pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0027197**
Facility Type	**Municipal**	APS ID	**276152**
Major / Minor	**Major**	Authorization ID	**1032943**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Capital Region Water**	Facility Name	**Harrisburg Advanced Wastewater Treatment Facility**
Applicant Address	3003 Front Street	Facility Address	1662 S Cameron Street
	Harrisburg, PA 17110		Harrisburg, PA 17104-3145
Applicant Contact	Charlotte Katzenmoyer	Facility Contact	Jess Rosentel
Applicant Phone	(717) 939-7270	Facility Phone	(717) 939-7270
Client ID	43333	Site ID	454377
Ch 94 Load Status	Not Overloaded	Municipality	Harrisburg City
Connection Status	No Limitations	County	Dauphin
Date Application Received	July 7, 2014	EPA Waived?	No
Date Application Accepted	July 8, 2014	If No, Reason	Major Facility, Pretreatment, Significant CB Discharge
Purpose of Application	NPDES Renewal.		

Summary of Review

Capital Region Water (CRW) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on December 15, 2009 and became effective on January 1, 2010. The permit expired on December 31, 2014 but the terms and conditions of the permit have been extended since that time.

It is recommended that the permit be drafted.

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.

Any public records associated with the discharge or facility may be available for file reviews at PA DEP Southcentral Regional Office (SCRO), 909 Elmerton Avenue, Harrisburg, PA 17110. To make an appointment for the review, contact the SCRO File Review Coordinator at 717.705.4732.

Approve	Deny	Signatures	Date
X		*Jinsu Kim* Jinsu Kim / Environmental Engineering Specialist	June 1, 2023
X		Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	June 23, 2023
X		Maria D. Bebenek Maria D. Bebenek, P.E. / Program Manager	June 27, 2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	37.7
Latitude	40º 14' 14"	Longitude	-76º 51' 23"
Quad Name	Steelton	Quad Code	1731
Wastewater Description:	Sewage Effluent		
Receiving Waters	Susquehanna River	Stream Code	06885
NHD Com ID	133783674	RMI	68.7
Drainage Area	24,100	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	3,200	Q_{7-10} Basis	USGS Gage No. 015705000
Elevation (ft)	288	Slope (ft/ft)	
Watershed No.	7-C	Chapter 93 Class.	WWF
Existing Use	None	Existing Use Qualifier	None
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	pH/Acidity/Caustic Conditions		
Source(s) of Impairment	Unknown		
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Borough of Steelton		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	68.2	Distance from Outfall (mi)	0.5

Drainage Area
The discharge is to Susquehanna River at RM 68.7. A drainage area upstream of the point of discharge is estimated to be 24,100 sq.mi. using USGS StreamStats available at https://streamstats.usgs.gov/ss/. This is the same value identified at the stream gage station no. 015705000 about 2 miles upstream from the point of discharge.

Streamflow
USGS StreamStats produced a Q7-10 flow of 2,800 cfs (area-averaged) at the point of discharge. However, because the estimated drainage area is greater than a maximum value allowed to compute the low-flow statistics, USGS explained that these estimates were extrapolated with unknown errors. Given the distance from the gage station no. 015705000, it may be acceptable to consider low flow statistics computed based on the real-time flow measurement at this gage station. USGS StreamStats provided the following low-flow statistics at this gage station: 3,200 cfs (Q7-10), 3,020 cfs (Q1-10), 3,690 cfs (Q-30-10).

Susquehanna River
Under 25 Pa Code §93.9o, Susquehanna River from Juniata River to PA-MD border is designated as warm water fishes and supports migratory fishes. No special protection water is impacted by this discharge. DEP's latest integrated water quality report prepared in 2020 indicates that Susquehanna River near the point of discharge is impaired for pH/acidity/caustic conditions as a result of unknown source. This impairment is listed as Category 5 impairment which requires the development of a TMDL. The TMDL has not yet been developed to address this impairment as the date of this fact sheet. The pH effluent limits have been implemented in this permit and are expected to be maintained in the permit. All permit requirements will be developed to ensure that the discharge from this facility does not contribute to this impairment nor cause additional impairment to the receiving stream.

Public Water Supply Intake
The application lists the Borough of Steelton as the nearest downstream public water supply intake. This is located on Susquehanna River approximately 0.5 miles from Outfall 001.

Treatment Facility Summary				
Treatment Facility Name: Harrisburg Advanced Wastewater Treatment Facility				
WQM Permit No.	**Issuance Date**			
2212403	09/2012; 05/2016; 12/1/2017			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Phosphorus Removal	Extended Aeration	Gas Chlorine	37.7
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
45	68,257	Not Overloaded	Anaerobic Digester	Land Applied

CRW operates a municipal wastewater treatment facility (facility) serving the City of Harrisburg (44.1%), Susquehanna Township (15.7%), Lower Paxton Township (20.4%), Paxtang Borough (1.0%), Pennbrook Borough (2.0%), Swatara Township (7.6%), and Steelton Borough (9.2%). Except for the City of Harrisburg, all sewer systems are 100% separated. The sewer system serving the City of Harrisburg is 25% separated and 75% combined according to the renewal application.

The facility has an annual average design flow of 37.7 MGD and hydraulic design capacity of 45 MGD with an organic design capacity of 68,257 lbs BOD/day. At this facility, CRW utilizes an extended aeration activated sludge treatment process consisting of mechanical bar screens (2), grit removal systems (4), primary clarifiers (4), UNOX high purity oxygen tanks (3), Bioreactor, post aeration, RAS regeneration tank, final clarifiers (6), chlorine contact tanks (4), and an outfall structure to Susquehanna River.

Chlorine gas is currently used for disinfection. Ferric chloride and polymer are used, if needed, for coagulation. Caustic soda and sodium hydroxide are used for pH adjustment and alkalinity. Ferrous sulfate is used for phosphorous removal. Sludge is processed through gravity thickeners, primary/secondary digesters and a belt filter press. Biosolids from this sludge process are sent to either a landfill (Mostoller Municipal Waste Landfill) or agricultural sites for land application under PAG083597 (Class B biosolids).

The renewal application lists the following ten (10) significant industrial users that are connected to the sewer system:

Name	Description of Industry	Wastewater Flows (GPD)
Ames True Temper Incorporated	Manufacturer of land and garden equipment	4,014 (process); 300 (NCCW), 4,220 (sanitary); 100 (other) = 8,634
Bimbo Bakeries	Manufacturer of bakery products	1,500 (process); 3,200 (NCCW); 4,300 (sanitary) = 9,000
Electronic Service and Design Corp.	Manufacturer of printed circuit board	7,200 (process); 1,400 (NCCW); 250 (sanitary); 150 (other) = 9,000
Harrisburg Dairies, Inc.	Manufacturer of fruit drinks and dairy products	24,500 (process); 3,200 (sanitary); 5,300 (other) = 33,000
Hershey Creamery Co.	Manufacturer of ice cream and dairy products	30,500 (process); 4,100 (NCCW); 3,400 (sanitary); 1,500 (other) = 39,500
Lancaster County Solid Waste Management	Municipal Solid Waste Landfill	11,000 (other)
Norfolk Southern Railway Co.	Railroad Refueling Depot	2,548 (process); 44 (other) = 2,592
Public Realty Capital	Municipal Landfill	49,775 (other)
Dr. Robert E. Young Water Services Center	Public Water Supply Treatment Facility	138,904 (process); 455 (sanitary) = 139,359
Swatara Township	Municipal Landfill	6,542 (other)

CRW has been implementing an approved pretreatment program administered by U.S. EPA.

Along with Outfall 001, CRW also utilizes additional sixty (60) combined sewer overflow (CSO) outfalls and six (6) stormwater runoff outfalls. The details of these outfalls are shown below:

Stormwater Runoff Outfalls				
Outfall No.	**Latitude**	**Longitude**	**Receiving Stream**	**Drainage Area**
S01	40°14'18"	76°51'21"	Susquehanna River (via swale)	16,500
S02	40°14'15"	76°51'18"	Susquehanna River (via swale)	18,000
S03	40°14'23"	76°51'29"	Susquehanna River (via swale)	16,500
S04	40°14'24"	76°51'30"	Susquehanna River (via swale)	19,000
S05	40°14'27"	76°51'27"	Spring Creek	4,500
S06	40°14'24"	76°51'24"	Spring Creek	57,000

CSO Outfalls				
Outfall No.	**Latitude**	**Longitude**	**Receiving Stream**	**Name or Street Location**
002	40°15'04"	76°52'42"	Susquehanna River	Front Street Pump Station
003	40°14'40"	76°51'42"	Paxton Creek	Spring Creek Pump Station
004	40°17'59"	76°54'15"	Susquehanna River	Front and Vaughn
005	40°17'53"	76°54'17"	Susquehanna River	Front and Lewis
006	40°16'34"	76°53'57"	Susquehanna River	Front and Geiger
007	40°16'32"	76°53'55"	Susquehanna River	Front and Peffer
008	40°16'28"	76°53'53"	Susquehanna River	Front and Muench
009	40°16'19"	76°53'47"	Susquehanna River	Front and Hamilton
010	40°16'11"	76°53'41"	Susquehanna River	Front and Reilly
011	40°16'07"	76°53'39"	Susquehanna River	Front and Calder
012	40°16'03"	76°53'36"	Susquehanna River	Front and Verbeke
013	40°16'00"	76°53'34"	Susquehanna River	Front and Cumberland
014	40°15'55"	76°53'30"	Susquehanna River	Front and Boas
015	40°15'52"	76°53'29"	Susquehanna River	Front and Forster
016	40°15'45"	76°53'24"	Susquehanna River	Front and Liberty
017	40°15'29"	76°53'01"	Susquehanna River	Front and Market
018	40°15'22"	76°52'50"	Susquehanna River	Front and Mulberry
019	40°15'18"	76°52'43"	Susquehanna River	Front and Paxton
020	40°15'07"	76°52'32"	Susquehanna River	Front and Hanna
021	40°17'18"	76°53'13"	Paxton Creek	Cameron and Schuylkill
022	40°16'59"	76°53'06"	Paxton Creek	Forrest and Cameron
023	40°16'29"	76°52'46"	Paxton Creek	Cameron and Calder
024	40°16'22"	76°52'45"	Paxton Creek	Hill Chamber (TRW)
025	40°16'20"	76°52'45"	Paxton Creek	N. Cameron and Cumberland
026	40°16'21"	76°52'47"	Paxton Creek	S. Cameron and Cumberland
027	40°16'20"	76°52'46"	Paxton Creek	Ninth and Cumberland
028	40°16'17"	76°52'42"	Paxton Creek	Ninth and Herr
029	40°16'07"	76°52'40"	Paxton Creek	E. Cameron and North
030	40°15'02"	76°52'35"	Paxton Creek	W. Cameron and North
031	40°15'56"	76°52'35"	Paxton Creek	Cameron and State
032	40°15'57"	76°52'33"	Paxton Creek	W. Cameron and Walnut
033	40°15'51"	76°52'31"	Paxton Creek	E. Cameron and Walnut
034	40°15'50"	76°52'32"	Paxton Creek	S. Market and Cameron
037	40°15'49"	76°52'31"	Paxton Creek	Tenth and Market
038	40°15'40"	76°52'28"	Paxton Creek	Tenth and Chestnut
039	40°15'40"	76°52'28"	Paxton Creek	S. Mulberry and Cameron
040	40°15'37"	76°52'23"	Paxton Creek	N. Mulberry and Cameron
041	40°15'36"	76°52'23"	Paxton Creek	W. Mulberry and Cameron
042	40°15'30"	76°52'16"	Paxton Creek	S. Kittatinny and Cameron
043	40°15'31"	76°52'19"	Paxton Creek	N. Kittatinny and Cameron
044	40°15'26"	76°52'22"	Paxton Creek	Cameron and Berryhill
045	40°15'19"	76°52'19"	Paxton Creek	Paxton Street (South)

CSO Outfalls				
Outfall No.	**Latitude**	**Longitude**	**Receiving Stream**	**Name or Street Location**
046	40°15'20"	76°52'11"	Paxton Creek	Paxton Street (North)
048	40°15'11"	76°52'11"	Paxton Creek	Tenth and Shannon
049	40°17'03"	76°54'12"	Susquehanna River	Front and Schuylkill
050	40°16'57"	76°54'09"	Susquehanna River	Seneca and Susquehanna
051	40°16'45"	76°54'03"	Susquehanna River	Woodbine and Green
052	40°15'44"	76°53'21"	Susquehanna River	Front and State
053	40°15'42"	76°53'18"	Susquehanna River	Front and South
054	40°15'38"	76°53'14"	Susquehanna River	Front and Pine
055	40°15'34"	76°53'08"	Susquehanna River	Front and Locust
056	40°15'32"	76°53'05"	Susquehanna River	Front and Walnut
057	40°15'24"	76°52'52"	Susquehanna River	Cherry and Mulberry
058	40°15'10"	76°52'33"	Susquehanna River	Front and Tuscarora
060	40°15'06"	76°52'02"	Paxton Creek	Salmon Street
061	40°15'03"	76°52'04"	Paxton Creek	Tenth and Sycamore (059/58)
062	40°15'52"	76°51'53"	Paxton Creek	Shanois Street
063	40°14'44"	76°51'51"	Paxton Creek	Cameron and Hanover
064	40°14'43"	76°51'44"	Paxton Creek	Cameron and Magnolia

According to the application, there have been eighty-two (82) CSO events in the past year (2013).

Compliance History	
Summary of DMRs:	A summary of the past 12-month DMR data is included on pages
Summary of Inspections:	All of the following inspections were performed by Ms. Heather Dock, DEP Water Quality Specialist: 01/21/2021: A routine partial inspection was conducted to discuss the sewage treatment plant's operation during a recent wet weather/flooding event that began on 12/24/2020. Due to rain and snow melt, a peak influent flow between 80-86 MGD was reported. 11/24/2020: An administrative review of DMRs was conducted. The report indicated that no errors were noted. 09/25/2020: A partial inspection was conducted to observe the testing of the bypass pumps for the Front Street Pump Station upgrade. No issues were found during this inspection. 08/18/2020: A partial inspection was conducted. A power outage occurred for both Spring Creek and Front Street Pump Stations. 05/27/2020: An administrative inspection was conducted to review a semi-annual report. 09/05/2019: A routine inspection was conducted. No significant issues were identified at the time of inspection. Field effluent sample results: 7.0 SU pH, 7.83 mg/L DO, 0.35 mg/L TRC. 01/31/2019: An administrative inspection was conducted to review the Chesapeake Bay nutrient records for Compliance year 2018 (Oct 2017 – Sept 2018). No issues were identified at the time of inspection. 08/09/2018: A routine inspection was conducted. No significant issues were identified at the time of inspection. Field effluent same results: 7.49 SU pH; 6.89 mg/L DO, 0.40 mg/L TRC, 24.5ºC. 08/07/2018: A Combined Sewer System inspection was conducted. A number of Dry Weather Overflows occurred at different CSO outfalls since the previous inspection. Some of these overflows occurred as a result of collection and conveyance system improvements. No significant issues were identified at the time of inspection. 06/26/2018: A routine inspection was conducted to see the progress of construction on the new headworks screening building. No significant issues were identified at the time of inspection. 08/16/2017: A Combined Sewer System inspection was conducted. The report lists twelve (12) Dry Weather Overflows and seven (7) Sanitary Sewer Overflows occurred since the previous inspection. No violations were identified at the time of inspection.
Other Comments:	DEP's database revealed that there are no open violations associated with the permittee or facility. The database shows there was one (1) effluent limit violation occurred since the last permit reissuance (April 2020 DO 4.9 v. 5.0 mg/L). There were eleven (11) permit violations occurred since the last permit reissuance. These violations were related to meeting the compliance schedule, untreated/inadequately treated sewage discharges, failure to submit the Operator Certification, failure to implement CSO NMCs and/or LTCP, and failure to notify of an anticipated bypass and failure to implement required Nine Minimum Controls #4 (maximization of flow). All of these previous violations have been resolved/closed.

Effluent Data

DMR Data for Outfall 001 (from August 1, 2020 to July 31, 2021)

Parameter	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20
Flow (MGD) Average Monthly	24.4	17.8	19.8	20.2	23.8	21.7	18.8	24.4	15.2	14.8	14.6	16.6
Flow (MGD) Daily Maximum	45.2	26.9	35.9	37.6	47.1	54.6	29.0	78.1	31.0	35.6	24.2	30.6
pH (S.U.) Minimum	6.6	6.2	6.3	6.2	6.8	6.6	6.8	6.8	6.8	6.6	6.8	6.7
pH (S.U.) Instantaneous Maximum	7.2	7.3	7.3	7.3	7.4	7.2	7.4	7.5	7.4	7.5	8.9	7.4
DO (mg/L) Minimum	5.9	7.1	7.1	7.0	7.2	5.8	7.9	7.8	7.2	7.2	6.6	6.6
TRC (mg/L) Instantaneous Minimum	0.05	0.09	0.05	0.03	0.04	0.05	0.02	0.03	0.04	0.01	0.11	0.02
TRC (mg/L) Average Monthly	0.42	0.42	0.43	0.19	0.21	0.19	0.18	0.21	0.18	0.20	0.41	0.42
TRC (mg/L) Instantaneous Maximum	0.93	1.16	1.23	0.54	0.51	0.68	0.56	0.67	0.48	0.80	0.99	1.11
CBOD5 (lbs/day) Average Monthly	686	481	540	506	620	698	494	1212	437	460	391	481
CBOD5 (lbs/day) Weekly Average	947	483	754	629	1490	683	664	2980	487	852	559	745
CBOD5 (mg/L) Average Monthly	3	3	3	3	3	3	3	4	3	3	3	3
CBOD5 (mg/L) Weekly Average	3	3	4	3	4	3	4	6	3	4	4	4
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	22755	25412	44669	45564	50433	46970	47786	39076	29307	27458	29315	30294
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	34109	39145	132356	80698	99830	113839	149307	129170	55064	59381	45121	41088
BOD5 (mg/L) Raw Sewage Influent Average Monthly	121	171	273	276	258	266	322	231	233	229	245	224
TSS (lbs/day) Average Monthly	803	587	719	479	574	759	441	4377	711	759	595	557

Parameter	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20
TSS (lbs/day) Raw Sewage Influent Average Monthly	28601	29811	62549	64216	80261	62922	58317	68434	36021	37888	40380	40907
TSS (lbs/day) Raw Sewage Influent Daily Maximum	54876	69918	184147	126101	199279	132966	102082	310899	83033	118762	81907	85749
TSS (lbs/day) Weekly Average	1210	689	1159	762	2440	715	490	10851	1011	1763	965	929
TSS (mg/L) Average Monthly	4	4	4	3	3	3	3	10	5	5	5	4
TSS (mg/L) Raw Sewage Influent \ Average Monthly	149	199	382	387	409	356	385	336	282	311	336	296
TSS (mg/L) Weekly Average	4	4	5	4	6	4	3	20	7	8	6	5
Fecal Coliform (CFU/100 ml) Geometric Mean	4	2	1	2	2	3	7	9	23	7	2	4
Nitrate-Nitrite (mg/L) Average Monthly	5.22	3.40	5.37	8.03	9.03	6.45	5.33	8.00	6.25	5.07	5.57	3.66
Nitrate-Nitrite (lbs) Total Monthly	33149	15734	25168	39541	52918	28453	25662	37052	21724	17854	20959	15518
Total Nitrogen (mg/L) Average Monthly	6.1	4.7	6.1	8.8	11.6	9.2	7.3	9.8	7.7	6.3	6.9	5.1
Total Nitrogen (lbs) Effluent Net Total Monthly	37741	21113	27970	42298	66958	43210	34208	44878	26087	21386	25959	22165
Total Nitrogen (lbs) Total Monthly	38434	21878	28783	43380	67667	43444	34560	45345	26770	22231	26636	22926
Total Nitrogen (lbs) Effluent Net Total Annual											460678	
Total Nitrogen (lbs) Total Annual											460678	
Ammonia (lbs/day) Average Monthly	< 96	< 44	< 58	< 140	306	386	294	< 250	< 77	< 69	< 68	< 89
Ammonia (mg/L) Average Monthly	< 0.5	< 0.3	< 0.3	< 0.8	1.5	2.0	1.9	< 1.0	< 0.5	< 0.5	< 0.6	< 0.6
Ammonia (lbs) Total Monthly	2965	1316	1799	4211	9481	10807	9111	7752	2310	2130	2026	2765
Ammonia (lbs) Total Annual											57324	
TKN (mg/L) Average Monthly	0.9	1.3	0.7	0.8	2.6	2.8	2.0	1.8	1.5	1.2	1.4	1.4

Parameter	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20
TKN (lbs) Total Monthly	5285	6144	3616	3839	14749	14991	8898	8293	5046	4377	5678	7409
Total Phosphorus (lbs/day) Average Monthly	272	236	238	231	198	202	174	198	188	189	197	212
Total Phosphorus (mg/L) Average Monthly	1.4	1.6	1.5	1.4	1.0	1.2	1.2	1.2	1.5	1.6	1.7	1.6
Total Phosphorus (lbs) Effluent Net Total Monthly	8429	7068	7385	6935	6147	5654	5381	6152	5628	5852	5903	6570
Total Phosphorus (lbs) Total Monthly	8429	7068	7385	6935	6147	5654	5381	6152	5628	5852	5903	6570
Total Phosphorus (lbs) Effluent Net Total Annual											80855	
Total Phosphorus (lbs) Total Annual											80855	

Existing Effluent Limits and Monitoring Requirements

The tables below summarize effluent limits and monitoring requirements for Outfall 001 specified in the existing NPDES permit.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
Influent (BOD5 and TSS)	Report	Report Daily Max	XXX	Report	XXX	XXX	3/week	24-hr comp
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/shift	Grab
Total Suspended Solids	9,433	14,149	XXX	30	45	60	1/day	24-hr comp
CBOD5	7,860	12,577	XXX	25	40	50	3/week	24-hr comp
NH3-N (5/1 to 10/31)	3,458	XXX	XXX	11	XXX	22	1/day	24-hr comp
NH3-N (11/1 to 4/30)	Report	XXX	XXX	Report	XXX	XXX	1/day	24-hr comp
Total Phosphorus	629	XXX	XXX	2.0	XXX	4.0	1/day	24-hr comp
Fecal Coliform (5/1 to 9/30)	XXX	XXX	XXX	200	XXX	XXX	1/day	Grab
Fecal Coliform (10/1 to 4/30)	XXX	XXX	XXX	2,000	XXX	XXX	1/day	Grab

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	1/day	24-hr comp
Kjeldahl---N	Report	XXX	XXX	Report	XXX	1/week	24-hr comp
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	1/week	24-hr comp
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	1/day	24-hr comp
Net Total Nitrogen	Report	688,575	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	91,810	XXX	XXX	XXX	1/month	Calculation

Development of Effluent Limitations and Monitoring Requirements

Outfall No. 001 **Design Flow (MGD)** 37.7
Latitude 40° 14' 14" **Longitude** 76° 51' 23"
Wastewater Description: Treated Sewage

Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
Total Suspended Solids	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen
WQM 7.0 is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's guidance no. 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. DEP recently updated this model (ver. 1.1) to include the new ammonia criteria that has been approved by US EPA as part of the 2017 Triennial Review. There are several point source dischargers located within the vicinity of this facility. However, most of those are non-sewage related dischargers (i.e., stormwater, industrial waste, MS4s, etc.). There is a downstream sewage discharger (i.e., combined Fairview/Lower Allen NPDES no. PA0081868/)A0027189) and two (2) upstream sewage dischargers (Lemoyne Borough NPDES no. PA0026441 & New Cumberland NPDES no. PA0026654) located on the other side of the river While it is on the other side, because CRW's outfall is located in the middle of the river, a multiple discharge analysis is warranted.

This model assumes immediate and complete mixing of the discharge with the receiving water within the given stream reach. However, this assumption is likely inaccurate when the discharge is to a large body of water such as Susquehanna River or when a dilution ratio between the discharge and stream is very low. Therefore, it would be reasonable to adjust a Q7-10 to reflect site-specific mixing conditions within the studied stream reach. DEP SCRO has historically been using one-fourth ($1/4^{th}$) of the original Q7-10 in the water quality analysis. For consistency purpose, the Q7-10 will be converted to a low flow yield using USGS Gage Station no. 015705000 and then readjusted using 25% ($1/4^{th}$) of that low flow yield. See below the calculations:

Low Flow Yield = 3,200 cfs/24,100 sq.mi = 0.1327 cfs/sq.mi * 0.25 = 0.033 cfs/sq.mi.

The model was utilized using all nearby downstream and upstream discharges and the output indicates that existing effluent limits are still adequate. No changes are therefore recommended for the upcoming permit renewal.

Total Residual Chlorine
DEP's TRC_CALC worksheet was utilized using a Q7-10 flow of 800 cfs (3200*0.25) to determine if the existing average monthly effluent limit of 0.5 mg/L, which is derived from 25 Pa Code §92a.48(b)(2), is still appropriate for this discharge. The worksheet indicates that existing effluent limits are still appropriate. No change is therefore recommended.

Toxics
DEP utilizes a Toxics Management Spreadsheet (last modified on March 2021 ver. 1.3) to facilitate calculations necessary for completing a reasonable potential analysis and determining WQBELs for toxic pollutants. The worksheet combines the functionality of DEP's Toxics Screening Analysis worksheet and PENTOXSD. The worksheet output recommends a routine monitoring requirement for Total Aluminum and Total Zinc.

Best Professional Judgment (BPJ) Limitations

Dissolved Oxygen
A minimum DO limit of 5.0 mg/L is a DO water quality criterion found in 25 Pa. Code § 93.7(a). This effluent limit is included in the existing NPDES permit. It is still recommended to include this limit in the draft permit to ensure that the facility continues to achieve compliance with DEP water quality standards.

Total Phosphorus
Historically, an average monthly Total Phosphorus limit of 2.0 mg/L was recommended in NPDES permits, per DEP phosphorus guidance 391-2000-018, to control phosphorus effluent levels for any facilities that are expected to contribute 0.25% or more of the total phosphorus loading of the entire basin. DEP has previously determined that this facility meets the criteria and as a result, the effluent limit has been continuously imposed in the permit. No relaxation or removal of the current requirement is warranted as it does not meet any of the exceptions listed in 40 CFR §122.44 (l)(2)(i). It is therefore recommended to maintain this effluent limit in the draft permit.

Additional Considerations

Flow Monitoring
The requirement to monitor the volume of effluent discharged from this facility will continue to be included in the permit in accordance with 40 CFR 122.44(i)(1)(ii).

Influent BOD5 and TSS Monitoring
As a result of negotiation with U.S. EPA, influent monitoring of BOD5 and TSS are generally required for any POTWs. Monitoring of influent BOD5 and TSS will therefore be continued.

Mass Loading Effluent Limitations
All mass loading effluent limitations are calculated based on a formula: design flow (MGD) x concentration effluent limit at design flow (mg/L) x conversion factor (8.34).

E. Coli Monitoring Requirement
DEP's SOP no. BCW-PMT-033 recommends a routine monitoring for E. Coli in all new and reissued sewage permits. As a result, a monthly monitoring requirement for E. Coli will be included in the permit given the facility's design flow is greater than 1.0 MGD.

Local Watershed TMDL
DEP's latest integrated water quality report developed in 2018 shows that Susquehanna River (within the lower Susquehanna River basin) is impaired for pH as a result of unknown source(s). The report classified this impairment as Category 5 which requires the development of a Total Maximum Daily Load to address such impairment. While this impairment was identified in 2020, no anticipated TMDL development date is shown on this report. At this time, this facility is required to meet the federal and state secondary treatment standards of pH (6-9 SU). DEP determines that this pH effluent limit ensures that the discharge will not contribute to impairment. Nevertheless, once the TMDL is developed, DEP may reopen this permit to incorporate any permit requirements included in the TMDL that are assigned to this facility.

Chesapeake Bay TMDL
In August 2019, DEP finalized Phase 3 Chesapeake Bay Watershed Implementation Plan to provide the plans in place by 2025 to further achieve the nutrient and sediment reduction targets that would ultimately meet U.S EPA's expectations for

the Chesapeake Bay TMDL. The Chesapeake Bay TMDL identifies the necessary pollution reductions from major sources of nitrogen, phosphorus and sediment across the Bay jurisdictions and sets pollution limits necessary to meet water quality standards. The Phase 3 WIP is an update to the Pennsylvania's Chesapeake Bay TMDL Strategy (2004), the Chesapeake WIP Phase I (2011) and Phase 2 WIP (2012). The more details on the TMDL are available at www.dep.pa.gov.

A Supplement to the Phase 3 WIP which was last updated on December 17, 2019 provides an update on Chesapeake Bay TMDL implementation activities for point sources and DEP's current implementation strategy for wastewater. According to this document, Harrisburg Advanced WWTP is a phase 1 significant discharger located within the Chesapeake Bay watershed. The following Cap Loads (annual net nutrient mass effluent limitations) specified in the current Supplement to the Phase 3 WIP will be included in the draft permit:

NPDES Permit No.	Phase	Facility	Latest Permit Issuance Date	Permit Expiration Date	Cap Load Compliance Start Date	TN Cap Load (lbs/yr)	TN Offsets Included in Cap Load (lbs/yr)	TP Cap Load (lbs/yr)	TN Delivery Ratio	TP Delivery Ratio
PA0027197	1	Harrisburg Sewerage Authority	12/4/2009	12/31/2014	10/1/2012	688,575	-	91,810	0.951	0.436

This facility has been monitoring for TN species (TKN and NO3-NO2) on a weekly basis. DEP's Phase 3 WIP now requires all significant dischargers to monitor for nutrients at least 2/week. As a result, the minimum monitoring frequency for these parameters have changed from 1/week to 2/week.

Total Dissolved Solids (TDS)
TDS has become a statewide pollutant of concern and a threat to DEP's mission to prevent violations of water quality standards. TDS and its associated constituents including Bromide, Chloride, and Sulfate levels in the effluent are to be monitored under the criteria specified in 25 Pa. Code §95.10 and/or the following January 23, 2014 statewide guidance:

> *For point source discharges and upon issuance or reissuance of an individual NPDES permit:*
>
> *• Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.*
>
> *• Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less*

The maximum TDS effluent concentration reported in the renewal application is 472 mg/L. Bromide was not detected at 0.56 mg/L. Accordingly, the requirement to monitor TDS and its constituents is not needed.

Anti-Backsliding Requirement
Unless specified otherwise in this fact sheet, all proposed permit requirements have been developed as stringent as existing permit requirements.

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

Whole Effluent Toxicity (WET)

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

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

The dilution series used for the tests was: 100%, 56%, 11%, 6%, and 3%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 11%.

Summary of Four Most Recent Test Results

(NOTE – Enter results into one table, depending on which data analysis method was used).

NOEC/LC50 Data Analysis

Test Date	*Ceriodaphnia* Results (% Effluent)			*Pimephales* Results (% Effluent)			Pass? *
	NOEC Survival	NOEC Reproduction	LC50	NOEC Survival	NOEC Growth	LC50	
July 2017	100	100		100	100		Yes
October 2017	100	100		100	100		Yes
January 2018	100	100		100	100		Yes
May 2018	100	100		100	100		Yes

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

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

☐ **YES** ☒ **NO**

Comments: DEP's WET Analysis Spreadsheet is attached to this fact sheet.

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

Acute Partial Mix Factor (PMFa): **0.005** Chronic Partial Mix Factor (PMFc): **0.035**

1. Determine IWC – Acute (IWCa):

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

[(37.7 MGD x 1.547) / ((3200 cfs x 0.005) + (37.7 MGD x 1.547))] x 100 = **78%**

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

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

2b. Determine Target IWCc (If Chronic Tests Required)

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

[(37.7 MGD x 1.547) / ((3200 cfs x 0.035) + (37.7 MGD x 1.547))] x 100 = **34%**

3. Determine Dilution Series

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

Dilution Series = 100%, 67%, 34%, 17%, and 9%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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

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

N/A

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

N/A

Combined Sewer Overflow

CRW also utilizes 61 active Combined Sewer Overflow (CSO) outfalls. These outfalls are shown below.

OUTFALL NO.	LATITUDE			LONGITUDE			LOCATION	RECEIVING WATERS	
	Deg	Min	Sec	Deg	Min	Sec		Name	Ch. 93 Class.
003	40	14	40	76	51	42	Spring Creek Pump Station	Paxton Creek	WWF,MF
021	40	17	18	76	53	13	Cameron and Schuylkill	Paxton Creek	WWF,MF
022	40	16	59	76	53	06	Forrest and Cameron	Paxton Creek	WWF,MF
023	40	16	29	76	52	46	Cameron and Calder	Paxton Creek	WWF,MF
024	40	16	22	76	52	45	Hill Chamber (TRW)	Paxton Creek	WWF,MF
025	40	16	20	76	52	45	Cameron and Cumberland (North)	Paxton Creek	WWF,MF
026	40	16	21	76	52	47	Cameron and Cumberland (South)	Paxton Creek	WWF,MF
027	40	16	20	76	52	46	Ninth and Cumberland	Paxton Creek	WWF,MF
028	40	16	17	76	52	42	Ninth and Herr	Paxton Creek	WWF,MF
029	40	16	07	76	52	40	Cameron and North (East)	Paxton Creek	WWF,MF
030	40	15	02	76	52	35	Cameron and North (West)	Paxton Creek	WWF,MF
031	40	15	56	76	52	35	Cameron and State	Paxton Creek	WWF,MF
032	40	15	57	76	52	33	Cameron and Walnut (West)	Paxton Creek	WWF,MF
033	40	15	51	76	52	31	Cameron and Walnut (East)	Paxton Creek	WWF,MF
034	40	15	50	76	52	32	Market and Cameron (South)	Paxton Creek	WWF,MF
037	40	15	49	76	52	31	Tenth and Market	Paxton Creek	WWF,MF
038	40	15	40	76	52	28	Tenth and Chestnut	Paxton Creek	WWF,MF
039	40	15	40	76	52	28	Mulberry and Cameron (South)	Paxton Creek	WWF,MF
040	40	15	37	76	52	23	Mulberry and Cameron (North)	Paxton Creek	WWF,MF
041	40	15	36	76	52	23	Mulberry and Cameron (West)	Paxton Creek	WWF,MF
042	40	15	30	76	52	16	Kittatinny and Cameron (South)	Paxton Creek	WWF,MF
043	40	15	31	76	52	19	Kittatinny and Cameron (North)	Paxton Creek	WWF,MF
044	40	15	26	76	52	22	Cameron and Berryhill	Paxton Creek	WWF,MF
045	40	15	19	76	52	19	Paxton Street (South)	Paxton Creek	WWF,MF
046	40	15	20	76	52	11	Paxton Street (North)	Paxton Creek	WWF,MF
047	40	15	20	76	52	22	Paxton Street (West)	Paxton Creek	WWF,MF
048	40	15	11	76	52	11	Tenth and Shannon	Paxton Creek	WWF,MF
060	40	15	06	76	52	02	Salmon Street	Paxton Creek	WWF,MF
061	40	15	03	76	52	04	Tenth and Sycamore (059/58)	Paxton Creek	WWF,MF
062	40	15	53	76	51	53	Shanois Street	Paxton Creek	WWF,MF
063	40	14	44	76	51	49	Cameron and Hanover	Paxton Creek	WWF,MF

064	40	14	44	76	51	43	Cameron and Magnolia	Paxton Creek	WWF,MF
002	40	15	04	76	52	42	Front Street Pump Station	Susquehanna River	WWF,MF
004	40	17	59	76	54	15	Front and Vaughn	Susquehanna River	WWF,MF
005	40	17	53	76	54	17	Front and Lewis	Susquehanna River	WWF,MF
006	40	16	34	76	53	57	Front and Geiger	Susquehanna River	WWF,MF
007	40	16	32	76	53	55	Front and Peffer	Susquehanna River	WWF,MF
008	40	16	28	76	53	53	Front and Muench	Susquehanna River	WWF,MF
009	40	16	19	76	53	47	Front and Hamilton	Susquehanna River	WWF,MF
010	40	16	11	76	53	41	Front and Reilly	Susquehanna River	WWF,MF
011	40	16	07	76	53	39	Front and Calder	Susquehanna River	WWF,MF
012	40	16	03	76	53	36	Front and Verbeke	Susquehanna River	WWF,MF
013	40	16	00	76	53	34	Front and Cumberland	Susquehanna River	WWF,MF
014	40	15	55	76	53	30	Front and Boas	Susquehanna River	WWF,MF
015	40	15	52	76	53	29	Front and Forster	Susquehanna River	WWF,MF
016	40	15	45	76	53	24	Front and Liberty	Susquehanna River	WWF,MF
017	40	15	29	76	53	01	Front and Market	Susquehanna River	WWF,MF
018	40	15	22	76	52	50	Front and Mulberry	Susquehanna River	WWF,MF
019	40	15	18	76	52	43	Front and Paxton	Susquehanna River	WWF,MF
020	40	15	07	76	52	32	Front and Hanna	Susquehanna River	WWF,MF
049	40	17	03	76	54	12	Front and Schuylkill	Susquehanna River	WWF,MF
050	40	16	57	76	54	09	Seneca and Susquehanna	Susquehanna River	WWF,MF
051	40	16	45	76	54	03	Woodbine and Green	Susquehanna River	WWF,MF
052	40	15	44	76	53	21	Front and State	Susquehanna River	WWF,MF
053	40	15	42	76	53	18	Front and South	Susquehanna River	WWF,MF
054	40	15	38	76	53	14	Front and Pine	Susquehanna River	WWF,MF
055	40	15	34	76	53	08	Front and Locust	Susquehanna River	WWF,MF
056	40	15	32	76	53	05	Front and Walnut	Susquehanna River	WWF,MF
057	40	15	24	76	52	52	Cherry and Mulberry	Susquehanna River	WWF,MF
058	40	15	10	76	52	33	Front and Tuscarora	Susquehanna River	WWF,MF

The Combined Sewer Overflow Long-Term Control Plan (LCTP) developed in 2018 was determined to be inadequate by US EPA. Modification to Partial Consent Decree (Consent Decree; Civil Action No. 1:15-cv-00291-CCC) was filed on February 13, 2023 and currently open for public comments. This Consent Decree indicated that Harrisburg is required to complete and submit a revised and updated LTCP by December 31, 2024. At this time, DEP has included standard CSO conditions in the permit that referencing this Modification to Partial Consent Decree, but DEP may reopen this permit to include specific conditions tailormade to the updated LTCP once the updated LTCP is approved.

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" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5	7860	12577	XXX	25.0	40.0	50	1/day	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/day	24-Hr Composite
TSS	9433	14149	XXX	30.0	45.0	60	1/day	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/day	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs) Effluent Net	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	629	XXX	XXX	2.0	XXX	4	1/day	24-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs) Effluent Net	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
UV Dosage (mjoules/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Total Aluminum	XXX	XXX	XXX	XXX	XXX	XXX	1/week	24-Hr Composite
Total Zinc	XXX	XXX	XXX	XXX	XXX	XXX	1/week	24-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen (lbs) Effluent Net	XXX	688575 Total Annual	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs) Effluent Net	XXX	91810 Total Annual	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/month	Calculation

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	PENTOXSD for Windows Model (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Toxics Screening Analysis Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

Attachments

1. WQM 7.0

Input Data WQM 7.0

	SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
	07K	6685	SUSQUEHANNA RIVER	70.220	293.00	24084.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.033	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	25.00	7.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Lemoyne Borough	PA0026441	2.0880	2.0880	2.0880	0.000	25.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6885	SUSQUEHANNA RIVER	**69.230**	292.00	24086.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.033	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	25.00	7.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
New Cumberland	PA0026654	1.2500	1.2500	1.2500	0.000	25.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6685	SUSQUEHANNA RIVER	**68.700**	288.00	24100.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.033	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	25.00	7.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Harrisburg AWTP	PA0027197	37.7000	37.7000	37.7000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	11.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6685	SUSQUEHANNA RIVER	**68.300**	287.00	24299.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.033	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	25.00	7.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Fairview&Allen	PA0081868	8.2260	8.2260	8.2260	0.000	25.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6685	SUSQUEHANNA RIVER	**68.240**	286.00	24300.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.033	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	25.00	7.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

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

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
70.220	794.77	0.00	794.77	3.2301	0.00019	1.246	687.52	551.61	0.93	0.065	25.00	7.00
69.230	794.84	0.00	794.84	5.1639	0.00143	1.233	623.06	505.44	1.04	0.031	25.00	7.00
68.700	795.30	0.00	795.30	63.4858	0.00047	1.213	694.29	572.43	1.02	0.024	25.00	7.00
68.300	801.87	0.00	801.87	76.2114	0.00316	1.271	603.45	474.73	1.14	0.003	25.00	7.00
Q1-10 Flow												
70.220	508.65	0.00	508.65	3.2301	0.00019	NA	NA	NA	0.73	0.083	25.00	7.00
69.230	508.70	0.00	508.70	5.1639	0.00143	NA	NA	NA	0.81	0.040	25.00	7.00
68.700	508.99	0.00	508.99	63.4858	0.00047	NA	NA	NA	0.81	0.030	25.00	7.00
68.300	513.19	0.00	513.19	76.2114	0.00316	NA	NA	NA	0.92	0.004	25.00	7.00
Q30-10 Flow												
70.220	1080.89	0.00	1080.89	3.2301	0.00019	NA	NA	NA	1.11	0.055	25.00	7.00
69.230	1080.98	0.00	1080.98	5.1639	0.00143	NA	NA	NA	1.24	0.026	25.00	7.00
68.700	1081.61	0.00	1081.61	63.4858	0.00047	NA	NA	NA	1.20	0.020	25.00	7.00
68.300	1090.54	0.00	1090.54	76.2114	0.00316	NA	NA	NA	1.34	0.003	25.00	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
70.220	2.088	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
687.521	1.246	551.614	0.931
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.09	0.068	0.10	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.230	0.936	Tsivoglou	5
Reach Travel Time (days)			
0.065			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.006	2.09	0.10	7.54
0.013	2.09	0.10	7.54
0.019	2.09	0.10	7.54
0.026	2.09	0.10	7.54
0.032	2.09	0.10	7.54
0.039	2.09	0.10	7.54
0.045	2.08	0.10	7.54
0.052	2.08	0.10	7.54
0.058	2.08	0.10	7.54
0.065	2.08	0.09	7.54

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
69.230	3.338	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
623.057	1.233	505.444	1.042
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.14	0.102	0.15	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.532	7.819	Tsivoglou	5
Reach Travel Time (days)			
0.031			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.003	2.14	0.15	7.54
0.006	2.14	0.15	7.54
0.009	2.13	0.15	7.54
0.012	2.13	0.15	7.54
0.016	2.13	0.15	7.54
0.019	2.13	0.15	7.54
0.022	2.13	0.15	7.54
0.025	2.13	0.15	7.54
0.028	2.13	0.15	7.54
0.031	2.13	0.15	7.54

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
68.700	41.038	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
694.287	1.213	572.425	1.020
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.68	0.737	0.89	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.366	2.536	Tsivoglou	5
Reach Travel Time (days)			
0.024			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.002	3.67	0.88	7.35
0.005	3.67	0.88	7.33
0.007	3.66	0.88	7.32
0.010	3.65	0.88	7.30
0.012	3.64	0.88	7.29
0.014	3.63	0.87	7.27
0.017	3.62	0.87	7.26
0.019	3.62	0.87	7.24
0.022	3.61	0.87	7.23
0.024	3.60	0.87	7.21

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
68.300	49.264	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
603.446	1.271	474.732	1.145
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.90	0.796	1.21	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.188	18.975	Tsivoglou	5
Reach Travel Time (days)			
0.003			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.000	3.90	1.21	7.19
0.001	3.90	1.21	7.20
0.001	3.89	1.21	7.20
0.001	3.89	1.21	7.20
0.002	3.89	1.21	7.21
0.002	3.89	1.21	7.21
0.002	3.89	1.21	7.21
0.003	3.89	1.21	7.22
0.003	3.89	1.20	7.22
0.003	3.89	1.20	7.22

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
70.220	Lemoyne Boroug	11.07	50	11.07	50	0	0
69.230	New Cumberland	11.07	50	11.07	50	0	0
68.700	Harrisburg AWTP	11.07	22	11.07	22	0	0
68.300	Fairview&Allen	11.07	50	11.07	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
70.220	Lemoyne Boroug	1.37	25	1.37	25	0	0
69.230	New Cumberland	1.37	25	1.37	25	0	0
68.700	Harrisburg AWTP	1.37	11	1.37	11	0	0
68.300	Fairview&Allen	1.37	25	1.37	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
70.22	Lemoyne Borough	25	25	25	25	5	5	0	0
69.23	New Cumberland	25	25	25	25	5	5	0	0
68.70	Harrisburg AWTP	25	25	11	11	5	5	0	0
68.30	Fairview&Allen	25	25	25	25	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
70.220	Lemoyne Borough	PA0026441	2.088	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
69.230	New Cumberland	PA0026654	1.250	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
68.700	Harrisburg AWTP	PA0027197	37.700	CBOD5	25		
				NH3-N	11	22	
				Dissolved Oxygen			5

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
68.300	Fairview&Allen	PA0081868	8.226	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

2. Toxics Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: Harrisburg AWTF NPDES Permit No.: PA0027197 Outfall No.: 001

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
37.7	201	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		472									
	Chloride (PWS)	mg/L		110									
	Bromide	mg/L	<	0.6									
	Sulfate (PWS)	mg/L		40									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		78									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	1.5									
	Total Barium	µg/L		28									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L		100									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L	<	1									
	Hexavalent Chromium	µg/L		0.25									
	Total Cobalt	µg/L	<	2.5									
	Total Copper	µg/L	<	2.5									
	Free Cyanide	µg/L		2									
	Total Cyanide	µg/L	<	1									
	Dissolved Iron	µg/L	<	21									
	Total Iron	µg/L		190									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		120									
	Total Mercury	µg/L		0.0014									
	Total Nickel	µg/L	<	2.5									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	2									
	Total Silver	µg/L	<	0.5									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	µg/L		56									
	Total Molybdenum	µg/L		1.8									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	5									
	Benzene	µg/L	<	1									
	Bromoform	µg/L	<	1									

Group 3	Carbon Tetrachloride	µg/L	<	0.5									
	Chlorobenzene	µg/L	<	1									
	Chlorodibromomethane	µg/L	<	1									
	Chloroethane	µg/L	<	2									
	2-Chloroethyl Vinyl Ether	µg/L	<	1									
	Chloroform	µg/L	<	1									
	Dichlorobromomethane	µg/L	<										
	1,1-Dichloroethane	µg/L	<	1									
	1,2-Dichloroethane	µg/L	<	1									
	1,1-Dichloroethylene	µg/L	<	1									
	1,2-Dichloropropane	µg/L	<	1									
	1,3-Dichloropropylene	µg/L	<	0.5									
	1,4-Dioxane	µg/L	<	1									
	Ethylbenzene	µg/L	<	1									
	Methyl Bromide	µg/L	<	1									
	Methyl Chloride	µg/L	<	1									
	Methylene Chloride	µg/L	<	1									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5									
	Tetrachloroethylene	µg/L	<	1									
	Toluene	µg/L	<	1									
	1,2-trans-Dichloroethylene	µg/L	<	1									
	1,1,1-Trichloroethane	µg/L	<	1									
	1,1,2-Trichloroethane	µg/L	<	1									
	Trichloroethylene	µg/L	<	1									
	Vinyl Chloride	µg/L	<	0.5									
Group 4	2-Chlorophenol	µg/L	<	2.8									
	2,4-Dichlorophenol	µg/L	<	5.7									
	2,4-Dimethylphenol	µg/L	<	2.8									
	4,6-Dinitro-o-Cresol	µg/L	<	2.8									
	2,4-Dinitrophenol	µg/L	<	2.8									
	2-Nitrophenol	µg/L	<	2.8									
	4-Nitrophenol	µg/L	<	2.8									
	p-Chloro-m-Cresol	µg/L	<	2.8									
	Pentachlorophenol	µg/L	<	5.7									
	Phenol	µg/L	<	7.5									
	2,4,6-Trichlorophenol	µg/L	<	2.8									
Group 5	Acenaphthene	µg/L	<	1.4									
	Acenaphthylene	µg/L	<	1.4									
	Anthracene	µg/L	<	1.4									
	Benzidine	µg/L	<	7.7									
	Benzo(a)Anthracene	µg/L	<	1.4									
	Benzo(a)Pyrene	µg/L	<	1.4									
	3,4-Benzofluoranthene	µg/L	<	1.4									
	Benzo(ghi)Perylene	µg/L	<	1.4									
	Benzo(k)Fluoranthene	µg/L	<	2.5									
	Bis(2-Chloroethoxy)Methane	µg/L	<	2.9									
	Bis(2-Chloroethyl)Ether	µg/L	<	2.9									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	2.9									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	2.9									
	4-Bromophenyl Phenyl Ether	µg/L	<	2.9									
	Butyl Benzyl Phthalate	µg/L	<	2.9									
	2-Chloronaphthalene	µg/L	<	2.9									
	4-Chlorophenyl Phenyl Ether	µg/L	<	2.9									
	Chrysene	µg/L	<	1.4									
	Dibenzo(a,h)Anthrancene	µg/L	<	1.4									
	1,2-Dichlorobenzene	µg/L	<	1									
	1,3-Dichlorobenzene	µg/L	<	1									
	1,4-Dichlorobenzene	µg/L	<	1									
	3,3-Dichlorobenzidine	µg/L	<	2.9									
	Diethyl Phthalate	µg/L	<	2.9									
	Dimethyl Phthalate	µg/L	<	2.9									
	Di-n-Butyl Phthalate	µg/L	<	2.9									
	2,4-Dinitrotoluene	µg/L	<	2.9									

	2,6-Dinitrotoluene	µg/L	<	2.9										
	Di-n-Octyl Phthalate	µg/L	<	2.9										
	1,2-Diphenylhydrazine	µg/L	<	2.9										
	Fluoranthene	µg/L	<	1.4										
	Fluorene	µg/L	<	1.4										
	Hexachlorobenzene	µg/L	<	2.9										
	Hexachlorobutadiene	µg/L	<	0.5										
	Hexachlorocyclopentadiene	µg/L	<	2.9										
	Hexachloroethane	µg/L	<	2.9										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	1.4										
	Isophorone	µg/L	<	2.9										
	Naphthalene	µg/L	<	1.4										
	Nitrobenzene	µg/L	<	2.9										
	n-Nitrosodimethylamine	µg/L	<	2.9										
	n-Nitrosodi-n-Propylamine	µg/L	<	2.9										
	n-Nitrosodiphenylamine	µg/L	<	2.9										
	Phenanthrene	µg/L	<	2.5										
	Pyrene	µg/L	<	7.7										
	1,2,4-Trichlorobenzene	µg/L	<	0.5										
Group 6	Aldrin	µg/L	<	0.019										
	alpha-BHC	µg/L	<	0.019										
	beta-BHC	µg/L	<	0.019										
	gamma-BHC	µg/L	<	0.019										
	delta BHC	µg/L	<	0.019										
	Chlordane	µg/L	<	0.19										
	4,4-DDT	µg/L	<	0.019										
	4,4-DDE	µg/L	<	0.019										
	4,4-DDD	µg/L	<	0.019										
	Dieldrin	µg/L	<	0.019										
	alpha-Endosulfan	µg/L	<	0.019										
	beta-Endosulfan	µg/L	<	0.019										
	Endosulfan Sulfate	µg/L	<	0.019										
	Endrin	µg/L	<	0.019										
	Endrin Aldehyde	µg/L	<	0.019										
	Heptachlor	µg/L	<	0.019										
	Heptachlor Epoxide	µg/L	<	0.019										
	PCB-1016	µg/L	<	0.46										
	PCB-1221	µg/L	<	0.46										
	PCB-1232	µg/L	<	0.46										
	PCB-1242	µg/L	<	0.46										
	PCB-1248	µg/L	<	0.46										
	PCB-1254	µg/L	<	0.46										
	PCB-1260	µg/L	<	0.46										
	PCBs, Total	µg/L	<	0.46										
	Toxaphene	µg/L	<	0.5										
	2,3,7,8-TCDD	ng/L	<											
Group 7	Gross Alpha	pCi/L												
	Total Beta	pCi/L	<											
	Radium 226/228	pCi/L	<											
	Total Strontium	µg/L	<											
	Total Uranium	µg/L	<											
	Osmotic Pressure	mOs/kg												

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Harrisburg AWTF, NPDES Permit No. PA0027197, Outfall 001

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 (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	006685	68.8	288	24100			Yes
End of Reach 1	006685	68.3	287	24299			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	68.8	0.1327										161	7		
End of Reach 1	68.3	0.1327													

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	68.8														
End of Reach 1	68.3														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Harrisburg AWTF, NPDES Permit No. PA0027197, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.005 Analysis Hardness (mg/l): 192.28 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	959	
Total Antimony	0	0		0	1,100	1,100	1,407	
Total Arsenic	0	0		0	340	340	435	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	26,856	
Total Boron	0	0		0	8,100	8,100	10,359	
Total Cadmium	0	0		0	3.801	4.15	5.3	Chem Translator of 0.917 applied
Total Chromium (III)	0	0		0	973.266	3,080	3,939	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	20.8	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	121	
Total Copper	0	0		0	24.882	25.9	33.1	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	28.1	
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	130.562	188	240	Chem Translator of 0.696 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	2.11	Chem Translator of 0.85 applied
Total Nickel	0	0		0	814.081	816	1,043	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	9.903	11.7	14.9	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	83.1	
Total Zinc	0	0		0	203.905	208	267	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	3.84	

Acrylonitrile	0	0		0	650	650	831	
Benzene	0	0		0	640	640	818	
Bromoform	0	0		0	1,800	1,800	2,302	
Carbon Tetrachloride	0	0		0	2,800	2,800	3,581	
Chlorobenzene	0	0		0	1,200	1,200	1,535	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	23,020	
Chloroform	0	0		0	1,900	1,900	2,430	
1,2-Dichloroethane	0	0		0	15,000	15,000	19,183	
1,1-Dichloroethylene	0	0		0	7,500	7,500	9,592	
1,2-Dichloropropane	0	0		0	11,000	11,000	14,068	
1,3-Dichloropropylene	0	0		0	310	310	396	
Ethylbenzene	0	0		0	2,900	2,900	3,709	
Methyl Bromide	0	0		0	550	550	703	
Methyl Chloride	0	0		0	28,000	28,000	35,809	
Methylene Chloride	0	0		0	12,000	12,000	15,347	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,279	
Tetrachloroethylene	0	0		0	700	700	895	
Toluene	0	0		0	1,700	1,700	2,174	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	8,696	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	3,837	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	4,348	
Trichloroethylene	0	0		0	2,300	2,300	2,941	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	716	
2,4-Dichlorophenol	0	0		0	1,700	1,700	2,174	
2,4-Dimethylphenol	0	0		0	660	660	844	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	102	
2,4-Dinitrophenol	0	0		0	660	660	844	
2-Nitrophenol	0	0		0	8,000	8,000	10,231	
4-Nitrophenol	0	0		0	2,300	2,300	2,941	
p-Chloro-m-Cresol	0	0		0	160	160	205	
Pentachlorophenol	0	0		0	8.723	8.72	11.2	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	588	
Acenaphthene	0	0		0	83	83.0	106	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	384	
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.64	
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	38,366	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	5,755	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	345	
Butyl Benzyl Phthalate	0	0		0	140	140	179	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	

Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	1,049	
1,3-Dichlorobenzene	0	0		0	350	350	448	
1,4-Dichlorobenzene	0	0		0	730	730	934	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	5,116	
Dimethyl Phthalate	0	0		0	2,500	2,500	3,197	
Di-n-Butyl Phthalate	0	0		0	110	110	141	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	2,046	
2,6-Dinitrotoluene	0	0		0	990	990	1,266	
1,2-Diphenylhydrazine	0	0		0	15	15.0	19.2	
Fluoranthene	0	0		0	200	200	256	
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	12.8	
Hexachlorocyclopentadiene	0	0		0	5	5.0	6.39	
Hexachloroethane	0	0		0	60	60.0	76.7	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	12,789	
Naphthalene	0	0		0	140	140	179	
Nitrobenzene	0	0		0	4,000	4,000	5,116	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	21,741	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	384	
Phenanthrene	0	0		0	5	5.0	6.39	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	166	
Aldrin	0	0		0	3	3.0	3.84	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	0.95	0.95	1.21	
Chlordane	0	0		0	2.4	2.4	3.07	
4,4-DDT	0	0		0	1.1	1.1	1.41	
4,4-DDE	0	0		0	1.1	1.1	1.41	
4,4-DDD	0	0		0	1.1	1.1	1.41	
Dieldrin	0	0		0	0.24	0.24	0.31	
alpha-Endosulfan	0	0		0	0.22	0.22	0.28	
beta-Endosulfan	0	0		0	0.22	0.22	0.28	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.086	0.086	0.11	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.52	0.52	0.67	
Heptachlor Epoxide	0	0		0	0.5	0.5	0.64	
PCBs, Total	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	0.73	0.73	0.93	

☑ ***CFC*** CCT (min): 720 PMF: 0.035 Analysis Hardness (mg/l): 174.64 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	645	
Total Arsenic	0	0		0	150	150	440	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	12,022	
Total Boron	0	0		0	1,600	1,600	4,691	
Total Cadmium	0	0		0	0.362	0.41	1.2	Chem Translator of 0.886 applied
Total Chromium (III)	0	0		0	117.010	136	399	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	30.5	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	55.7	
Total Copper	0	0		0	14.422	15.0	44.0	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	15.2	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	83,752	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	4.592	6.47	19.0	Chem Translator of 0.71 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	2.66	Chem Translator of 0.85 applied
Total Nickel	0	0		0	83.352	83.6	245	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	14.6	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	38.1	
Total Zinc	0	0		0	189.481	192	563	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	8.8	
Acrylonitrile	0	0		0	130	130	381	
Benzene	0	0		0	130	130	381	
Bromoform	0	0		0	370	370	1,085	
Carbon Tetrachloride	0	0		0	560	560	1,642	
Chlorobenzene	0	0		0	240	240	704	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	10,262	
Chloroform	0	0		0	390	390	1,144	
1,2-Dichloroethane	0	0		0	3,100	3,100	9,090	
1,1-Dichloroethylene	0	0		0	1,500	1,500	4,398	
1,2-Dichloropropane	0	0		0	2,200	2,200	6,451	
1,3-Dichloropropylene	0	0		0	61	61.0	179	
Ethylbenzene	0	0		0	580	580	1,701	
Methyl Bromide	0	0		0	110	110	323	
Methyl Chloride	0	0		0	5,500	5,500	16,127	

Methylene Chloride	0	0		0	2,400	2,400	7,037	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	616	
Tetrachloroethylene	0	0		0	140	140	410	
Toluene	0	0		0	330	330	968	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	4,105	
1,1,1-Trichloroethane	0	0		0	610	610	1,789	
1,1,2-Trichloroethane	0	0		0	680	680	1,994	
Trichloroethylene	0	0		0	450	450	1,319	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	323	
2,4-Dichlorophenol	0	0		0	340	340	997	
2,4-Dimethylphenol	0	0		0	130	130	381	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	46.9	
2,4-Dinitrophenol	0	0		0	130	130	381	
2-Nitrophenol	0	0		0	1,600	1,600	4,691	
4-Nitrophenol	0	0		0	470	470	1,378	
p-Chloro-m-Cresol	0	0		0	500	500	1,466	
Pentachlorophenol	0	0		0	6.693	6.69	19.6	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	267	
Acenaphthene	0	0		0	17	17.0	49.8	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	173	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.29	
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	17,593	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	2,668	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	158	
Butyl Benzyl Phthalate	0	0		0	35	35.0	103	
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	469	
1,3-Dichlorobenzene	0	0		0	69	69.0	202	
1,4-Dichlorobenzene	0	0		0	150	150	440	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	2,346	
Dimethyl Phthalate	0	0		0	500	500	1,466	
Di-n-Butyl Phthalate	0	0		0	21	21.0	61.6	
2,4-Dinitrotoluene	0	0		0	320	320	938	
2,6-Dinitrotoluene	0	0		0	200	200	586	
1,2-Diphenylhydrazine	0	0		0	3	3.0	8.8	

Fluoranthene	0	0		0	40	40.0	117	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	5.86	
Hexachlorocyclopentadiene	0	0		0	1	1.0	2.93	
Hexachloroethane	0	0		0	12	12.0	35.2	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	6,157	
Naphthalene	0	0		0	43	43.0	126	
Nitrobenzene	0	0		0	810	810	2,375	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	9,969	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	173	
Phenanthrene	0	0		0	1	1.0	2.93	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	76.2	
Aldrin	0	0		0	0.1	0.1	0.29	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0043	0.004	0.013	
4,4-DDT	0	0		0	0.001	0.001	0.003	
4,4-DDE	0	0		0	0.001	0.001	0.003	
4,4-DDD	0	0		0	0.001	0.001	0.003	
Dieldrin	0	0		0	0.056	0.056	0.16	
alpha-Endosulfan	0	0		0	0.056	0.056	0.16	
beta-Endosulfan	0	0		0	0.056	0.056	0.16	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.036	0.036	0.11	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.0038	0.004	0.011	
Heptachlor Epoxide	0	0		0	0.0038	0.004	0.011	
PCBs, Total	0	0		0	0.014	0.014	0.041	
Toxaphene	0	0		0	0.0002	0.0002	0.0006	

☑ ***THH*** CCT (min): 720 PMF: 0.035 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	16.4	

Total Arsenic	0	0		0	10	10.0	29.3	
Total Barium	0	0		0	2,400	2,400	7,037	
Total Boron	0	0		0	3,100	3,100	9,090	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	4	4.0	11.7	
Dissolved Iron	0	0		0	300	300	880	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	2,932	
Total Mercury	0	0		0	0.050	0.05	0.15	
Total Nickel	0	0		0	610	610	1,789	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.7	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	8.8	
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	293	
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	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	96.8	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	199	
Methyl Bromide	0	0		0	100	100.0	293	
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	167	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	293	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	29,321	
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	88.0	
2,4-Dichlorophenol	0	0		0	10	10.0	29.3	
2,4-Dimethylphenol	0	0		0	100	100.0	293	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	5.86	
2,4-Dinitrophenol	0	0		0	10	10.0	29.3	
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	11,729	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	205	
Anthracene	0	0		0	300	300	880	
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	586	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	0.29	
2-Chloronaphthalene	0	0		0	800	800	2,346	
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	2,932	
1,3-Dichlorobenzene	0	0		0	7	7.0	20.5	
1,4-Dichlorobenzene	0	0		0	300	300	880	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	1,759	
Dimethyl Phthalate	0	0		0	2,000	2,000	5,864	
Di-n-Butyl Phthalate	0	0		0	20	20.0	58.6	
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	58.6	
Fluorene	0	0		0	50	50.0	147	
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	11.7	
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	99.7	
Naphthalene	0	0		0	N/A	N/A	N/A	

Nitrobenzene	0	0		0	10	10.0	29.3	
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	58.6	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.21	
Aldrin	0	0		0	N/A	N/A	N/A	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	4.2	4.2	12.3	
Chlordane	0	0		0	N/A	N/A	N/A	
4,4-DDT	0	0		0	N/A	N/A	N/A	
4,4-DDE	0	0		0	N/A	N/A	N/A	
4,4-DDD	0	0		0	N/A	N/A	N/A	
Dieldrin	0	0		0	N/A	N/A	N/A	
alpha-Endosulfan	0	0		0	20	20.0	58.6	
beta-Endosulfan	0	0		0	20	20.0	58.6	
Endosulfan Sulfate	0	0		0	20	20.0	58.6	
Endrin	0	0		0	0.03	0.03	0.088	
Endrin Aldehyde	0	0		0	1	1.0	2.93	
Heptachlor	0	0		0	N/A	N/A	N/A	
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A	
PCBs, Total	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 720 PMF: 0.048 Analysis Hardness (mg/l): N/A Analysis pH: N/A

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

Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	0.49	
Benzene	0	0		0	0.58	0.58	4.69	
Bromoform	0	0		0	7	7.0	56.6	
Carbon Tetrachloride	0	0		0	0.4	0.4	3.24	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	6.47	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	46.1	
1,2-Dichloroethane	0	0		0	9.9	9.9	80.1	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	7.28	
1,3-Dichloropropylene	0	0		0	0.27	0.27	2.18	
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	162	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	1.62	
Tetrachloroethylene	0	0		0	10	10.0	80.9	
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	4.45	
Trichloroethylene	0	0		0	0.6	0.6	4.85	
Vinyl Chloride	0	0		0	0.02	0.02	0.16	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	0.24	

Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	12.1	
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	0.0008	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.008	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.0008	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.008	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.081	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.24	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	2.59	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	0.97	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.0008	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	0.4	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	0.4	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.4	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.24	
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	0.0006	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.081	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	0.81	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.008	
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	0.006	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.04	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	26.7	
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	
Aldrin	0	0		0	0.0000008	8.00E-07	0.000006	
alpha-BHC	0	0		0	0.0004	0.0004	0.003	

beta-BHC	0	0		0	0.008	0.008	0.065	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0003	0.0003	0.002	
4,4-DDT	0	0		0	0.00003	0.00003	0.0002	
4,4-DDE	0	0		0	0.00002	0.00002	0.0002	
4,4-DDD	0	0		0	0.0001	0.0001	0.0008	
Dieldrin	0	0		0	0.000001	0.000001	0.000008	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000006	0.000006	0.00005	
Heptachlor Epoxide	0	0		0	0.00003	0.00003	0.0002	
PCBs, Total	0	0		0	0.000064	0.00006	0.0005	
Toxaphene	0	0		0	0.0007	0.0007	0.006	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	750	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	208	AFC	Discharge Conc > 10% WQBEL (no RP)

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

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

Pollutants	Governing	Units	Comments

Pollutants	WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	7,037	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	4,691	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	1.2	µg/L	Discharge Conc < TQL
Total Chromium (III)	399	µg/L	Discharge Conc < TQL
Hexavalent Chromium	16.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	55.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	25.9	µg/L	Discharge Conc < TQL
Free Cyanide	11.7	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	880	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	83,752	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	19.0	µg/L	Discharge Conc < TQL
Total Manganese	2,932	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.15	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	245	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	14.6	µg/L	Discharge Conc < TQL
Total Silver	11.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	0.7	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.0	µg/L	Discharge Conc < TQL
Acrylonitrile	0.49	µg/L	Discharge Conc < TQL
Benzene	4.69	µg/L	Discharge Conc ≤ 25% WQBEL
Bromoform	56.6	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	3.24	µg/L	Discharge Conc < TQL
Chlorobenzene	293	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	6.47	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	10,262	µg/L	Discharge Conc < TQL
Chloroform	46.1	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	80.1	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	96.8	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichloropropane	7.28	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	2.18	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	199	µg/L	Discharge Conc ≤ 25% WQBEL

Methyl Bromide	293	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	16,127	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	162	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	1.62	µg/L	Discharge Conc < TQL
Tetrachloroethylene	80.9	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	167	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	293	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	1,789	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	4.45	µg/L	Discharge Conc ≤ 25% WQBEL
Trichloroethylene	4.85	µg/L	Discharge Conc ≤ 25% WQBEL
Vinyl Chloride	0.16	µg/L	Discharge Conc < TQL
2-Chlorophenol	88.0	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	29.3	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	293	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	5.86	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	29.3	µg/L	Discharge Conc < TQL
2-Nitrophenol	4,691	µg/L	Discharge Conc < TQL
4-Nitrophenol	1,378	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	160	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.24	µg/L	Discharge Conc < TQL
Phenol	11,729	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	12.1	µg/L	Discharge Conc < TQL
Acenaphthene	49.8	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	880	µg/L	Discharge Conc < TQL
Benzidine	0.0008	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.008	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.0008	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.008	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.081	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.24	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	586	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	2.59	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	158	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.29	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	2,346	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.97	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.0008	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	469	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	20.5	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	440	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	0.4	µg/L	Discharge Conc < TQL

Diethyl Phthalate	1,759	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	1,466	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	58.6	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	0.4	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.4	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.24	µg/L	Discharge Conc < TQL
Fluoranthene	58.6	µg/L	Discharge Conc < TQL
Fluorene	147	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.0006	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.081	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	2.93	µg/L	Discharge Conc < TQL
Hexachloroethane	0.81	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.008	µg/L	Discharge Conc < TQL
Isophorone	99.7	µg/L	Discharge Conc < TQL
Naphthalene	126	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	29.3	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.006	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.04	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	26.7	µg/L	Discharge Conc < TQL
Phenanthrene	2.93	µg/L	Discharge Conc < TQL
Pyrene	58.6	µg/L	Discharge Conc ≤ 25% WQBEL
1,2,4-Trichlorobenzene	0.21	µg/L	Discharge Conc < TQL
Aldrin	0.000006	µg/L	Discharge Conc < TQL
alpha-BHC	0.003	µg/L	Discharge Conc < TQL
beta-BHC	0.065	µg/L	Discharge Conc < TQL
gamma-BHC	0.95	µg/L	Discharge Conc < TQL
delta BHC	N/A	N/A	No WQS
Chlordane	0.002	µg/L	Discharge Conc < TQL
4,4-DDT	0.0002	µg/L	Discharge Conc < TQL
4,4-DDE	0.0002	µg/L	Discharge Conc < TQL
4,4-DDD	0.0008	µg/L	Discharge Conc < TQL
Dieldrin	0.000008	µg/L	Discharge Conc < TQL
alpha-Endosulfan	0.16	µg/L	Discharge Conc < TQL
beta-Endosulfan	0.16	µg/L	Discharge Conc < TQL
Endosulfan Sulfate	58.6	µg/L	Discharge Conc < TQL
Endrin	0.086	µg/L	Discharge Conc < TQL
Endrin Aldehyde	2.93	µg/L	Discharge Conc < TQL
Heptachlor	0.00005	µg/L	Discharge Conc < TQL
Heptachlor Epoxide	0.0002	µg/L	Discharge Conc < TQL
PCB-1016	N/A	N/A	No WQS
PCB-1221	N/A	N/A	No WQS
PCB-1232	N/A	N/A	No WQS
PCB-1242	N/A	N/A	No WQS
PCB-1248	N/A	N/A	No WQS

PCB-1254	N/A	N/A	No WQS
PCB-1260	N/A	N/A	No WQS
PCBs, Total	0.0005	µg/L	Discharge Conc < TQL
Toxaphene	0.0006	µg/L	Discharge Conc < TQL

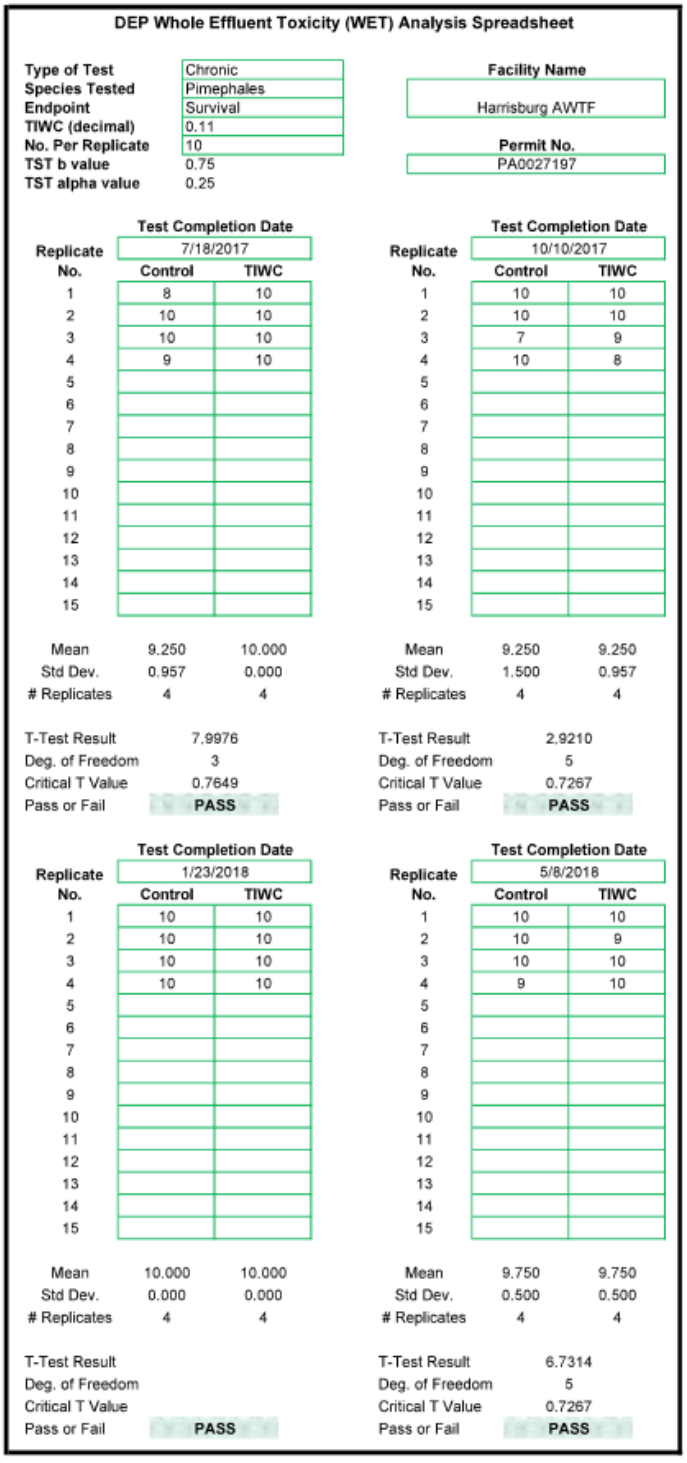
3. TRC_CALC Spreadsheet

TRC_CALC

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	**Input appropriate values in B4:B8 and E4:E7**					
4	800	= Q stream (cfs)		0.5	= CV Daily	
5	37.7	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)			=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 4.395		1.3.2.iii	WLA cfc = 4.277
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 1.638		5.1d	LTA_cfc = 2.486
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
18			INST MAX LIMIT (mg/l) = 1.635			

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)

4. WET Analysis Spreadsheet



DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.11
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Harrisburg AWTF

Permit No.: PA0027197

Test Completion Date: 7/18/2017

Replicate No.	Control	TIWC
1	8	10
2	10	10
3	10	10
4	9	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.250	10.000
Std Dev.	0.957	0.000
# Replicates	4	4

T-Test Result: 7.9976
Deg. of Freedom: 3
Critical T Value: 0.7649
Pass or Fail: **PASS**

Test Completion Date: 10/10/2017

Replicate No.	Control	TIWC
1	10	10
2	10	10
3	7	9
4	10	8
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.250	9.250
Std Dev.	1.500	0.957
# Replicates	4	4

T-Test Result: 2.9210
Deg. of Freedom: 5
Critical T Value: 0.7267
Pass or Fail: **PASS**

Test Completion Date: 1/23/2018

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

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

Test Completion Date: 5/8/2018

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

T-Test Result: 6.7314
Deg. of Freedom: 5
Critical T Value: 0.7267
Pass or Fail: **PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.11
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name

Harrisburg AWTF

Permit No.

PA0027197

Replicate No.	Test Completion Date: 7/18/2017 Control	TIWC
1	0.285	0.312
2	0.31	0.387
3	0.26	0.394
4	0.271	0.388
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.282	0.370
Std Dev.	0.022	0.039
# Replicates	4	4

T-Test Result	7.5443
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

Replicate No.	Test Completion Date: 10/10/2017 Control	TIWC
1	0.327	0.357
2	0.355	0.315
3	0.292	0.301
4	0.385	0.319
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.340	0.323
Std Dev.	0.040	0.024
# Replicates	4	4

T-Test Result	3.5705
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Replicate No.	Test Completion Date: 1/23/2018 Control	TIWC
1	0.327	0.265
2	0.343	0.35
3	0.361	0.303
4	0.359	0.301
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.348	0.305
Std Dev.	0.016	0.035
# Replicates	4	4

T-Test Result	2.3961
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

Replicate No.	Test Completion Date: 5/8/2018 Control	TIWC
1	0.498	0.516
2	0.46	0.457
3	0.428	0.457
4	0.486	0.522
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.468	0.488
Std Dev.	0.031	0.036
# Replicates	4	4

T-Test Result	6.4071
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.11
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name

Harrisburg AWTF

Permit No.

PA0027197

Test Completion Date: 7/18/2017

Replicate No.	Control	TIWC
1	1	0
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	0.900
Std Dev.	0.000	0.316
# Replicates	10	10
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Test Completion Date: 10/9/2017

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Test Completion Date: 1/23/2018

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Test Completion Date: 5/7/2018

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.11
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.2

Facility Name: Harrisburg AWTF

Permit No.: PA0027197

Test Completion Date: 7/18/2017

Replicate No.	Control	TIWC
1	34	30
2	35	31
3	28	36
4	30	30
5	30	36
6	32	40
7	30	37
8	31	26
9	32	35
10	33	
11		
12		
13		
14		
15		
Mean	31.500	33.444
Std Dev.	2.121	4.419
# Replicates	10	9

T-Test Result	6.3084
Deg. of Freedom	11
Critical T Value	0.8755
Pass or Fail	PASS

Test Completion Date: 10/9/2017

Replicate No.	Control	TIWC
1	28	25
2	30	27
3	34	33
4	26	30
5	27	34
6	30	27
7	25	28
8	23	30
9	29	29
10	26	34
11		
12		
13		
14		
15		
Mean	27.800	29.700
Std Dev.	3.120	3.129
# Replicates	10	10

T-Test Result	7.1633
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

Test Completion Date: 1/23/2018

Replicate No.	Control	TIWC
1	11	15
2	15	19
3	25	21
4	29	8
5	14	18
6	20	14
7	8	18
8	18	11
9	13	19
10	15	19
11		
12		
13		
14		
15		
Mean	16.800	16.200
Std Dev.	6.391	4.131
# Replicates	10	10

T-Test Result	1.7991
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Test Completion Date: 5/7/2018

Replicate No.	Control	TIWC
1	34	31
2	32	32
3	31	37
4	37	29
5	30	28
6	36	28
7	32	27
8	31	30
9	28	25
10	30	37
11		
12		
13		
14		
15		
Mean	32.100	30.400
Std Dev.	2.807	4.006
# Replicates	10	10

T-Test Result	4.4202
Deg. of Freedom	15
Critical T Value	0.8662
Pass or Fail	PASS

WET Summary and Evaluation

Facility Name	Harrisburg AWTF
Permit No.	PA0027197
Design Flow (MGD)	37.7
Q_{7-10} Flow (cfs)	3200
PMF_a	0.005
PMF_c	0.035

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	7/18/17	10/10/17	1/23/18	5/8/18
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	7/18/17	10/10/17	1/23/18	5/8/18
Pimephales	Growth	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	7/18/17	10/9/17	1/23/18	5/7/18
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	7/18/17	10/9/17	1/23/18	5/7/18
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**
TIWC	**34** % Effluent
Dilution Series	**9, 17, 34, 67, 100** % Effluent
Permit Limit	**None**
Permit Limit Species	