Pennsylvania Department of Environmental Protection

Northeast Regional Office
CLEAN WATER PROGRAM

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

Application Type	**Renewal & Amendment**	Application No.	**PA0008346**
Facility Type	**Industrial**	APS ID	**556715**
Major / Minor	**Minor**	Authorization ID	**1425531**

Applicant and Facility Information

Applicant Name	**Pennsylvania – American Water Company**	Facility Name	**PA American Water Company Susquehanna WTP**
Applicant Address	852 Wesley Drive	Facility Address	Route 171 South
	Mechanicsburg, PA 17055		Susquehanna, PA 18847
Applicant Contact	Richard C. Dudek, Senior Project Manager	Facility Contact	Jerry Gow, Senior Supervisor of Operations
Applicant Phone	(570) 351-0129	Facility Phone	(570) 853-4629
Client ID	87712	Site ID	247501
SIC Code	4941	Municipality	Harmony Township
SIC Description	Trans. & Utilities - Water Supply	County	Susquehanna
Date Application Received	January 27, 2023	EPA Waived?	Yes
Date Application Accepted	February 6, 2023	If No, Reason	

Purpose of Application: Renewal and Amendment of NPDES permit to discharge industrial wastewater.

Summary of Review

The applicant is requesting the renewal of an NPDES permit to discharge up to 0.035 MGD of industrial wastewater into East Branch Canawacta Creek, a Cold-Water Fishery, Migratory Fish (CWF, MF) receiving stream in State Water Plan Basin 4-E (Great Bend Susquehanna River). As per the Department's current existing use list, the receiving stream does not have an existing use classification that is more protective than its designated use. This stream segment is designated as a naturally reproducing trout stream as per PA Fish & Boat Commission. This discharge is not expected to affect public water supplies. The Applicant is the public water supplier.

This permit renewal also incorporates a permit amendment. The amendment application was received via Public Upload on May 22, 2025. The Applicant, PA American Water Company, intends to construct a new 1.2 MGD water treatment plant (WTP) to replace this existing WTP. The supernatant from the lagoons will either be recycled back through the WTP or will be dechlorinated and discharged to the East Branch Canawacta Creek at Comfort Lake, which is upstream of the existing outfall from the existing water treatment plant. The existing WTP will be eliminated. The WQM Permit (5825201) for the design review/construction of the new WTP was received by the Department on May 13, 2025 and is currently under review by a different Permit Engineer.

The existing WTP technically has two outfalls; however, they are only 16 feet apart and discharge from separate wastewater holding tanks where the water has undergone the same treatment. The effluent from each holding tank is composited for sampling. The renewal application listed an average flow of 0.035 MGD and maximum flow of 0.10 MGD

Approve	Deny	Signatures	Date
X		/s/ Allison Seyfried Zukosky / Project Manager	June 25, 2025
X		/s/ Edward Dudick, P.E. / Engineer Manager	June 26, 2025

Summary of Review

The proposed WTP will only have one discharge, Outfall 001. The proposed discharge from the new WTP is 0.031 MGD average flow and 0.143 MGD maximum flow.

The limitations in the permit will be tiered. There will be a set of limitations that are applicable for the existing WTP and the current outfall location. Then, there will be a second set of limitations that will be applicable for the new WTP plant and the new outfall location.

Modeling was conducted for the existing outfall location and for the proposed outfall location.

Limitations for Total Aluminum are water quality-based and carried over from the previous permit. These limitations are the same for both the current WTP and the proposed WTP.

Limits for pH, Total Suspended Solids (TSS), Total Iron, and Total Manganese are BPT technology-based limits from the "Technology-Based Control Requirements for Water Treatment Plant Wastes" (technical guidance document 362-2183-001). These effluent limits are the same as the previous permit and are the same in the new NPDES Permit for the existing WTP and the proposed WTP.

Pollutant sampling results submitted with the permit renewal application were entered into the Toxic Management Spreadsheet (TMS). The TMS recommended monitoring/reporting for Total Copper, Total Zinc, and Hexavalent Chromium. The permittee was given the opportunity to conduct a minimum of 10 additional effluent samples for these parameters. The permittee collected 10 additional samples during November 2024 through May 2025 and provided the results to the Department via email on June 9, 2025. These updated results were used to re-run the modeling. The modeling indicated that monitoring/ reporting should still be established for Total Zinc. Therefore, Total Zinc monitoring/reporting has been added to the existing WTP limitations in the permit renewal at a 2/month frequency to be consistent with the other parameters in the permit.

Modeling was then re-run for the proposed WTP. The new outfall location and proposed effluent discharge rate of 0.031 MGD was used. The TMS recommended modeling/reporting for Total Zinc and Total Lead. Therefore, Total Zinc and Total Lead monitoring/reporting has been added to the proposed WTP limitations in the permit renewal at a 2/month frequency to be consistent with the other parameters in the permit.

Preliminary Effluent Limitations (PELs) were sent to the permittee via email on April 18, 2025 and included new preliminary limitations for Total Copper, Total Zinc, and Hexavalent Chromium. Reporting was also recommended for Total Lead. These PELs did not incorporate the 10 additional sample results that were provided by the permittee for Total Copper, Total Zinc, and Hexavalent Chromium.

The Total Residual Chlorine (TRC) Calculation Spreadsheet did not recommend stricter limitations for the existing WTP; however, slightly stricter limitations than the previous permit were recommended for the new WTP. The permittee will be required to meet the new water quality-based limits for TRC at the new WTP.

There are no representative stream gages in the vicinity of the outfall and the drainage area the proposed outfall location is out of the recommended tolerance the low flow calculation using USGS StreamStats. The Q_{7-10} flow was obtained by using the StreamStats data at the confluence of the East Branch Canawacta Creek with Canawacta Creek and calculating the LFY. The StreamStats data and calculations can be seen beginning on page 5 of this fact sheet.

The RMI values were obtained using the "PA Historic Streams" feature of eMapPA, drainage areas were delineated using USGS's StreamStats Interactive Map, and elevations were obtained using the elevation profile feature of StreamStats.

The existing permit expired on July 31, 2023 and the application for renewal was received on time.

A Water Management System Inspection query indicated that on July 9, 2021 a Compliance Evaluation was performed.

There are currently three open violations for this client in the Clean Water Program that may need to be resolved before issuance of the final permit:

1. 6/04/2025 - Violation ID 8237090 – Violation Code 92A.41(A)10B – NPDES - Failure to utilize approved analytical methods (NPDES Permit # PA0026981).

Summary of Review

2. 6/04/2025 - Violation ID 8237091 – Violation Code 92A.41(A)5 – NPDES - Failure to properly operate and maintain all facilities which are installed or used by the permittee to achieve compliance (NPDES Permit # PA0026981).

3. 8/21/2023 - Violation ID 8156718 – Violation Code 92A.47(C) – NPDES - Illegal discharge to waters of the Commonwealth from a sanitary sewer overflow (SSO) (Permit # WQG02460510).

Public Participation

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

Existing Outfall

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001 & 002 (Outfalls are composited)	Design Flow (MGD)	0.035
Latitude	41º 55' 58.11"	Longitude	-75º 33' 23.73"
Quad Name	Susquehanna	Quad Code	0341
Wastewater Description:	IW Process Effluent without ELG		
Receiving Waters	East Branch Canawacta Creek (CWF, MF)	Stream Code	32154
NHD Com ID	43488657	RMI	0.55
Drainage Area	2.87 mi^2	Yield (cfs/mi^2)	0.1
Q_{7-10} Flow (cfs)	0.0649	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1,195.18	Slope (ft/ft)	-
Watershed No.	4-E	Chapter 93 Class.	CWF, 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	-

Proposed Outfall

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.031
Latitude	41º 55' 11"	Longitude	-75º 32' 40"
Quad Name	Susquehanna	Quad Code	0341
Wastewater Description:	IW Process Effluent without ELG		
Receiving Waters	East Branch Canawacta Creek (CWF, MF)	Stream Code	32154
NHD Com ID	43488657	RMI	1.8
Drainage Area	1.55	Yield (cfs/mi^2)	0.0357
Q_{7-10} Flow (cfs)	0.057	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1,443	Slope (ft/ft)	-
Watershed No.	4-E	Chapter 93 Class.	CWF, 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	-

Modeling Using USGS StreamStats

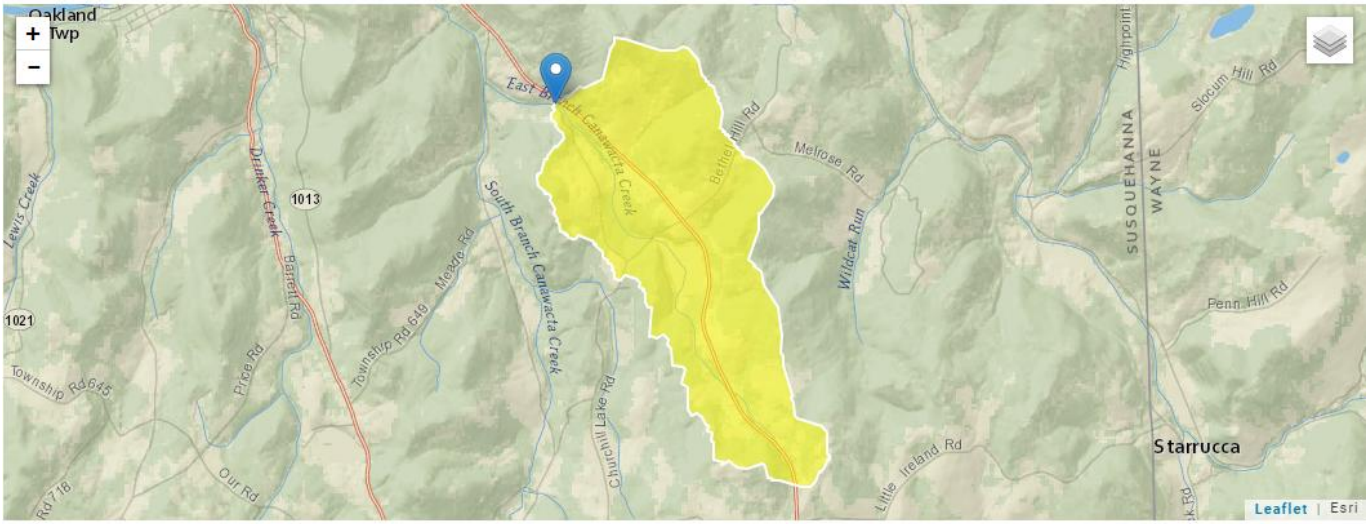
At Existing Outfall 001 on East Branch Canawacta Creek:

RMI	Elevation (ft)	Drainage Area (mi²)	$Q_{7\text{-}10}$ Flow (cfs)
0.55	1,195.18	2.87	0.0649

$$Low\ Flow\ Yield\ using\ StreamStats = \frac{0.0649\ cfs}{2.87\ mi^2} = \mathbf{0.022}\ \frac{\boldsymbol{ft^3/sec}}{\boldsymbol{mi^2}}$$

StreamStats Report

Region ID:	PA
Workspace ID:	PA20240828171340209000
Clicked Point (Latitude, Longitude):	41.93299, -75.55727
Time:	2024-08-28 13:14:04 -0400



Parameter Code	Parameter Name	Value	Units
DRNAREA	Drainage Area	2.87	square miles

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

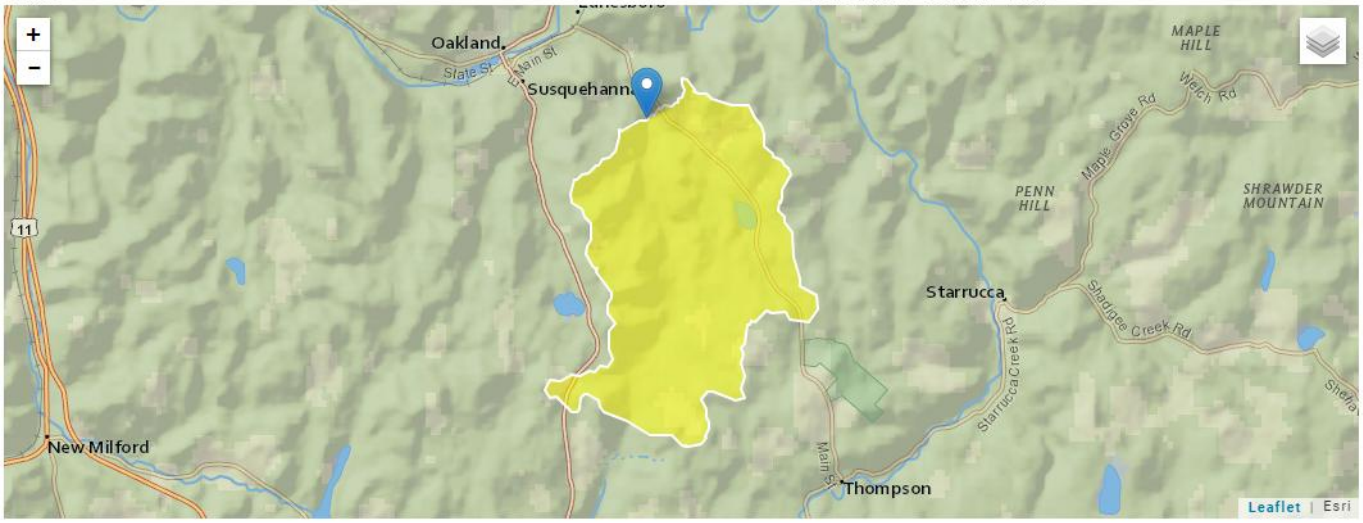
Statistic	Value
7 Day 2 Year Low Flow	0.209
30 Day 2 Year Low Flow	0.314
7 Day 10 Year Low Flow	0.0649

At confluence with Canawacta Creek (32150):

RMI	Elevation (ft)	Drainage Area (mi^2)
0.00 2.11 (On Canawacta Creek)	1,085	10.5

StreamStats Report

Region ID:	PA
Workspace ID:	PA20240828171702908000
Clicked Point (Latitude, Longitude):	41.93563, -75.56674
Time:	2024-08-28 13:17:31 -0400



Parameter Code	Parameter Name	Value	Units
DRNAREA	Drainage Area	10.5	square miles

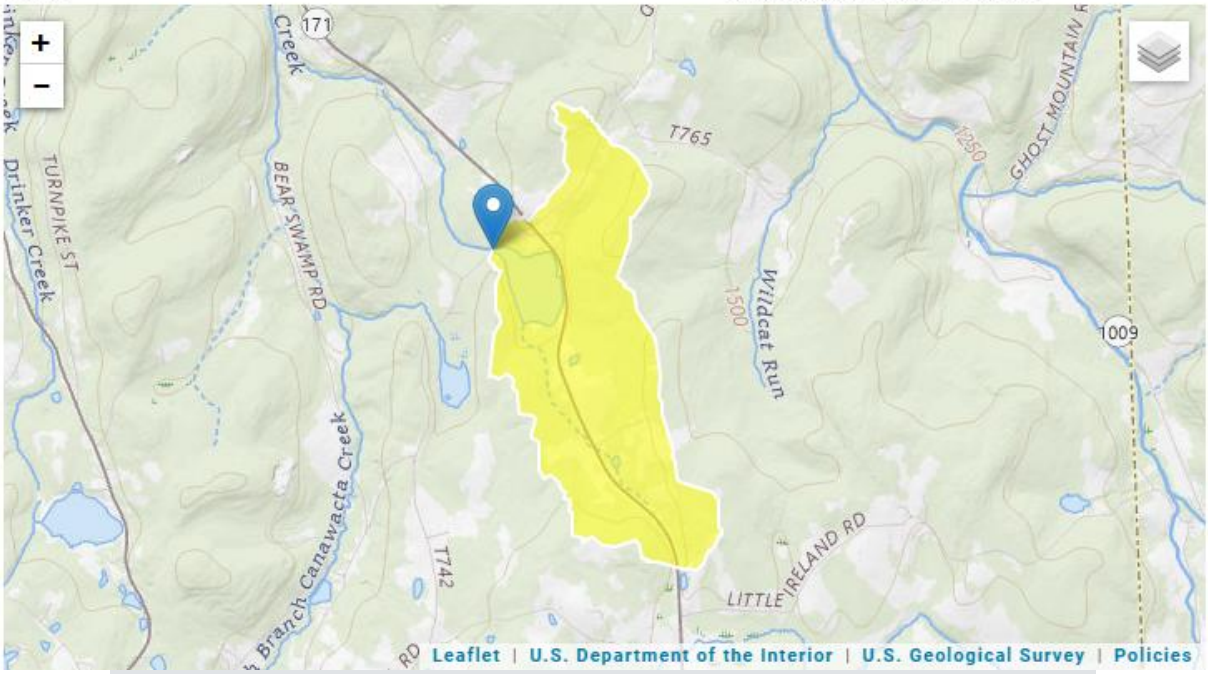
Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.05	ft^3/s	38	38
30 Day 2 Year Low Flow	1.5	ft^3/s	33	33
7 Day 10 Year Low Flow	0.39	ft^3/s	57	57

At <u>Proposed</u> Outfall 001 on East Branch Canawacta Creek:

RMI	Elevation (ft)	Drainage Area (mi²)	Q_{7-10} Flow (cfs)
1.8	1,443	1.55	0.0276

StreamStats Report

Region ID: PA
Workspace ID: PA20250623150442595000
Clicked Point (Latitude, Longitude): 41.91978, -75.54437
Time: 2025-06-23 11:05:01 -0400



Parameter Code	Parameter Name	Value	Units
DRNAREA	Drainage Area	1.55	square miles

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

Low-Flow Statistics Flow Report [Low Flow Region 5]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0969	ft^3/s
30 Day 2 Year Low Flow	0.149	ft^3/s
7 Day 10 Year Low Flow	0.0276	ft^3/s

$$\boldsymbol{LFY} = \frac{Q_{7-10}}{Drainage\ Area} = \frac{0.39\ cfs}{10.5\ mi^2} = \mathbf{0.037\ cfs/mi^2}$$

$$\boldsymbol{Q_{7-10}\ at\ Outfall\ 001} = 0.037\frac{cfs}{mi^2} \times 1.55\ mi^2 = \mathbf{0.057\ cfs}$$

Existing WTP TMS:

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Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: Susquehanna WTP NPDES Permit No.: PA0008346 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Treated IW

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
0.035	24	7						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc		0.6 if left blank: Daily CV	Hourly CV	0 if left blank: Stream CV	Fate Coeff	FOS	1 if left blank: Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		63									
	Chloride (PWS)	mg/L		11									
	Bromide	mg/L	<	1									
	Sulfate (PWS)	mg/L		15.4									
	Fluoride (PWS)	mg/L	<	0.0261									
Group 2	Total Aluminum	µg/L		470									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		38									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L	<	100									
	Total Cadmium	µg/L	<	0.152									
	Total Chromium (III)	µg/L	<	1									
	Hexavalent Chromium	µg/L	<	0.69									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L	<	1.22									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L	<	1									
	Total Iron	µg/L		39									
	Total Lead	µg/L		0.8									
	Total Manganese	µg/L		91									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		2.57									
	Total Phenols (Phenolics) (PWS)	µg/L	<	75									
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L	<	0.132									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		48.2									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Susquehanna WTP, NPDES Permit No. PA0008346, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: East Branch Canawacta

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	032154	0.55	1195.18	2.87			Yes
End of Reach 1	032154	0	1085	10.5			Yes

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

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	0.55	0.1										100	7		
End of Reach 1	0	0.1													

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	0.55														
End of Reach 1	0														

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

No. Samples/Month: 4

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Total Aluminum	Report	Report	Report	Report	Report	µg/L	3,029	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	434	AFC	Discharge Conc > 10% WQBEL (no RP)

<u>Proposed</u> WTP TMS:

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Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: Susquehanna WTP NPDES Permit No.: PA0008346 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Treated IW

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
0.031	24	7						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc		0.5 if left blank: Daily CV	Hourly CV	0 if left blank: Stream CV	Fate Coeff	FOS	1 if left blank: Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		63									
	Chloride (PWS)	mg/L		11									
	Bromide	mg/L	<	1									
	Sulfate (PWS)	mg/L		15.4									
	Fluoride (PWS)	mg/L	<	0.0281									
Group 2	Total Aluminum	µg/L		470									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		38									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L	<	100									
	Total Cadmium	µg/L	<	0.152									
	Total Chromium (III)	µg/L	<	1									
	Hexavalent Chromium	µg/L	<	0.69									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L	<	1.22									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L	<	1									
	Total Iron	µg/L		39									
	Total Lead	µg/L		0.8									
	Total Manganese	µg/L		91									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		2.57									
	Total Phenols (Phenolics) (PWS)	µg/L	<	75									
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L	<	0.132									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		48.2									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Susquehanna WTP, NPDES Permit No. PA0008346, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: East Branch Canawacta

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	032154	1.8	1443	1.55			Yes
End of Reach 1	032154	0	1085	10.5			Yes

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

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	1.8	0.037										100	7		
End of Reach 1	0	0.037													

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	1.8														
End of Reach 1	0														

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

No. Samples/Month: 4

Pollutants	*Mass Limits* AML (lbs/day)	MDL (lbs/day)	*Concentration Limits* AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	1,056	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Lead	Report	Report	Report	Report	Report	µg/L	4.07	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	118	AFC	Discharge Conc > 10% WQBEL (no RP)

TRC Spreadsheet Limitations – Existing WTP

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0649	= Q stream (cfs)	0.5	= CV Daily
0.035	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.401	1.3.2.iii	WLA cfc = 0.384
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.150	5.1d	LTA_cfc = 0.223

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.257	AFC
		INST MAX LIMIT (mg/l) = 0.602	

WLA afc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...
	...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...
	...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)

TRC Spreadsheet Limitations – Proposed WTP

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.057	= Q stream (cfs)	0.5	= CV Daily
0.031	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.398	1.3.2.iii	WLA cfc = 0.381
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.148	5.1d	LTA_cfc = 0.221

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.255	AFC
		INST MAX LIMIT (mg/l) = 0.597	

WLA afc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...
	...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...
	...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)

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