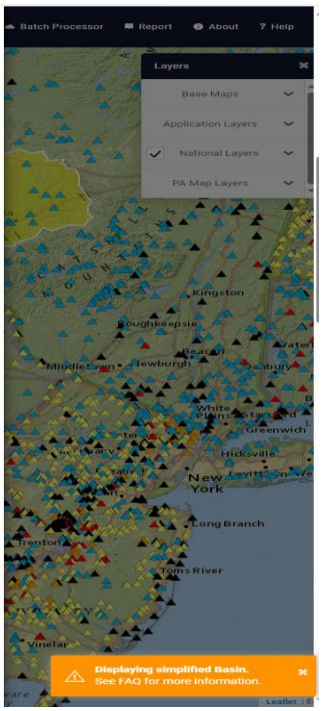
Leaflet | Esri
Collapse All
Basin Characteristics
Parameter Code | Parameter Description | Value | Unit
BSLOPD | Mean basin slope measured in degrees | 8.0251 | degrees
CARBON | Percentage of area of carbonate rock | 7.93 | percent
DRNAREA | Area that drains to a point on a stream | 26900 | square miles
ELEV | Mean Basin Elevation | 1301 | feet
FOREST | Percentage of area covered by forest | 66.4085 | percent
GLACIATED | Percentage of basin area that was historically covered by glaciers | 43.8327 | percent
PRECIP | Mean Annual Precipitation | 40 | inches
ROCKDEP | Depth to rock | 4.5 | feet
STRDEN | Stream Density -- total length of streams divided by drainage area | 1.75 | miles per square mile
URBAN | Percentage of basin with urban development | 3.0316 | percent
Low-Flow Statistics
Low-Flow Statistics Parameters [7.0 Percent (1930 square miles) Low Flow Region 1]
Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit
DRNAREA | Drainage Area | 26900 | square miles | 4.78 | 1150
BSLOPD | Mean Basin Slope degrees | 8.0251 | degrees | 1.7 | 6.4
ROCKDEP | Depth to Rock | 4.5 | feet | 4.13 | 5.21
URBAN | Percent Urban | 3.0316 | percent | 0 | 89
Low-Flow Statistics Parameters [41.0 Percent (11100 square miles) Low Flow Region 2]
Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit
DRNAREA | Drainage Area | 26900 | square miles | 4.93 | 1280
PRECIP | Mean Annual Precipitation | 40 | inches | 35 | 50.4
STRDEN | Stream Density | 1.75 | miles per square mile | 0.51 | 3.1
ROCKDEP | Depth to Rock | 4.5 | feet | 3.32 | 5.65
CARBON | Percent Carbonate | 7.93 | percent | 0 | 99
Low-Flow Statistics Parameters [6.0 Percent (1610 square miles) Low Flow Region 3]


Batch Processor
Report
About
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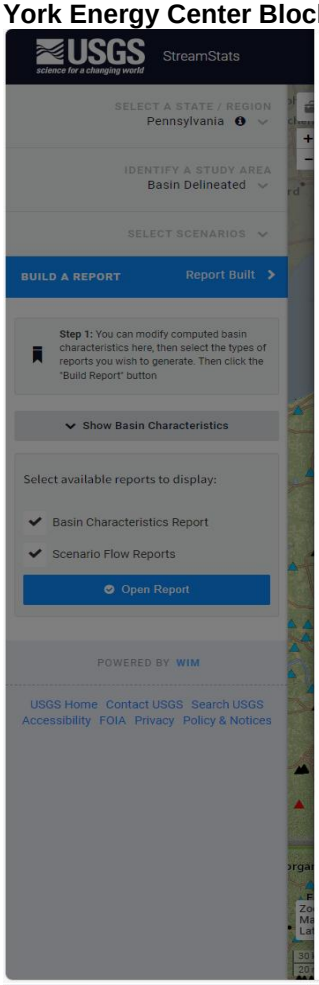
Layers
Base Maps
Application Layers
National Layers
PA Map Layers
Kingston
Poughkeepsie
Newburgh
Middletown
Hicksville
New York
Long Branch
Trenton
Toms River
Vineland
Displaying simplified basin.
See FAQ for more information.
Leaflet



Low-Flow Statistics Parameters [7.0 Percent (1930 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26900	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	8.0251	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.5	feet	4.13	5.21
URBAN	Percent Urban	3.0316	percent	0	89

Low-Flow Statistics Parameters [41.0 Percent (11100 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26900	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	40	inches	35	50.4
STRDEN	Stream Density	1.75	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	7.93	percent	0	99

Low-Flow Statistics Parameters [6.0 Percent (1610 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26900	square miles	2.33	1720
ELEV	Mean Basin Elevation	1301	feet	898	2700
PRECIP	Mean Annual Precipitation	40	inches	38.7	47.9

Low-Flow Statistics Parameters [46.0 Percent (12300 square miles) Low Flow Region 5]

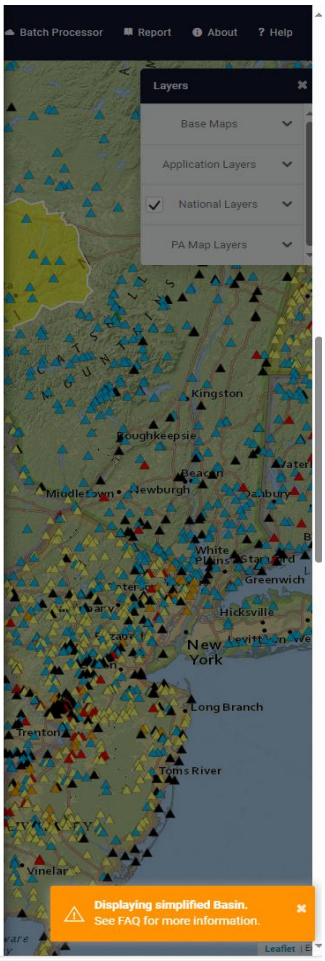
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26900	square miles	4.84	982
PRECIP	Mean Annual Precipitation	40	inches	33.1	47.1
GLACIATED	Percent of Glaciation	43.8327	percent	0	100
FOREST	Percent Forest	66.4085	percent	41	100

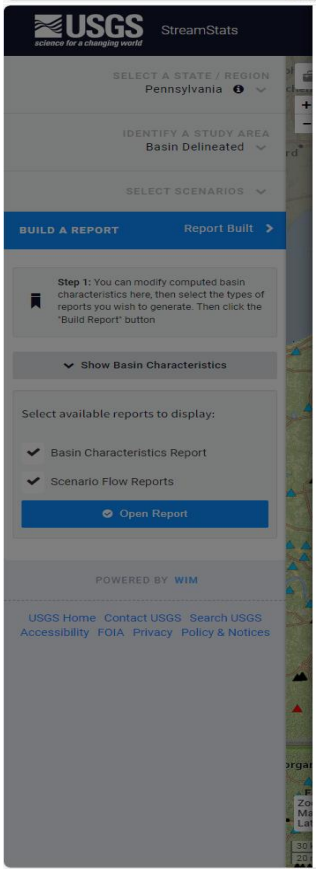
Low-Flow Statistics Disclaimers [7.0 Percent (1930 square miles) Low Flow Region 1]

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

Low-Flow Statistics Flow Report [7.0 Percent (1930 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	9480	ft^3/s
30 Day 2 Year Low Flow	10600	ft^3/s
7 Day 10 Year Low Flow	7390	ft^3/s
30 Day 10 Year Low Flow	7800	ft^3/s
90 Day 10 Year Low Flow	8370	ft^3/s





FOREST Percent Forest 66.4085 percent 41 100

Low-Flow Statistics Disclaimers [7.0 Percent (1930 square miles) Low Flow Region 1]

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

Low-Flow Statistics Flow Report [7.0 Percent (1930 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	9480	ft^3/s
30 Day 2 Year Low Flow	10600	ft^3/s
7 Day 10 Year Low Flow	7390	ft^3/s
30 Day 10 Year Low Flow	7800	ft^3/s
90 Day 10 Year Low Flow	8370	ft^3/s

Low-Flow Statistics Disclaimers [41.0 Percent (11100 square miles) Low Flow Region 2]

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

Low-Flow Statistics Flow Report [41.0 Percent (11100 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	6340	ft^3/s
30 Day 2 Year Low Flow	7450	ft^3/s
7 Day 10 Year Low Flow	4760	ft^3/s
30 Day 10 Year Low Flow	5590	ft^3/s
90 Day 10 Year Low Flow	6900	ft^3/s

Low-Flow Statistics Disclaimers [6.0 Percent (1610 square miles) Low Flow Region 3]

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

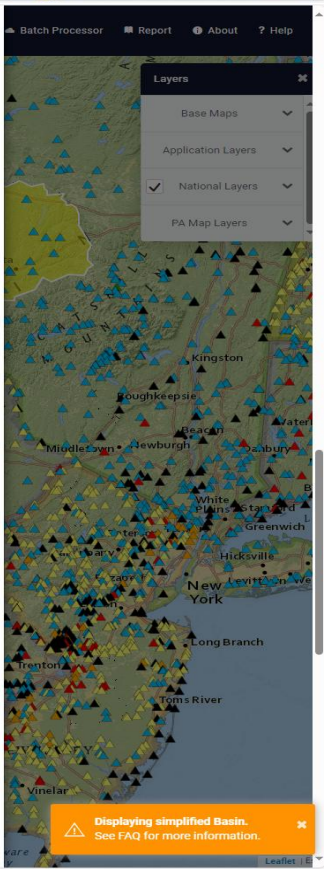
Low-Flow Statistics Flow Report [6.0 Percent (1610 square miles) Low Flow Region 3]

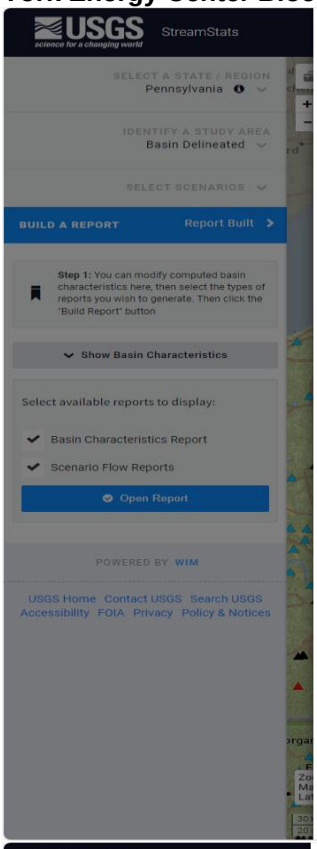
Statistic	Value	Unit
7 Day 2 Year Low Flow	2450	ft^3/s
30 Day 2 Year Low Flow	3040	ft^3/s
7 Day 10 Year Low Flow	1480	ft^3/s
30 Day 10 Year Low Flow	1850	ft^3/s
90 Day 10 Year Low Flow	2530	ft^3/s

Low-Flow Statistics Disclaimers [46.0 Percent (12300 square miles) Low Flow Region 5]

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

Low-Flow Statistics Flow Report [46.0 Percent (12300 square miles) Low Flow Region 5]





Low-Flow Statistics Flow Report [41.0 Percent (11100 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	6340	ft^3/s
30 Day 2 Year Low Flow	7450	ft^3/s
7 Day 10 Year Low Flow	4760	ft^3/s
30 Day 10 Year Low Flow	5590	ft^3/s
90 Day 10 Year Low Flow	6900	ft^3/s

Low-Flow Statistics Disclaimers [6.0 Percent (1610 square miles) Low Flow Region 3]

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

Low-Flow Statistics Flow Report [6.0 Percent (1610 square miles) Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	2450	ft^3/s
30 Day 2 Year Low Flow	3040	ft^3/s
7 Day 10 Year Low Flow	1480	ft^3/s
30 Day 10 Year Low Flow	1850	ft^3/s
90 Day 10 Year Low Flow	2530	ft^3/s

Low-Flow Statistics Disclaimers [46.0 Percent (12300 square miles) Low Flow Region 5]

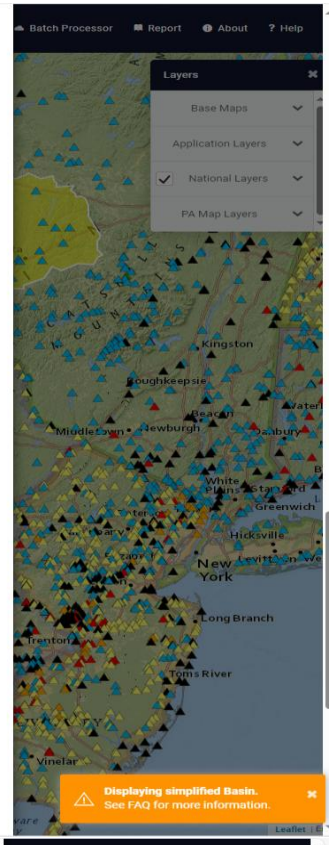
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

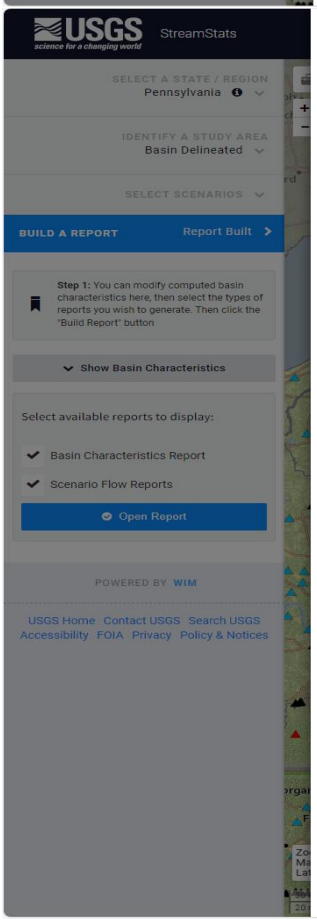
Low-Flow Statistics Flow Report [46.0 Percent (12300 square miles) Low Flow Region 5]

Statistic	Value	Unit
7 Day 2 Year Low Flow	3530	ft^3/s
30 Day 2 Year Low Flow	4470	ft^3/s
7 Day 10 Year Low Flow	2240	ft^3/s
30 Day 10 Year Low Flow	2970	ft^3/s
90 Day 10 Year Low Flow	3840	ft^3/s

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	5030	ft^3/s
30 Day 2 Year Low Flow	6040	ft^3/s
7 Day 10 Year Low Flow	3590	ft^3/s
30 Day 10 Year Low Flow	4320	ft^3/s
90 Day 10 Year Low Flow	5330	ft^3/s





Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	8.0213	degrees
CARBON	Percentage of area of carbonate rock	7.91	percent
DRNAREA	Area that drains to a point on a stream	27000	square miles
ELEV	Mean Basin Elevation	1299	feet
FOREST	Percentage of area covered by forest	66.3412	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	43.7564	percent
PRECIP	Mean Annual Precipitation	40	inches
ROCKDEP	Depth to rock	4.5	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.75	miles per square mile
URBAN	Percentage of basin with urban development	3.0275	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [7.0 Percent (1980 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27000	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	8.0213	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.5	feet	4.13	5.21
URBAN	Percent Urban	3.0275	percent	0	89

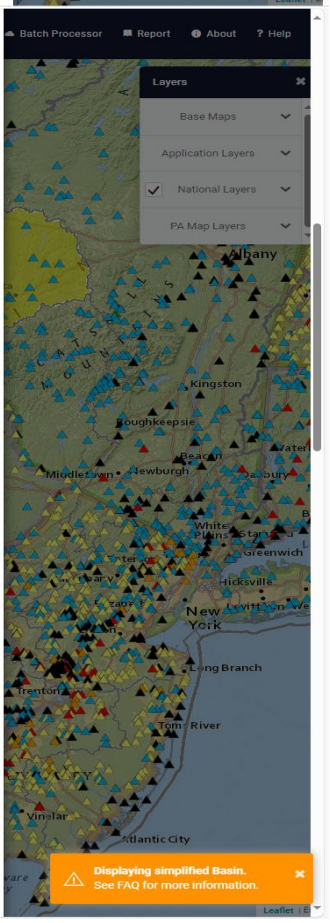
Low-Flow Statistics Parameters [41.0 Percent (11100 square miles) Low Flow Region 2]

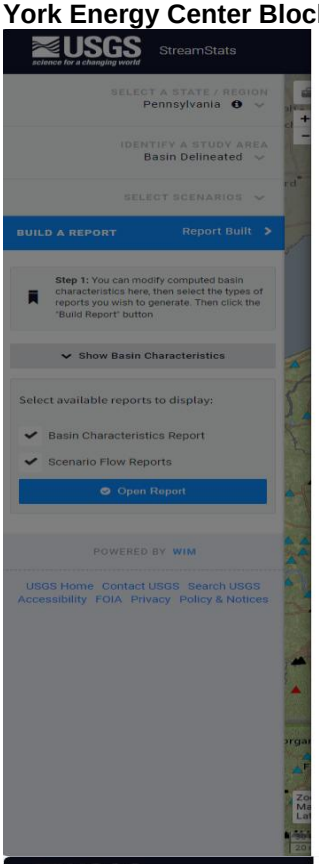
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27000	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	40	inches	35	50.4
STRDEN	Stream Density	1.75	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	7.91	percent	0	99

Low-Flow Statistics Parameters [6.0 Percent (1610 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27000	square miles	2.33	1720
ELEV	Mean Basin Elevation	1299	feet	898	2700
PRECIP	Mean Annual Precipitation	40	inches	38.7	47.9

Low-Flow Statistics Parameters [46.0 Percent (12300 square miles) Low Flow Region 5]





Low-Flow Statistics Parameters [6.0 Percent (1610 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27000	square miles	2.33	1720
ELEV	Mean Basin Elevation	1299	feet	898	2700
PRECIP	Mean Annual Precipitation	40	inches	38.7	47.9

Low-Flow Statistics Parameters [46.0 Percent (12300 square miles) Low Flow Region 5]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	27000	square miles	4.84	982
PRECIP	Mean Annual Precipitation	40	inches	33.1	47.1
GLACIATED	Percent of Glaciation	43.7564	percent	0	100
FOREST	Percent Forest	66.3412	percent	41	100

Low-Flow Statistics Disclaimers [7.0 Percent (1980 square miles) Low Flow Region 1]

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

Low-Flow Statistics Flow Report [7.0 Percent (1980 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	9500	ft^3/s
30 Day 2 Year Low Flow	10600	ft^3/s
7 Day 10 Year Low Flow	7410	ft^3/s
30 Day 10 Year Low Flow	7820	ft^3/s
90 Day 10 Year Low Flow	8400	ft^3/s

Low-Flow Statistics Disclaimers [41.0 Percent (11100 square miles) Low Flow Region 2]

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

Low-Flow Statistics Flow Report [41.0 Percent (11100 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	6360	ft^3/s
30 Day 2 Year Low Flow	7480	ft^3/s
7 Day 10 Year Low Flow	4780	ft^3/s
30 Day 10 Year Low Flow	5620	ft^3/s
90 Day 10 Year Low Flow	6930	ft^3/s

Low-Flow Statistics Disclaimers [6.0 Percent (1610 square miles) Low Flow Region 3]

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

Low-Flow Statistics Flow Report [6.0 Percent (1610 square miles) Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	2460	ft^3/s
30 Day 2 Year Low Flow	3040	ft^3/s
7 Day 10 Year Low Flow	1480	ft^3/s
30 Day 10 Year Low Flow	1850	ft^3/s
90 Day 10 Year Low Flow	2540	ft^3/s

Low-Flow Statistics Disclaimers [46.0 Percent (12300 square miles) Low Flow Region 5]

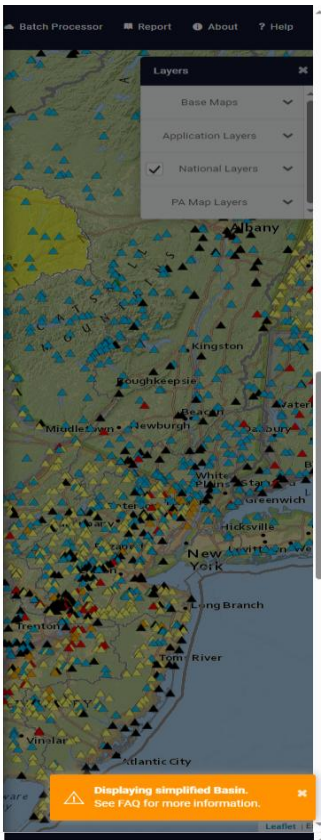
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

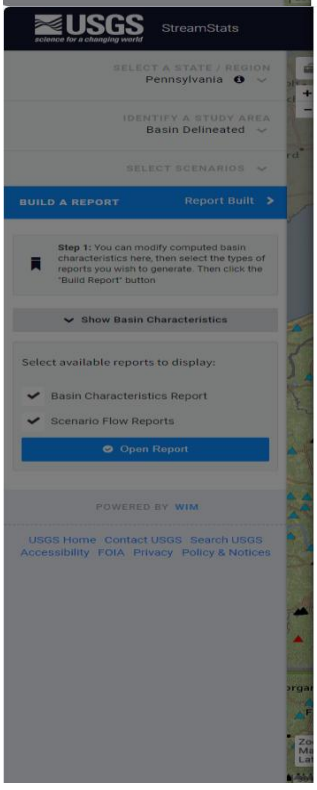
Low-Flow Statistics Flow Report [46.0 Percent (12300 square miles) Low Flow Region 5]

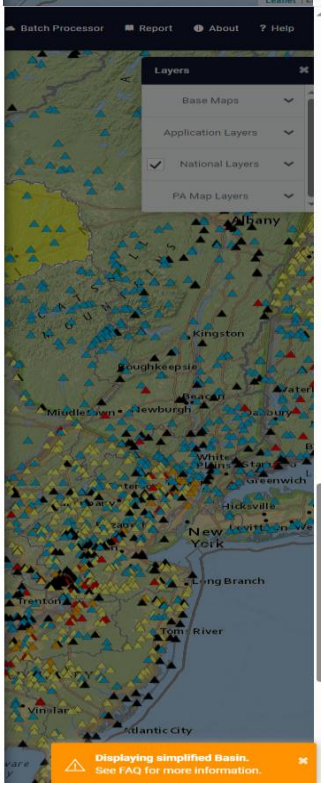
Statistic	Value	Unit
7 Day 2 Year Low Flow	3540	ft^3/s
30 Day 2 Year Low Flow	4480	ft^3/s
7 Day 10 Year Low Flow	2250	ft^3/s
30 Day 10 Year Low Flow	2980	ft^3/s
90 Day 10 Year Low Flow	3850	ft^3/s

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	5050	ft^3/s
30 Day 2 Year Low Flow	6050	ft^3/s
7 Day 10 Year Low Flow	3600	ft^3/s
30 Day 10 Year Low Flow	4330	ft^3/s
90 Day 10 Year Low Flow	5350	ft^3/s







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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: Calpine York Energy Block 2 NPDES Permit No.: PA0088781 Outfall No.: 001B

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Susquehanna River

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
3.31	418	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		1340									
	Chloride (PWS)	mg/L		130									
	Bromide	mg/L		1.8									
	Sulfate (PWS)	mg/L		412									
	Fluoride (PWS)	mg/L		0.26									
Group 2	Total Aluminum	µg/L		1900									
	Total Antimony	µg/L		0.86									
	Total Arsenic	µg/L		2.9									
	Total Barium	µg/L		140									
	Total Beryllium	µg/L	<	0.19									
	Total Boron	µg/L		92									
	Total Cadmium	µg/L	<	0.302									
	Total Chromium (III)	µg/L		3.2									
	Hexavalent Chromium	µg/L		0.64									
	Total Cobalt	µg/L		0.91									
	Total Copper	µg/L		10									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		3.1									
	Dissolved Iron	µg/L		300									
	Total Iron	µg/L		1800									
	Total Lead	µg/L		3.6									
	Total Manganese	µg/L		360									
	Total Mercury	µg/L											
	Total Nickel	µg/L		12									
	Total Phenols (Phenolics) (PWS)	µg/L		2									
	Total Selenium	µg/L	<	1.25									
	Total Silver	µg/L	<	0.634									
	Total Thallium	µg/L	<	0.302									
	Total Zinc	µg/L		42									
	Total Molybdenum	µg/L		2.4									
	Acrolein	µg/L	<	1.3									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	2									
	Benzene	µg/L	<	0.12									
	Bromoform	µg/L	<	0.37									

Group 3	Carbon Tetrachloride	µg/L	<	0.23										
	Chlorobenzene	µg/L	<	0.25										
	Chlorodibromomethane	µg/L	<	0.25										
	Chloroethane	µg/L	<	0.47										
	2-Chloroethyl Vinyl Ether	µg/L	<	3.1										
	Chloroform	µg/L		0.88										
	Dichlorobromomethane	µg/L		0.27										
	1,1-Dichloroethane	µg/L	<	0.07										
	1,2-Dichloroethane	µg/L	<	0.12										
	1,1-Dichloroethylene	µg/L	<	0.13										
	1,2-Dichloropropane	µg/L	<	0.26										
	1,3-Dichloropropylene	µg/L	<	0.47										
	1,4-Dioxane	µg/L	<	0.34										
	Ethylbenzene	µg/L	<	0.2										
	Methyl Bromide	µg/L	<	0.42										
	Methyl Chloride	µg/L	<	0.33										
	Methylene Chloride	µg/L	<	0.14										
	1,1,2,2-Tetrachloroethane	µg/L	<	0.38										
	Tetrachloroethylene	µg/L	<	0.27										
	Toluene	µg/L	<	0.24										
	1,2-trans-Dichloroethylene	µg/L	<	0.08										
	1,1,1-Trichloroethane	µg/L	<	0.12										
	1,1,2-Trichloroethane	µg/L	<	0.13										
	Trichloroethylene	µg/L	<	0.29										
	Vinyl Chloride	µg/L	<	0.33										
Group 4	2-Chlorophenol	µg/L	<	0.38										
	2,4-Dichlorophenol	µg/L	<	0.43										
	2,4-Dimethylphenol	µg/L	<	0.46										
	4,6-Dinitro-o-Cresol	µg/L	<	1.2										
	2,4-Dinitrophenol	µg/L	<	2.8										
	2-Nitrophenol	µg/L		1.5										
	4-Nitrophenol	µg/L	<	1.3										
	p-Chloro-m-Cresol	µg/L	<	0.38										
	Pentachlorophenol	µg/L	<	1.7										
	Phenol	µg/L	<	0.25										
	2,4,6-Trichlorophenol	µg/L		1.4										
Group 5	Acenaphthene	µg/L	<	0.39										
	Acenaphthylene	µg/L	<	0.38										
	Anthracene	µg/L	<	0.39										
	Benzidine	µg/L	<	2.5										
	Benzo(a)Anthracene	µg/L	<	0.4										
	Benzo(a)Pyrene	µg/L	<	0.35										
	3,4-Benzofluoranthene	µg/L	<	0.39										
	Benzo(ghi)Perylene	µg/L	<	0.41										
	Benzo(k)Fluoranthene	µg/L	<	0.38										
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.43										
	Bis(2-Chloroethyl)Ether	µg/L	<	0.37										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.43										
	Bis(2-Ethylhexyl)Phthalate	µg/L		0.91										
	4-Bromophenyl Phenyl Ether	µg/L	<	0.44										
	Butyl Benzyl Phthalate	µg/L	<	0.57										
	2-Chloronaphthalene	µg/L	<	0.39										
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.39										
	Chrysene	µg/L	<	0.41										
	Dibenzo(a,h)Anthrancene	µg/L	<	0.42										
	1,2-Dichlorobenzene	µg/L	<	0.37										
	1,3-Dichlorobenzene	µg/L	<	0.43										
	1,4-Dichlorobenzene	µg/L	<	0.43										
	3,3-Dichlorobenzidine	µg/L	<	1										
	Diethyl Phthalate	µg/L	<	0.55										
	Dimethyl Phthalate	µg/L	<	0.41										
	Di-n-Butyl Phthalate	µg/L	<	0.56										
	2,4-Dinitrotoluene	µg/L	<	0.44										

	2,6-Dinitrotoluene	µg/L	<	0.4										
	Di-n-Octyl Phthalate	µg/L	<	0.86										
	1,2-Diphenylhydrazine	µg/L	<	0.37										
	Fluoranthene	µg/L	<	0.42										
	Fluorene	µg/L	<	0.37										
	Hexachlorobenzene	µg/L	<	0.42										
	Hexachlorobutadiene	µg/L	<	0.48										
	Hexachlorocyclopentadiene	µg/L	<	0.72										
	Hexachloroethane	µg/L	<	0.36										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.39										
	Isophorone	µg/L	<	0.42										
	Naphthalene	µg/L	<	0.39										
	Nitrobenzene	µg/L	<	0.51										
	n-Nitrosodimethylamine	µg/L	<	1.1										
	n-Nitrosodi-n-Propylamine	µg/L	<	0.41										
	n-Nitrosodiphenylamine	µg/L	<	0.48										
	Phenanthrene	µg/L	<	0.38										
	Pyrene	µg/L	<	0.41										
	1,2,4-Trichlorobenzene	µg/L	<	0.41										
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												

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Calpine York Energy Block 2, NPDES Permit No. PA0088781, Outfall 001B

Instructions | Discharge | Stream

Receiving Surface Water Name: **Susquehanna River**

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	006685	19.25	99	26900			Yes
End of Reach 1	006685	15.001	96.76	27000			Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi²)*	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	19.25	0.13										63	7		
End of Reach 1	15.001	0.13													

Q_h

Location	RMI	LFY (cfs/mi²)	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	19.25														
End of Reach 1	15.001														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Calpine York Energy Block 2, NPDES Permit No. PA0088781, Outfall 001B

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | (•) All ( ) Inputs ( ) Results ( ) Limits

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ *AFC* CCT (min): 15 PMF: 0.003 Analysis Hardness (mg/l): 185.57 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	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	2,172	
Total Antimony	0	0		0	1,100	1,100	3,186	
Total Arsenic	0	0		0	340	340	985	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	60,822	
Total Boron	0	0		0	8,100	8,100	23,460	
Total Cadmium	0	0		0	3.672	4.0	11.6	Chem Translator of 0.918 applied
Total Chromium (III)	0	0		0	945.373	2,992	8,665	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	47.2	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	275	
Total Copper	0	0		0	24.064	25.1	72.6	Chem Translator of 0.96 applied
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	125.720	179	519	Chem Translator of 0.701 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	789.992	792	2,293	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	9.317	11.0	31.7	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	188	
Total Zinc	0	0		0	197.862	202	586	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	8.69	
Acrylonitrile	0	0		0	650	650	1,883	

Benzene	0	0		0	640	640	1,854	
Bromoform	0	0		0	1,800	1,800	5,213	
Carbon Tetrachloride	0	0		0	2,800	2,800	8,110	
Chlorobenzene	0	0		0	1,200	1,200	3,476	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	52,133	
Chloroform	0	0		0	1,900	1,900	5,503	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	43,444	
1,1-Dichloroethylene	0	0		0	7,500	7,500	21,722	
1,2-Dichloropropane	0	0		0	11,000	11,000	31,859	
1,3-Dichloropropylene	0	0		0	310	310	898	
Ethylbenzene	0	0		0	2,900	2,900	8,399	
Methyl Bromide	0	0		0	550	550	1,593	
Methyl Chloride	0	0		0	28,000	28,000	81,096	
Methylene Chloride	0	0		0	12,000	12,000	34,756	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	2,896	
Tetrachloroethylene	0	0		0	700	700	2,027	
Toluene	0	0		0	1,700	1,700	4,924	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	19,695	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	8,689	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	9,847	
Trichloroethylene	0	0		0	2,300	2,300	6,661	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,622	
2,4-Dichlorophenol	0	0		0	1,700	1,700	4,924	
2,4-Dimethylphenol	0	0		0	660	660	1,912	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	232	
2,4-Dinitrophenol	0	0		0	660	660	1,912	
2-Nitrophenol	0	0		0	8,000	8,000	23,170	
4-Nitrophenol	0	0		0	2,300	2,300	6,661	
p-Chloro-m-Cresol	0	0		0	160	160	463	
Pentachlorophenol	0	0		0	8.723	8.72	25.3	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,332	
Acenaphthene	0	0		0	83	83.0	240	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	869	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.45	
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	86,889	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	13,033	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	782	
Butyl Benzyl Phthalate	0	0		0	140	140	405	
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	2,375	
1,3-Dichlorobenzene	0	0		0	350	350	1,014	
1,4-Dichlorobenzene	0	0		0	730	730	2,114	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	11,585	
Dimethyl Phthalate	0	0		0	2,500	2,500	7,241	
Di-n-Butyl Phthalate	0	0		0	110	110	319	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	4,634	
2,6-Dinitrotoluene	0	0		0	990	990	2,867	
1,2-Diphenylhydrazine	0	0		0	15	15.0	43.4	
Fluoranthene	0	0		0	200	200	579	
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	29.0	
Hexachlorocyclopentadiene	0	0		0	5	5.0	14.5	
Hexachloroethane	0	0		0	60	60.0	174	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	28,963	
Naphthalene	0	0		0	140	140	405	
Nitrobenzene	0	0		0	4,000	4,000	11,585	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	49,237	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	869	
Phenanthrene	0	0		0	5	5.0	14.5	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	377	

☑ *CFC* CCT (min): 720 PMF: 0.019 Analysis Hardness (mg/l): 88.11 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	
Fluoride (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	3,110	
Total Arsenic	0	0		0	150	150	2,121	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	57,965	
Total Boron	0	0		0	1,600	1,600	22,621	
Total Cadmium	0	0		0	0.225	0.25	3.48	Chem Translator of 0.914 applied
Total Chromium (III)	0	0		0	66.816	77.7	1,098	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	147	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	269	

Total Copper	0	0		0	8.038	8.37	118	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,025,898	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.192	2.71	38.3	Chem Translator of 0.809 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	46.725	46.9	663	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	70.5	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	184	
Total Zinc	0	0		0	106.124	108	1,522	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	42.4	
Acrylonitrile	0	0		0	130	130	1,838	
Benzene	0	0		0	130	130	1,838	
Bromoform	0	0		0	370	370	5,231	
Carbon Tetrachloride	0	0		0	560	560	7,917	
Chlorobenzene	0	0		0	240	240	3,393	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	49,483	
Chloroform	0	0		0	390	390	5,514	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	43,828	
1,1-Dichloroethylene	0	0		0	1,500	1,500	21,207	
1,2-Dichloropropane	0	0		0	2,200	2,200	31,103	
1,3-Dichloropropylene	0	0		0	61	61.0	862	
Ethylbenzene	0	0		0	580	580	8,200	
Methyl Bromide	0	0		0	110	110	1,555	
Methyl Chloride	0	0		0	5,500	5,500	77,759	
Methylene Chloride	0	0		0	2,400	2,400	33,931	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	2,969	
Tetrachloroethylene	0	0		0	140	140	1,979	
Toluene	0	0		0	330	330	4,666	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	19,793	
1,1,1-Trichloroethane	0	0		0	610	610	8,624	
1,1,2-Trichloroethane	0	0		0	680	680	9,614	
Trichloroethylene	0	0		0	450	450	6,362	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	1,555	
2,4-Dichlorophenol	0	0		0	340	340	4,807	
2,4-Dimethylphenol	0	0		0	130	130	1,838	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	226	
2,4-Dinitrophenol	0	0		0	130	130	1,838	
2-Nitrophenol	0	0		0	1,600	1,600	22,621	
4-Nitrophenol	0	0		0	470	470	6,645	
p-Chloro-m-Cresol	0	0		0	500	500	7,069	

Pentachlorophenol	0	0		0	6.693	6.69	94.6	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,287	
Acenaphthene	0	0		0	17	17.0	240	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	834	
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.41	
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	84,828	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	12,866	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	763	
Butyl Benzyl Phthalate	0	0		0	35	35.0	495	
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	2,262	
1,3-Dichlorobenzene	0	0		0	69	69.0	976	
1,4-Dichlorobenzene	0	0		0	150	150	2,121	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	11,310	
Dimethyl Phthalate	0	0		0	500	500	7,069	
Di-n-Butyl Phthalate	0	0		0	21	21.0	297	
2,4-Dinitrotoluene	0	0		0	320	320	4,524	
2,6-Dinitrotoluene	0	0		0	200	200	2,828	
1,2-Diphenylhydrazine	0	0		0	3	3.0	42.4	
Fluoranthene	0	0		0	40	40.0	566	
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	28.3	
Hexachlorocyclopentadiene	0	0		0	1	1.0	14.1	
Hexachloroethane	0	0		0	12	12.0	170	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	29,690	
Naphthalene	0	0		0	43	43.0	608	
Nitrobenzene	0	0		0	810	810	11,452	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	48,069	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	834	
Phenanthrene	0	0		0	1	1.0	14.1	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	368	

☑ ***THH*** CCT (min): 720 PMF: 0.019 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	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	79.2	
Total Arsenic	0	0		0	10	10.0	141	
Total Barium	0	0		0	2,400	2,400	33,931	
Total Boron	0	0		0	3,100	3,100	43,828	
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	
Dissolved Iron	0	0		0	300	300	4,241	
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	14,138	
Total Nickel	0	0		0	610	610	8,624	
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	3.39	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	42.4	
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	1,414	
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	80.6	
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	467	
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	961	
Methyl Bromide	0	0		0	100	100.0	1,414	

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	806	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	1,414	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	141,379	
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	424	
2,4-Dichlorophenol	0	0		0	10	10.0	141	
2,4-Dimethylphenol	0	0		0	100	100.0	1,414	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	28.3	
2,4-Dinitrophenol	0	0		0	10	10.0	141	
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	56,552	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	990	
Anthracene	0	0		0	300	300	4,241	
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	2,828	
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	1.41	
2-Chloronaphthalene	0	0		0	800	800	11,310	
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	14,138	
1,3-Dichlorobenzene	0	0		0	7	7.0	99.0	
1,4-Dichlorobenzene	0	0		0	300	300	4,241	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	8,483	
Dimethyl Phthalate	0	0		0	2,000	2,000	28,276	
Di-n-Butyl Phthalate	0	0		0	20	20.0	283	
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	283	
Fluorene	0	0		0	50	50.0	707	
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	56.6	
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	481	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	141	
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	283	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.99	

☑ *CRL* CCT (min): 720 PMF: 0.027 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	
Fluoride (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	
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 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	2.95	
Benzene	0	0		0	0.58	0.58	28.5	
Bromoform	0	0		0	7	7.0	344	
Carbon Tetrachloride	0	0		0	0.4	0.4	19.7	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	39.3	
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	46.7	
1,2-Dichloroethane	0	0		0	9.9	9.9	487	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	44.2	
1,3-Dichloropropylene	0	0		0	0.27	0.27	13.3	
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	983	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	9.83	
Tetrachloroethylene	0	0		0	10	10.0	491	
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	27.0	
Trichloroethylene	0	0		0	0.6	0.6	29.5	
Vinyl Chloride	0	0		0	0.02	0.02	0.98	
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	1.47	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	73.7	
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	0.005	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.049	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.005	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.049	

Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.49	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	1.47	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	15.7	
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	5.9	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.005	
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	2.46	
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	2.46	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	2.46	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	1.47	
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	0.004	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.49	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	4.91	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.049	
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	0.034	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.25	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	162	
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	38.4	60.0	1,392	2,172	3,481	µg/L	1,392	AFC	Discharge Conc ≥ 50% WQBEL (RP)

Total Copper	Report	Report	Report	Report	Report	µg/L	46.5	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	376	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 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
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	79.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	141	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	33,931	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	15,037	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	3.48	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	1,098	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	30.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	176	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	4,241	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	1,025,898	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	38.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	14,138	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	663	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	70.5	µg/L	Discharge Conc < TQL
Total Silver	20.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	3.39	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	5.57	µg/L	Discharge Conc < TQL
Acrylonitrile	2.95	µg/L	Discharge Conc < TQL
Benzene	28.5	µg/L	Discharge Conc < TQL
Bromoform	344	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	19.7	µg/L	Discharge Conc < TQL
Chlorobenzene	1,414	µg/L	Discharge Conc < TQL
Chlorodibromomethane	39.3	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	33,415	µg/L	Discharge Conc < TQL
Chloroform	80.6	µg/L	Discharge Conc ≤ 25% WQBEL

Dichlorobromomethane	46.7	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	487	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	467	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	44.2	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	13.3	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	961	µg/L	Discharge Conc < TQL
Methyl Bromide	1,021	µg/L	Discharge Conc < TQL
Methyl Chloride	51,979	µg/L	Discharge Conc < TQL
Methylene Chloride	983	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	9.83	µg/L	Discharge Conc < TQL
Tetrachloroethylene	491	µg/L	Discharge Conc < TQL
Toluene	806	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	1,414	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	5,569	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	27.0	µg/L	Discharge Conc < TQL
Trichloroethylene	29.5	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.98	µg/L	Discharge Conc < TQL
2-Chlorophenol	424	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	141	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,225	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	28.3	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	141	µg/L	Discharge Conc < TQL
2-Nitrophenol	14,851	µg/L	Discharge Conc ≤ 25% WQBEL
4-Nitrophenol	4,270	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	297	µg/L	Discharge Conc < TQL
Pentachlorophenol	1.47	µg/L	Discharge Conc < TQL
Phenol	56,552	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	73.7	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthene	154	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	4,241	µg/L	Discharge Conc < TQL
Benzidine	0.005	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.049	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.005	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.049	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.49	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	1.47	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	2,828	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	15.7	µg/L	Discharge Conc ≤ 25% WQBEL
4-Bromophenyl Phenyl Ether	501	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	1.41	µg/L	Discharge Conc < TQL

2-Chloronaphthalene	11,310	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	5.9	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.005	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,522	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	99.0	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	1,355	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	2.46	µg/L	Discharge Conc < TQL
Diethyl Phthalate	7,426	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	4,641	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	204	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	2.46	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	2.46	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	1.47	µg/L	Discharge Conc < TQL
Fluoranthene	283	µg/L	Discharge Conc < TQL
Fluorene	707	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.004	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.49	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	9.28	µg/L	Discharge Conc < TQL
Hexachloroethane	4.91	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.049	µg/L	Discharge Conc < TQL
Isophorone	481	µg/L	Discharge Conc < TQL
Naphthalene	260	µg/L	Discharge Conc < TQL
Nitrobenzene	141	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.034	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.25	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	162	µg/L	Discharge Conc < TQL
Phenanthrene	9.28	µg/L	Discharge Conc < TQL
Pyrene	283	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.99	µg/L	Discharge Conc < TQL

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: