Pennsylvania Department of Environmental Protection

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**New**	Application No.	**PA0282022**
Facility Type	**Industrial**	APS ID	**1139949**
Major / Minor	**Major**	Authorization ID	**1531525**

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

Applicant and Facility Information

Applicant Name	**Calpine Mid Merit LLC**	Facility Name	**York Energy Center Block 1**
Applicant Address	1055 Pikes Peak Road	Facility Address	1055 Pikes Peak Road
	Delta, PA 17314-9239		Delta, PA 17314-9239
Applicant Contact	JoAnn Edgar	Facility Contact	JoAnn Edgar
Applicant Phone	(717) 456-2446	Facility Phone	(717) 456-2446
Client ID	281427	Site ID	880984
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 24, 2025	If No, Reason	Major Facility

Purpose of Application: NPDES new permit.

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. The Authority proposed to separate existing NPDES permit PA0088781 from Block 2. The application proposes a modification of existing NPDES permit PA0088781 to remove Block 1 from Block 2 while still retaining the original name as Calpine Mid-Merit, LLC (York Energy Center, Block 1). Since the existing permit is being transferred to Calpine Mid-Merit II, LLC (York Energy Center, Block 2), a new permit is being issued for Calpine Mid-Merit, LLC (York Energy Center, Block 1),

York Energy Center, Block 1, will be owned by Calpine Mid-Merit, 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 565-megawatt (MW). The primary fuel is natural gas with low sulfur distillate as a backup.

The design flow is 2.7 MGD.

The outfall Nos. are as follows.

1. Outfall 001A – Primary cooling tower blowdown (Noncontact Cooling Water (NCCW));
2. Outfalls 002 & 003 (portion of) – Stormwater; and
3. Outfall 100 – Internal Monitor Point (IMP) – Recycle water treatment plant effluent, and flow is 0.05 MGD.

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.

Approve	Deny	Signatures	Date
X		*Hilaryle* Hilary H. Le / Environmental Engineering Specialist	September 5, 2025
X		*Daniel W. Martin* Daniel W. Martin, P.E. / Environmental Engineer Manager	November 10, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001A	Design Flow (MGD)	2.7
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:

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	100	Design Flow (MGD)	0.05
Latitude	39º 46' 5"	Longitude	-76º 16' 6"
Quad Name	Holtwood	Quad Code	
Wastewater Description:	Intermittent Discharge		
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	

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, 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_{30-10} = 1.36 * 3,500 cfs ≈ 4,760 cfs
Q_{1-10} = 0.64 * 3,500 cfs ≈ 2,240 cfs

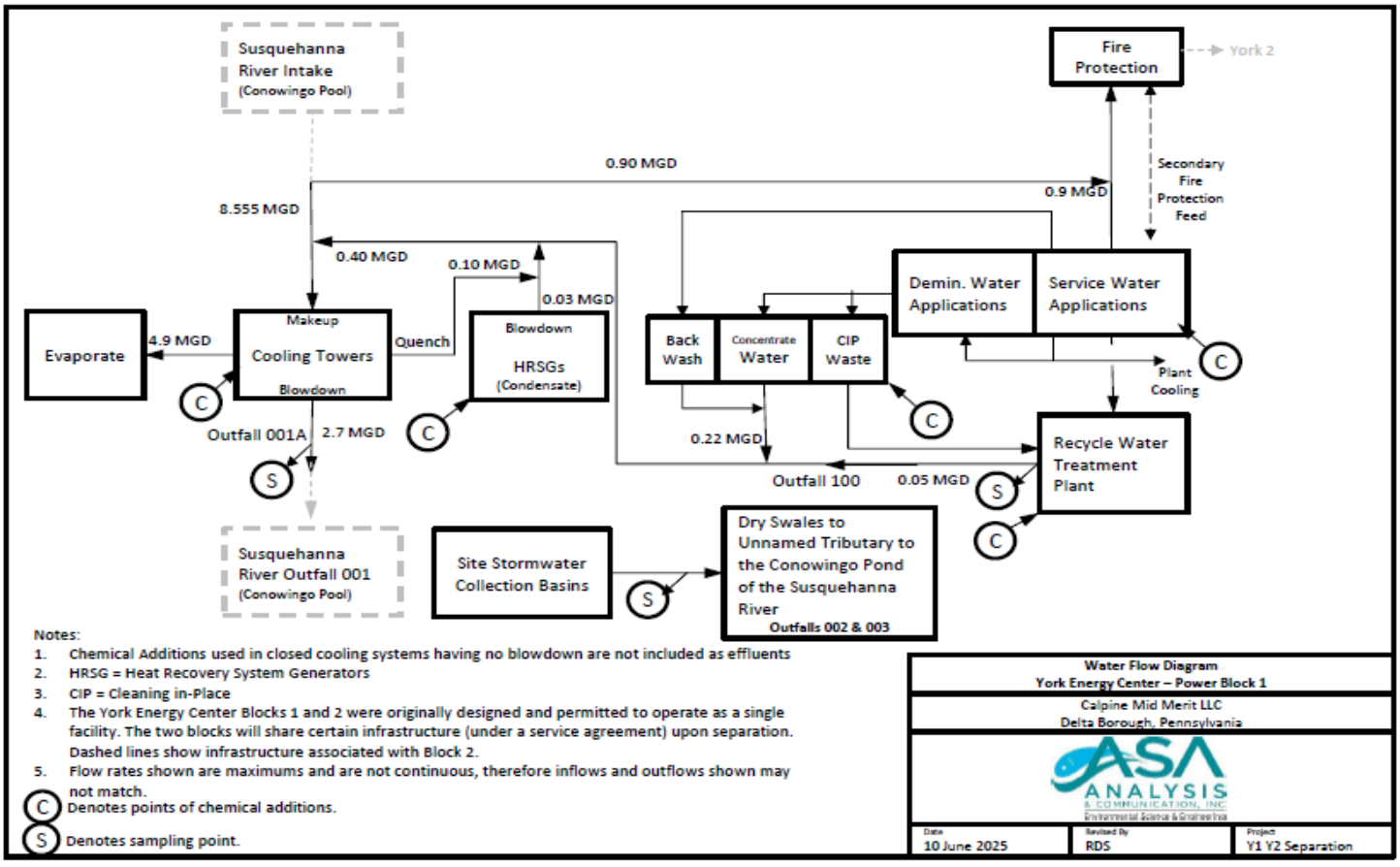
The resulting Q_{7-10} dilution ratio is: Q_{stream} / $Q_{discharge}$ = 3,500 cfs / [2.7 MGD * (1.547 cfs/MGD)] = 838:1

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.	002 / 003 (portion of)	Design Flow (MGD)	0
Latitude	39º 44' 20" / 39º 44' 30"	Longitude	-76º 17' 25" / -76º 17' 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	3.24
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
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:



Compliance History	
Summary of DMRs:	N/A because this is a new permit.
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. (Due to this permit is separated from the existing NPDES PA0088781.)
Other Comments:	N/A because it is a new permit.

Other Comments:

Compliance History

N/A because this is a new permit.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	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)	XXX	XXX	XXX	XXX	Report	110	Continuous	I-S
TSS Effluent Net	XXX	XXX	XXX	30.0	60.0	75.0	2/month	Grab
Aluminum, Total	Report Avg Qrtly	Report Daily Max	XXX	Report Avg Qrtly	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 100, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
TSS Effluent Net	XXX	XXX	XXX	30.0	100.0	XXX	2/month	Grab
Oil and Grease Effluent Net	XXX	XXX	XXX	15.0	20.0	30.0	2/month	Grab

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	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

Development of Effluent Limitations

Outfall No.	001A	**Design Flow (MGD)**	2.7
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 included 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.

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 included in the 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. The permit has a minimum monitoring frequency of 2/month and sample type of "grab" will include in the 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 permit, and it will include in the 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 included in the 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, *reference see the email below*. It is added in the proposed permit Part C, I, item H.

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
Phone: 484-250-5191 | Fax: 484.250.5971
www.dep.pa.gov

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	36.0	56.2	1,599	2,494	3,997	µg/L	1,599	AFC	Discharge Conc ≥ 50% WQBEL (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. A discharge hardness of 387 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 960 µg/L. The parameters concentration of 1,599 µg/L AML, 2,494 µg/L MDL, & 3,997 µg/L IMAX and mass of 36.0 lbs/day AML & 56.2 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.

***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 is necessary under the following 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 1.0 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.*

The facility has no record of routine monitoring of these pollutants. However, the application data reports a maximum influent concentration of 824.0 mg/L for TDS. The effluent concentration is not expected to exceed 1,000 mg/L. No monitoring is necessary.

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:
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 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 2025 permit amendment application indicates that the York Energy Center (YEC), Block 1 withdraws 0.0 MGD from Susquehanna River, therefore, the language for CWISs is not applicable to this facility.

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.

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**
Kleen MCT113	Reverse osmosis clean in place	1,184 (142 gal/day)	Daily
Hypersperse MDC 714	Reverse osmosis anti-scalant	4,871 (584 gal/day)	Daily
Citric acid (50%)	Cleaning ultrafiltration devices	As required	As required
Kleen MCT 405	Reverse osmosis membrane cleaner	590 (70.8 gal/day)	Daily
Kleen MCT 882	Reverse osmosis membrane cleaner	1,589 (190.5 gal/day)	Daily
Biomate MBC2881	Biocide	30 (3.65 gal/day)	As required
Sulfuric Acid	pH control	As required	As required
Sodium Hypochlorite	pH and TRC control	As required	As required
Steamate NA 1324	Steam Condensate treatment / pH control	225.2 (27 gal/day)	As required
Steamate PAP7000	Steam Condensate treatment	41.7 (5 gal/day)	Daily
Foamtroll 1440	Foam control in each cooling tower	1,118 (134.1 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, a Q_{7-10} multiplier of 1.0 is 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 40.6 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 2.7 MGD 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 all months. The permit limit for Temperature of 110°F is consistent with this analysis and will include in the permit. A printout of the worksheet is attached.

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Instructions | *Inputs*

Facility: Calpine Mid Merit, LLC York Energy Block 1 Permit No.: PA0282022

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	2.7	0	0	2.7
Feb 1-29	2.7	0	0	2.7
Mar 1-31	2.7	0	0	2.7
Apr 1-15	2.7	0	0	2.7
Apr 16-30	2.7	0	0	2.7
May 1-15	2.7	0	0	2.7
May 16-31	2.7	0	0	2.7
Jun 1-15	2.7	0	0	2.7
Jun 16-30	2.7	0	0	2.7
Jul 1-31	2.7	0	0	2.7
Aug 1-15	2.7	0	0	2.7
Aug 16-31	2.7	0	0	2.7
Sep 1-15	2.7	0	0	2.7
Sep 16-30	2.7	0	0	2.7
Oct 1-15	2.7	0	0	2.7
Oct 16-31	2.7	0	0	2.7
Nov 1-15	2.7	0	0	2.7
Nov 16-30	2.7	0	0	2.7
Dec 1-31	2.7	0	0	2.7

Stream Flows

Q7-10 Multipliers (Default Shown)	PMF	Seasonal Stream Flow (cfs)	Downstream Stream Flow (cfs)
3.2	1.00	129.92	129.92
3.5	1.00	142.10	142.10
7	1.00	284.20	284.20
9.3	1.00	377.58	377.58
9.3	1.00	377.58	377.58
5.1	1.00	207.06	207.06
5.1	1.00	207.06	207.06
3	1.00	121.80	121.80
3	1.00	121.80	121.80
1.7	1.00	69.02	69.02
1.4	1.00	56.84	56.84
1.4	1.00	56.84	56.84
1.1	1.00	44.66	44.66
1.1	1.00	44.66	44.66
1.2	1.00	48.72	48.72
1.2	1.00	48.72	48.72
1.6	1.00	64.96	64.96
1.6	1.00	64.96	64.96
2.4	1.00	97.44	97.44

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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	3,501	110.0
Feb 1-29	40	3,830	110.0
Mar 1-31	46	9,191	110.0
Apr 1-15	52	10,176	110.0
Apr 16-30	58	10,176	110.0
May 1-15	64	6,696	110.0
May 16-31	72	11,161	110.0
Jun 1-15	80	8,535	110.0
Jun 16-30	84	8,535	110.0
Jul 1-31	87	4,464	110.0
Aug 1-15	87	3,983	110.0
Aug 16-31	87	3,983	110.0
Sep 1-15	84	3,129	110.0
Sep 16-30	78	3,129	110.0
Oct 1-15	72	3,151	110.0
Oct 16-31	66	3,151	110.0
Nov 1-15	58	3,501	110.0
Nov 16-30	50	2,801	110.0
Dec 1-31	42	2,626	110.0

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.

Development of Effluent Limitations

Outfall No.	100	**Design Flow (MGD)**	0.05
Latitude	39º 46' 5.00"	**Longitude**	-76º 16' 6.00"
Wastewater Description:	Intermittent Discharge		

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

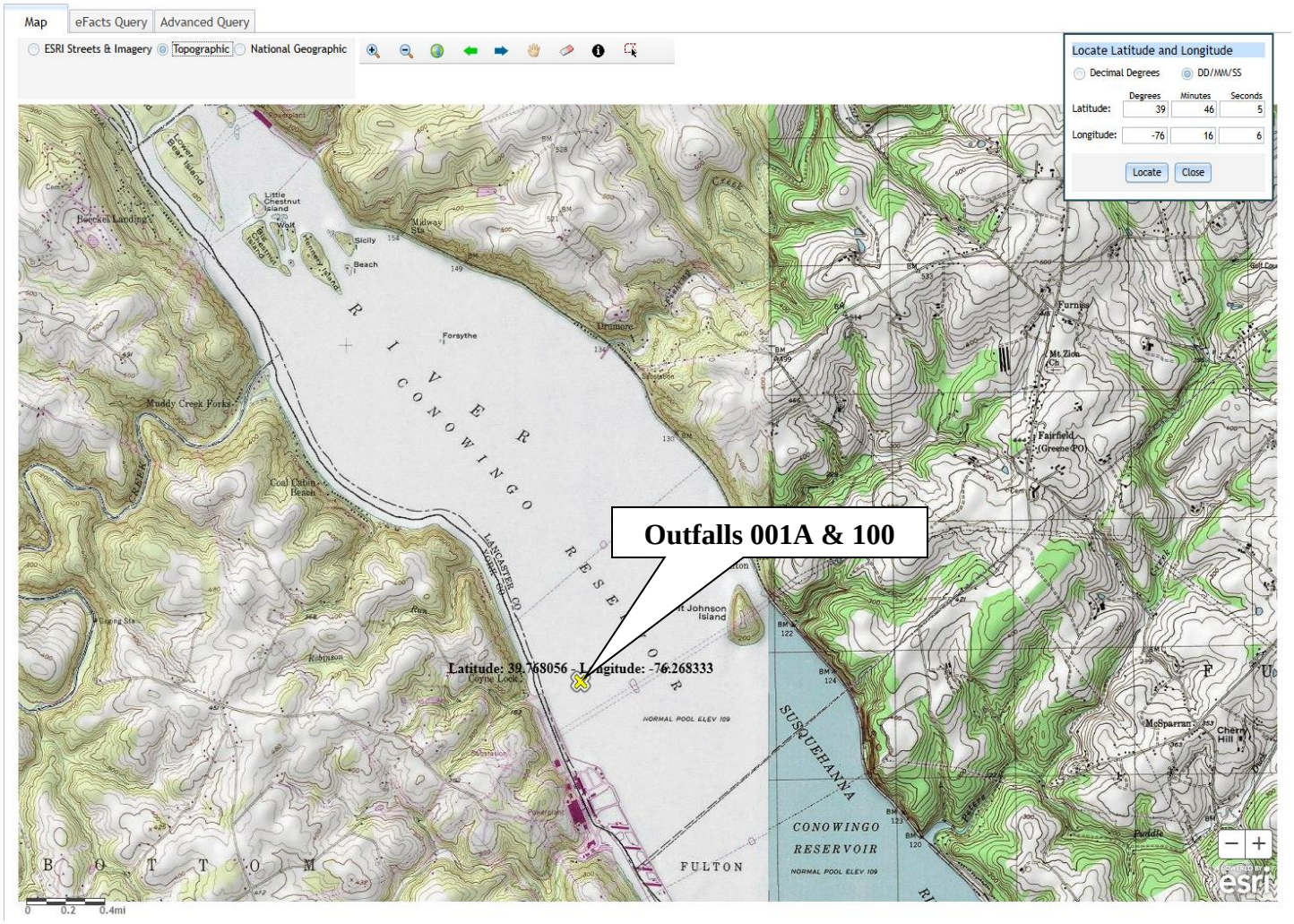
Outfall 100 designates the internal monitoring point (IMP) on the recycle water line, which conveys effluent from the recycle water treatment plant, reverse osmosis concentrate, and ultrafiltration unit rinse water from the process water treatment plant to the cooling towers.

As described above, the ELG Part 423.15(b)(3) requires limits for TSS and Oil and Grease in low volume waste sources.

Flow monitoring is recommended by DEP's technical guidance and is also required by 25 PA Code §§ 92a.61. It will be included in the permit.

The effluent Net of TSS limits of 30.0 mg/L average monthly, and 100.0 mg/L daily maximum monitoring of 2/month requirements will include in the permit.

The effluent Net of Oil and Grease limits of 15.0 mg/L average monthly, 20.0 mg/L daily maximum, and 30.0 mg/L IMAX monitoring of 2/month requirements will include in the permit.



Development of Effluent Limitations

Outfall No.	002 / 003 (portion of)	**Design Flow (MGD)**	0
Latitude	39º 44' 20.00" / 39º 44' 30.00"	**Longitude**	-76º 18' 25.00" / -76º 18' 10.00"
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 002
Latitiude 39°44'20", Longitude 76°18'25"
UNT Susquehanna River (07245), RMI: 3.24 + *0.66 (No Stream Code)*

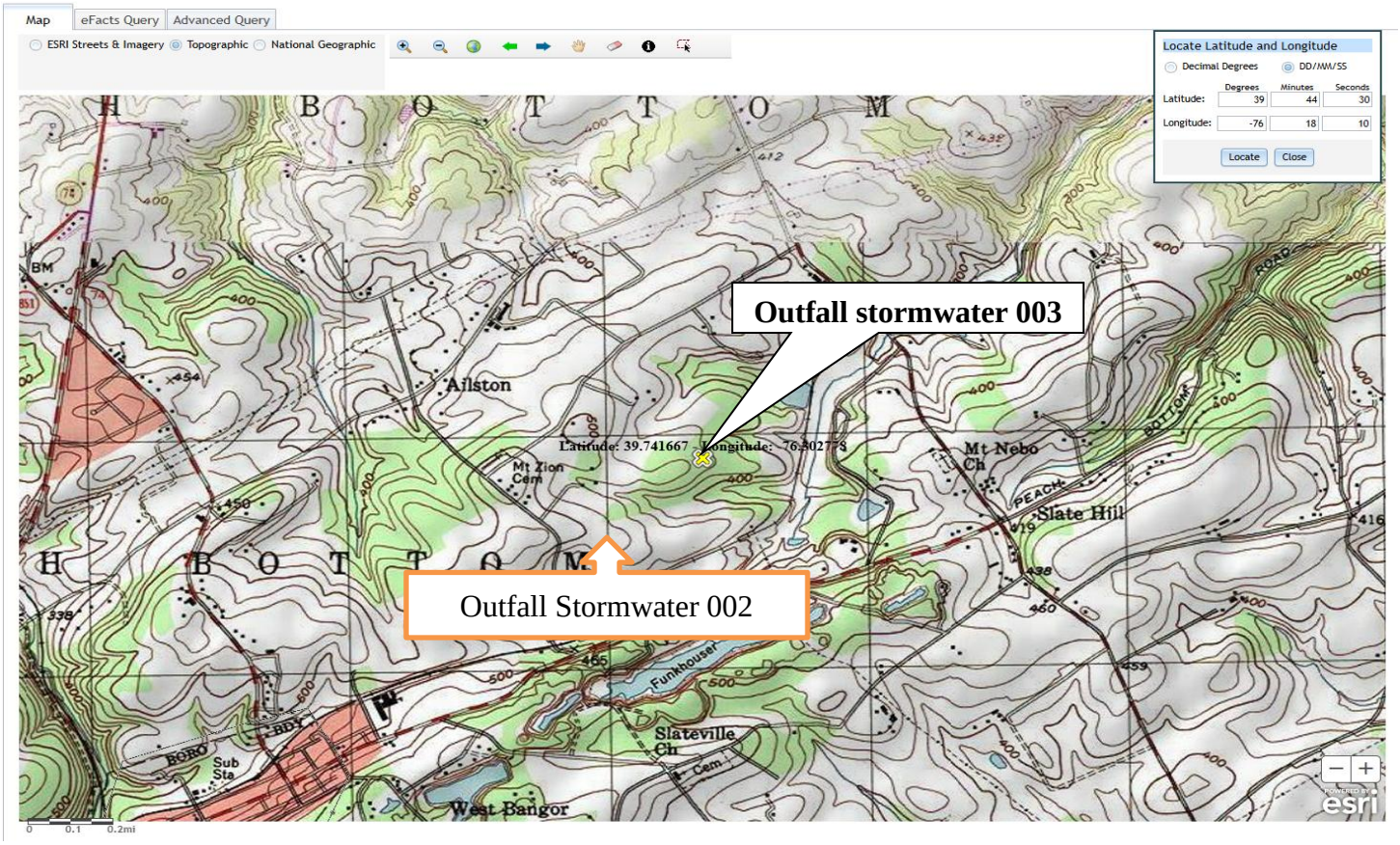
- Discharges via a retention basin for a drainage area of 27.7 acres (1,206,612 sq. ft.). The drainage area is 62% impervious. No artificial potential pollutant sources are listed.

Outfall 003 (portion of)
Latitiude 39°44'30", 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 12.6 acres (548,856 sq. ft.). The drainage area is 92% impervious. No artificial potential pollutant sources are listed.

The monitoring requirements for Outfall 002 match the current requirements for Steam Electric Power Generating Facilities listed in Appendix H of the PAG-03 permit for industrial stormwater discharges.

Due to Outfall 002 having the only listed artificial pollutant source (in addition to a relatively high impervious area of 17.2 acres), therefore, the yearly monitoring of pH, TSS, Oil & Grease, Total Copper, Total Iron, Total Nickel, and Total Zinc requirements will include in the permit.



TMS model inputs (001A)

Parameter	Value	Source
Discharge pH	7.0	(Default)
Discharge Hardness	387 mg/L	(2025 permit amendment application)
Stream pH	7.0	(Default)
Stream Hardness	63 mg/L	(Sample 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: 2.7 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

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Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Calpine Mid Merit - York Energy Center Block 1** NPDES Permit No.: **PA0282022** Outfall No.: **001A**

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

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
2.7	387	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		824									
	Chloride (PWS)	mg/L		114									
	Bromide	mg/L		2.7									
	Sulfate (PWS)	mg/L		320									
	Fluoride (PWS)	mg/L		0.32									
Group 2	Total Aluminum	µg/L		960									
	Total Antimony	µg/L		1.2									
	Total Arsenic	µg/L		1									
	Total Barium	µg/L		140									
	Total Beryllium	µg/L		0.11									
	Total Boron	µg/L		60									
	Total Cadmium	µg/L	<	0.302									
	Total Chromium (III)	µg/L		0.95									
	Hexavalent Chromium	µg/L		0.73									
	Total Cobalt	µg/L		1.1									
	Total Copper	µg/L		3.3									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		4.3									
	Dissolved Iron	µg/L		130									
	Total Iron	µg/L		770									
	Total Lead	µg/L		1.1									
	Total Manganese	µg/L		120									
	Total Mercury	µg/L		0.005									
	Total Nickel	µg/L		5.1									
	Total Phenols (Phenolics) (PWS)	µg/L	<	2									
	Total Selenium	µg/L		0.74									
	Total Silver	µg/L	<	0.634									
	Total Thallium	µg/L	<	0.302									
	Total Zinc	µg/L		7.3									
	Total Molybdenum	µg/L		3									
	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		2.5										
	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	<	0.38										
	4-Nitrophenol	µg/L	<	1.3										
	p-Chloro-m-Cresol	µg/L	<	0.38										
	Pentachlorophenol	µg/L	<	1.7										
	Phenol	µg/L		0.29										
	2,4,6-Trichlorophenol	µg/L	<	0.46										
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		0.93										
	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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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Calpine Mid Merit - York Energy Center Block 1, NPDES Permit No. PA0282022, Outfall 001A

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	26,900			Yes
End of Reach 1	006685	15.001	96.76	27,000			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 Mid Merit - York Energy Center Block 1, NPDES Permit No. PA0282022, Outfall 001A

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): 160.42 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	2,494	
Total Antimony	0	0		0	1,100	1,100	3,658	
Total Arsenic	0	0		0	340	340	1,131	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	69,839	
Total Boron	0	0		0	8,100	8,100	26,938	
Total Cadmium	0	0		0	3.188	3.45	11.5	Chem Translator of 0.924 applied
Total Chromium (III)	0	0		0	839.091	2,655	8,831	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	54.2	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	316	
Total Copper	0	0		0	20.978	21.9	72.7	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	107.610	149	496	Chem Translator of 0.722 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	5.48	Chem Translator of 0.85 applied
Total Nickel	0	0		0	698.427	700	2,327	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	7.252	8.53	28.4	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	216	
Total Zinc	0	0		0	174.896	179	595	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	9.98	

Acrylonitrile	0	0		0	650	650	2,162	
Benzene	0	0		0	640	640	2,128	
Bromoform	0	0		0	1,800	1,800	5,986	
Carbon Tetrachloride	0	0		0	2,800	2,800	9,312	
Chlorobenzene	0	0		0	1,200	1,200	3,991	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	59,862	
Chloroform	0	0		0	1,900	1,900	6,319	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	49,885	
1,1-Dichloroethylene	0	0		0	7,500	7,500	24,943	
1,2-Dichloropropane	0	0		0	11,000	11,000	36,583	
1,3-Dichloropropylene	0	0		0	310	310	1,031	
Ethylbenzene	0	0		0	2,900	2,900	9,644	
Methyl Bromide	0	0		0	550	550	1,829	
Methyl Chloride	0	0		0	28,000	28,000	93,119	
Methylene Chloride	0	0		0	12,000	12,000	39,908	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	3,326	
Tetrachloroethylene	0	0		0	700	700	2,328	
Toluene	0	0		0	1,700	1,700	5,654	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	22,615	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	9,977	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	11,307	
Trichloroethylene	0	0		0	2,300	2,300	7,649	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,862	
2,4-Dichlorophenol	0	0		0	1,700	1,700	5,654	
2,4-Dimethylphenol	0	0		0	660	660	2,195	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	266	
2,4-Dinitrophenol	0	0		0	660	660	2,195	
2-Nitrophenol	0	0		0	8,000	8,000	26,605	
4-Nitrophenol	0	0		0	2,300	2,300	7,649	
p-Chloro-m-Cresol	0	0		0	160	160	532	
Pentachlorophenol	0	0		0	8.723	8.72	29.0	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,530	
Acenaphthene	0	0		0	83	83.0	276	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	998	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.66	
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	99,771	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	14,966	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	898	
Butyl Benzyl Phthalate	0	0		0	140	140	466	

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	2,727	
1,3-Dichlorobenzene	0	0		0	350	350	1,164	
1,4-Dichlorobenzene	0	0		0	730	730	2,428	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	13,303	
Dimethyl Phthalate	0	0		0	2,500	2,500	8,314	
Di-n-Butyl Phthalate	0	0		0	110	110	366	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	5,321	
2,6-Dinitrotoluene	0	0		0	990	990	3,292	
1,2-Diphenylhydrazine	0	0		0	15	15.0	49.9	
Fluoranthene	0	0		0	200	200	665	
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	33.3	
Hexachlorocyclopentadiene	0	0		0	5	5.0	16.6	
Hexachloroethane	0	0		0	60	60.0	200	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	33,257	
Naphthalene	0	0		0	140	140	466	
Nitrobenzene	0	0		0	4,000	4,000	13,303	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	56,537	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	998	
Phenanthrene	0	0		0	5	5.0	16.6	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	432	

☑ ***CFC*** CCT (min): 720 PMF: 0.019 Analysis Hardness (mg/l): 81.933 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	3,765	
Total Arsenic	0	0		0	150	150	2,567	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	70,163	
Total Boron	0	0		0	1,600	1,600	27,381	
Total Cadmium	0	0		0	0.214	0.23	4.0	Chem Translator of 0.917 applied
Total Chromium (III)	0	0		0	62.955	73.2	1,253	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	178	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	325	

Total Copper	0	0		0	7.554	7.87	135	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	1,257,336	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.024	2.47	42.2	Chem Translator of 0.82 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	15.5	Chem Translator of 0.85 applied
Total Nickel	0	0		0	43.938	44.1	754	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	85.4	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	222	
Total Zinc	0	0		0	99.786	101	1,732	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	51.3	
Acrylonitrile	0	0		0	130	130	2,225	
Benzene	0	0		0	130	130	2,225	
Bromoform	0	0		0	370	370	6,332	
Carbon Tetrachloride	0	0		0	560	560	9,583	
Chlorobenzene	0	0		0	240	240	4,107	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	59,895	
Chloroform	0	0		0	390	390	6,674	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	53,050	
1,1-Dichloroethylene	0	0		0	1,500	1,500	25,669	
1,2-Dichloropropane	0	0		0	2,200	2,200	37,648	
1,3-Dichloropropylene	0	0		0	61	61.0	1,044	
Ethylbenzene	0	0		0	580	580	9,925	
Methyl Bromide	0	0		0	110	110	1,882	
Methyl Chloride	0	0		0	5,500	5,500	94,121	
Methylene Chloride	0	0		0	2,400	2,400	41,071	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	3,594	
Tetrachloroethylene	0	0		0	140	140	2,396	
Toluene	0	0		0	330	330	5,647	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	23,958	
1,1,1-Trichloroethane	0	0		0	610	610	10,439	
1,1,2-Trichloroethane	0	0		0	680	680	11,637	
Trichloroethylene	0	0		0	450	450	7,701	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	1,882	
2,4-Dichlorophenol	0	0		0	340	340	5,818	
2,4-Dimethylphenol	0	0		0	130	130	2,225	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	274	
2,4-Dinitrophenol	0	0		0	130	130	2,225	
2-Nitrophenol	0	0		0	1,600	1,600	27,381	
4-Nitrophenol	0	0		0	470	470	8,043	

p-Chloro-m-Cresol	0	0		0	500	500	8,556	
Pentachlorophenol	0	0		0	6.693	6.69	115	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,557	
Acenaphthene	0	0		0	17	17.0	291	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	1,010	
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.71	
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	102,677	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	15,573	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	924	
Butyl Benzyl Phthalate	0	0		0	35	35.0	599	
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	2,738	
1,3-Dichlorobenzene	0	0		0	69	69.0	1,181	
1,4-Dichlorobenzene	0	0		0	150	150	2,567	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	13,690	
Dimethyl Phthalate	0	0		0	500	500	8,556	
Di-n-Butyl Phthalate	0	0		0	21	21.0	359	
2,4-Dinitrotoluene	0	0		0	320	320	5,476	
2,6-Dinitrotoluene	0	0		0	200	200	3,423	
1,2-Diphenylhydrazine	0	0		0	3	3.0	51.3	
Fluoranthene	0	0		0	40	40.0	685	
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	34.2	
Hexachlorocyclopentadiene	0	0		0	1	1.0	17.1	
Hexachloroethane	0	0		0	12	12.0	205	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	35,937	
Naphthalene	0	0		0	43	43.0	736	
Nitrobenzene	0	0		0	810	810	13,861	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	58,184	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	1,010	
Phenanthrene	0	0		0	1	1.0	17.1	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	445	

☑ ***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	95.8	
Total Arsenic	0	0		0	10	10.0	171	
Total Barium	0	0		0	2,400	2,400	41,071	
Total Boron	0	0		0	3,100	3,100	53,050	
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	5,134	
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	17,113	
Total Mercury	0	0		0	0.050	0.05	0.86	
Total Nickel	0	0		0	610	610	10,439	
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	4.11	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	51.3	
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	1,711	
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	97.5	
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	565	
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	1,164	

Methyl Bromide	0	0		0	100	100.0	1,711	
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	975	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	1,711	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	171,128	
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	513	
2,4-Dichlorophenol	0	0		0	10	10.0	171	
2,4-Dimethylphenol	0	0		0	100	100.0	1,711	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	34.2	
2,4-Dinitrophenol	0	0		0	10	10.0	171	
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	68,451	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	1,198	
Anthracene	0	0		0	300	300	5,134	
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	3,423	
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	1.71	
2-Chloronaphthalene	0	0		0	800	800	13,690	
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	17,113	
1,3-Dichlorobenzene	0	0		0	7	7.0	120	
1,4-Dichlorobenzene	0	0		0	300	300	5,134	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	10,268	
Dimethyl Phthalate	0	0		0	2,000	2,000	34,226	
Di-n-Butyl Phthalate	0	0		0	20	20.0	342	
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	342	
Fluorene	0	0		0	50	50.0	856	
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	68.5	
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	582	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	171	
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	342	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	1.2	

☑ ***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 Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	

Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	3.6	
Benzene	0	0		0	0.58	0.58	34.8	
Bromoform	0	0		0	7	7.0	420	
Carbon Tetrachloride	0	0		0	0.4	0.4	24.0	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	48.0	
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	57.1	
1,2-Dichloroethane	0	0		0	9.9	9.9	595	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	54.1	
1,3-Dichloropropylene	0	0		0	0.27	0.27	16.2	
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	1,201	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	12.0	
Tetrachloroethylene	0	0		0	10	10.0	601	
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	33.0	
Trichloroethylene	0	0		0	0.6	0.6	36.0	
Vinyl Chloride	0	0		0	0.02	0.02	1.2	
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	1.8	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	90.1	
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	0.006	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.06	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.006	

3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.06	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.6	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	1.8	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	19.2	
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	7.21	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.006	
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	3.0	
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	3.0	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	3.0	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	1.8	
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	0.005	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.6	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	6.01	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.06	
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	0.042	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.3	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	198	
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	36.0	56.2	1,599	2,494	3,997	µg/L	1,599	AFC	Discharge Conc ≥ 50% WQBEL (RP)

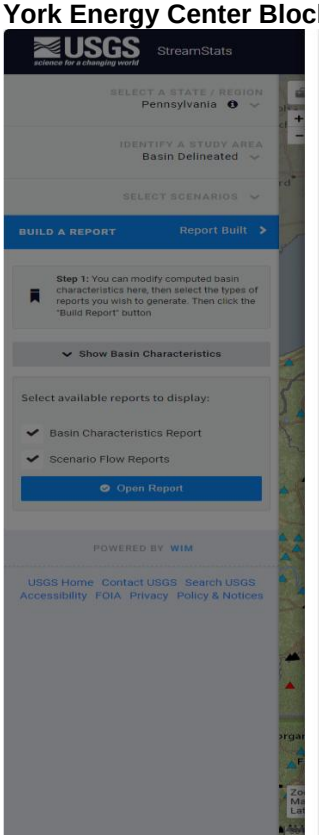
☑ ***Other Pollutants without Limits or Monitoring***

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	95.8	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	171	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	41,071	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	17,266	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	4.0	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	1,253	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	34.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	203	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	46.6	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	5,134	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	1,257,336	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	42.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	17,113	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.86	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	754	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	85.4	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	18.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	4.11	µg/L	Discharge Conc < TQL
Total Zinc	381	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	6.39	µg/L	Discharge Conc < TQL
Acrylonitrile	3.6	µg/L	Discharge Conc < TQL
Benzene	34.8	µg/L	Discharge Conc < TQL
Bromoform	420	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	24.0	µg/L	Discharge Conc < TQL
Chlorobenzene	1,711	µg/L	Discharge Conc < TQL
Chlorodibromomethane	48.0	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	38,369	µg/L	Discharge Conc < TQL
Chloroform	97.5	µg/L	Discharge Conc ≤ 25% WQBEL

Dichlorobromomethane	57.1	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	595	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	565	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	54.1	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	16.2	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	1,164	µg/L	Discharge Conc < TQL
Methyl Bromide	1,172	µg/L	Discharge Conc < TQL
Methyl Chloride	59,686	µg/L	Discharge Conc < TQL
Methylene Chloride	1,201	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	12.0	µg/L	Discharge Conc < TQL
Tetrachloroethylene	601	µg/L	Discharge Conc < TQL
Toluene	975	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	1,711	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	6,395	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	33.0	µg/L	Discharge Conc < TQL
Trichloroethylene	36.0	µg/L	Discharge Conc < TQL
Vinyl Chloride	1.2	µg/L	Discharge Conc < TQL
2-Chlorophenol	513	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	171	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,407	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	34.2	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	171	µg/L	Discharge Conc < TQL
2-Nitrophenol	17,053	µg/L	Discharge Conc < TQL
4-Nitrophenol	4,903	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	341	µg/L	Discharge Conc < TQL
Pentachlorophenol	1.8	µg/L	Discharge Conc < TQL
Phenol	68,451	µg/L	Discharge Conc ≤ 25% WQBEL
2,4,6-Trichlorophenol	90.1	µg/L	Discharge Conc < TQL
Acenaphthene	177	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	5,134	µg/L	Discharge Conc < TQL
Benzidine	0.006	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.06	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.006	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.06	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.6	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	1.8	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	3,423	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	19.2	µg/L	Discharge Conc ≤ 25% WQBEL
4-Bromophenyl Phenyl Ether	576	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	1.71	µg/L	Discharge Conc < TQL

2-Chloronaphthalene	13,690	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	7.21	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.006	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,748	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	120	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	1,556	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	3.0	µg/L	Discharge Conc < TQL
Diethyl Phthalate	8,527	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	5,329	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	234	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	3.0	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	3.0	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	1.8	µg/L	Discharge Conc < TQL
Fluoranthene	342	µg/L	Discharge Conc < TQL
Fluorene	856	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.005	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.6	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	10.7	µg/L	Discharge Conc < TQL
Hexachloroethane	6.01	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.06	µg/L	Discharge Conc < TQL
Isophorone	582	µg/L	Discharge Conc < TQL
Naphthalene	298	µg/L	Discharge Conc < TQL
Nitrobenzene	171	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.042	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.3	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	198	µg/L	Discharge Conc < TQL
Phenanthrene	10.7	µg/L	Discharge Conc < TQL
Pyrene	342	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	1.2	µg/L	Discharge Conc < TQL



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]

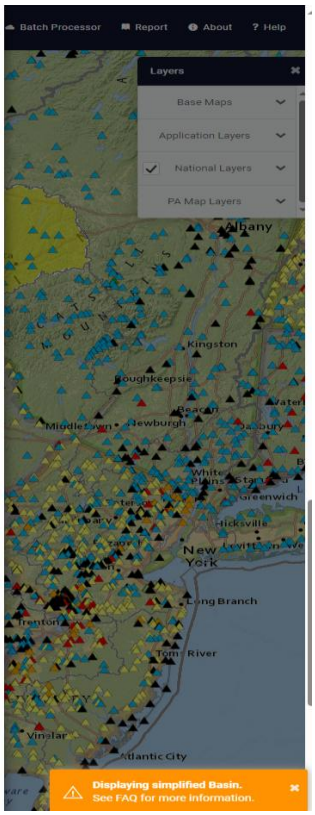
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

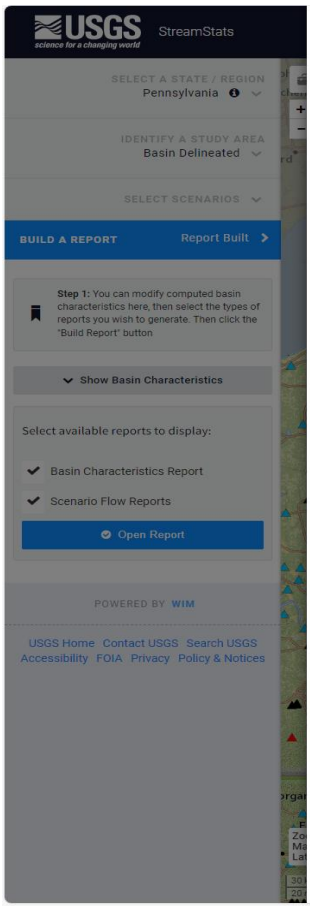
Low-Flow Statistics Flow Report [46.0 Percent (12300 square miles) Low Flow Region 5]

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





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]

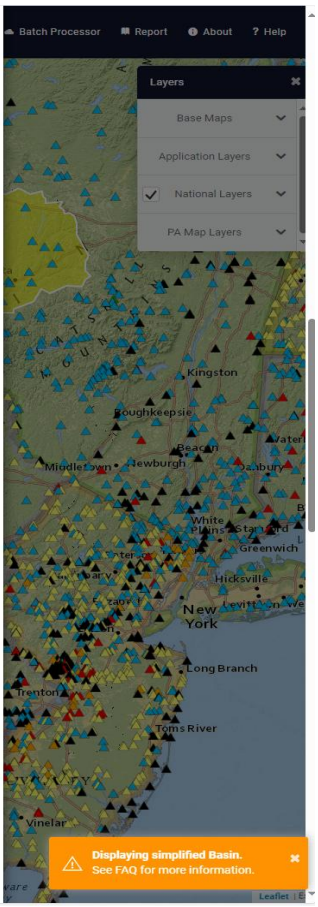
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26900	square miles	4.84	982
PRECIP	Mean Annual Precipitation	40	inches	33.1	47.1
GLACIATED	Percent of Glaciation	43.8327	percent	0	100
FOREST	Percent Forest	66.4085	percent	41	100

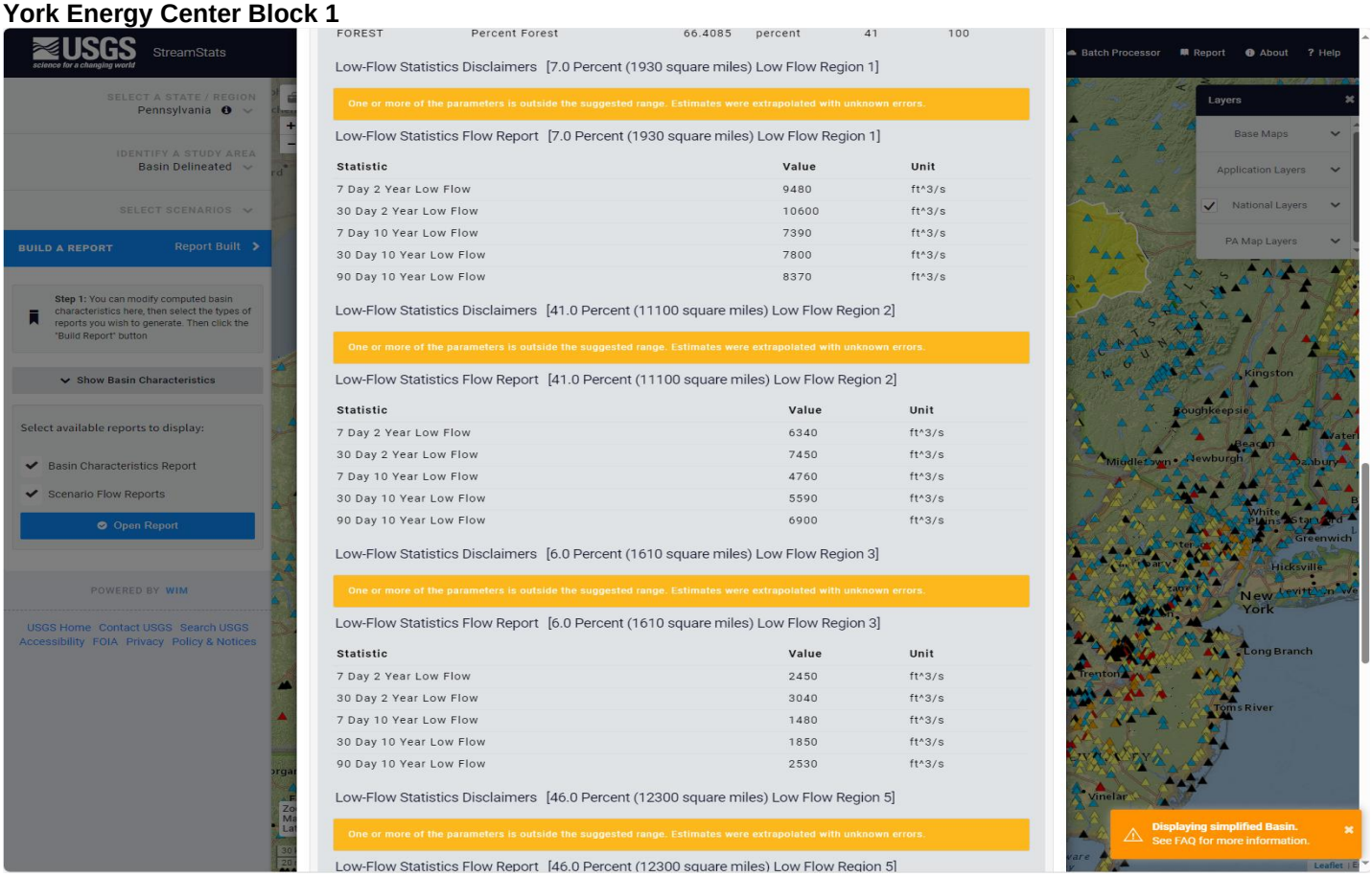
Low-Flow Statistics Disclaimers [7.0 Percent (1930 square miles) Low Flow Region 1]

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




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
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Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
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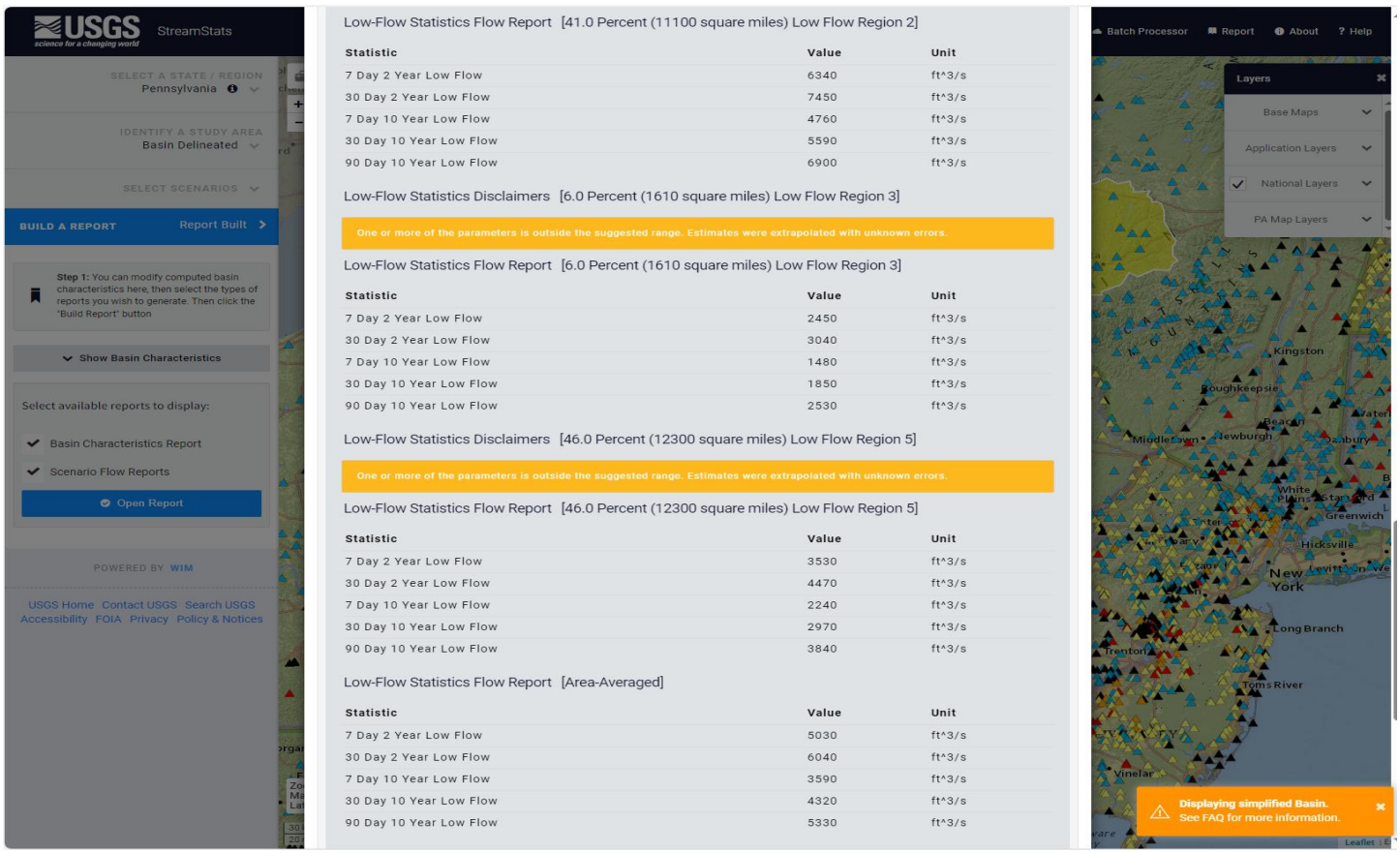
FOREST Percent Forest 66.4085 percent 41 100
Low-Flow Statistics Disclaimers [7.0 Percent (1930 square miles) Low Flow Region 1]
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.
Low-Flow Statistics Flow Report [7.0 Percent (1930 square miles) 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]
Batch Processor Report About Help
Layers
Base Maps
Application Layers
National Layers
PA Map Layers
Kingston
Poughkeepsie
Middletown
Newburgh
White Plains
Greenwich
Hicksville
New York
Long Branch
Trenton
Toms River
Vinelar
Displaying simplified Basin.
See FAQ for more information.
Leaflet


USGS StreamStats
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SELECT SCENARIOS
BUILD A REPORT
Report Built
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Show Basin Characteristics
Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
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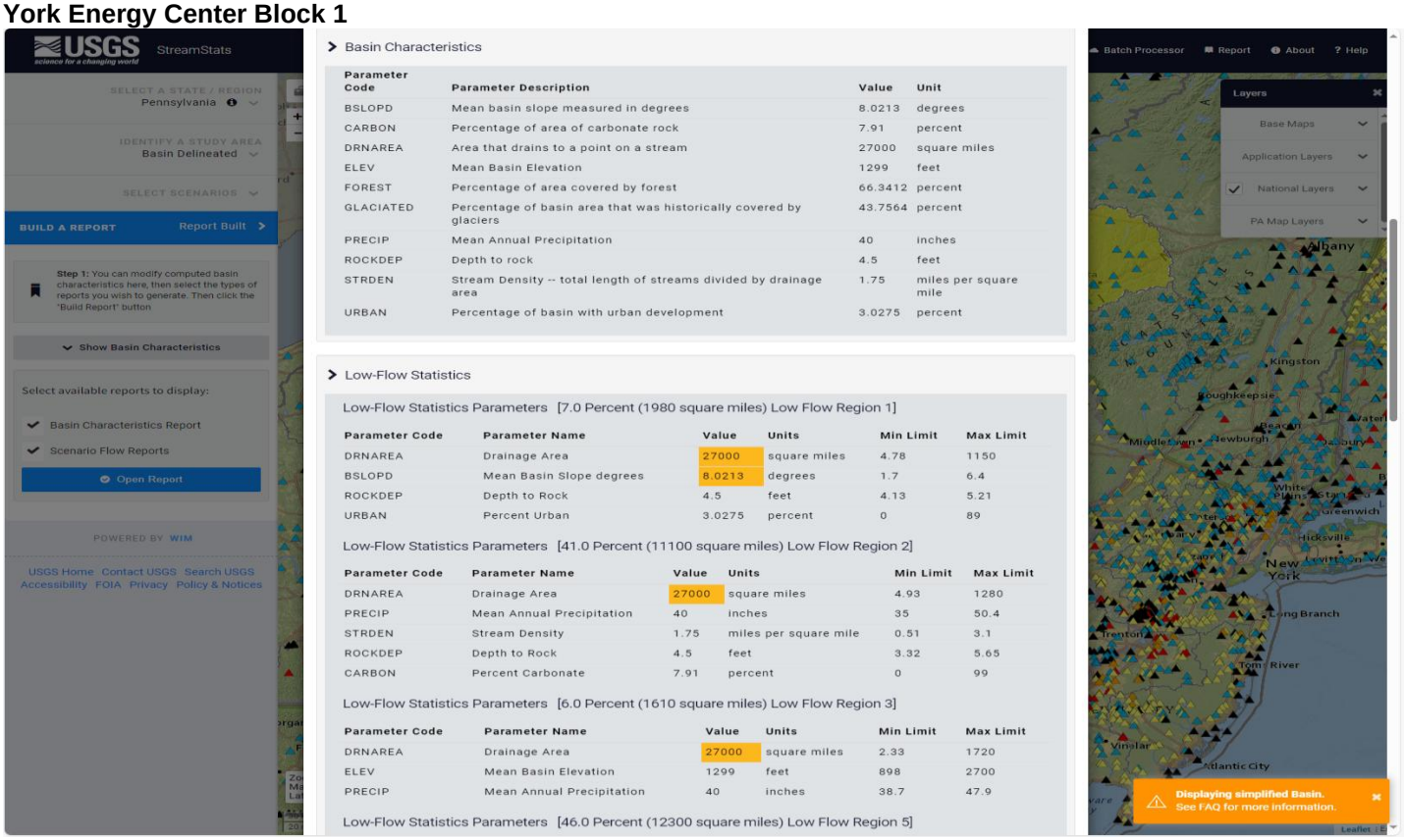
Low-Flow Statistics Flow Report [41.0 Percent (11100 square miles) Low Flow Region 2]
Statistic Value Unit
7 Day 2 Year Low Flow 6340 ft^3/s
30 Day 2 Year Low Flow 7450 ft^3/s
7 Day 10 Year Low Flow 4760 ft^3/s
30 Day 10 Year Low Flow 5590 ft^3/s
90 Day 10 Year Low Flow 6900 ft^3/s
Low-Flow Statistics 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
Batch Processor Report About Help
Layers
Base Maps
Application Layers
National Layers
PA Map Layers
Kingston
Poughkeepsie
Middletown
Newburgh
White Plains
Greenwich
Hicksville
New York
Long Branch
Trenton
Toms River
Vinelar
Displaying simplified Basin.
See FAQ for more information.
Leaflet



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]

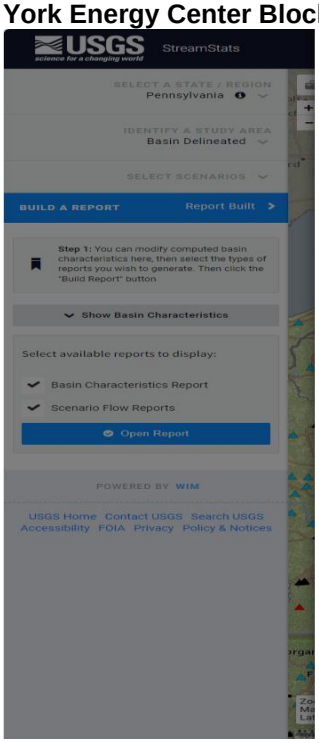
Statistic	Value	Unit
7 Day 2 Year Low Flow	6360	ft^3/s
30 Day 2 Year Low Flow	7480	ft^3/s
7 Day 10 Year Low Flow	4780	ft^3/s
30 Day 10 Year Low Flow	5620	ft^3/s
90 Day 10 Year Low Flow	6930	ft^3/s

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



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]

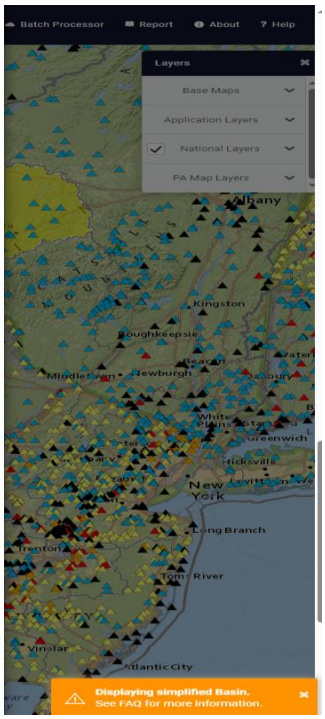
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

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



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: