Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0027120**
Facility Type	**Municipal**	APS ID	**1062503**
Major / Minor	**Major**	Authorization ID	**1394868**

Applicant and Facility Information

Applicant Name	**Warren City Warren County**	Facility Name	**Warren City WWTP**
Applicant Address	318 W 3rd Avenue	Facility Address	380 West Harmar Street
	Warren, PA 16365-2388		Warren, PA 16365-2388
Applicant Contact	Michael Holtz	Facility Contact	Michael Holtz
Applicant Phone	(814) 723-6300	Facility Phone	(814) 723-6300
Client ID	82555	Site ID	261846
Ch 94 Load Status	Not Overloaded	Municipality	Warren City
Connection Status	No Limitations	County	Warren
Date Application Received	May 3, 2022	EPA Waived?	No
Date Application Accepted		If No, Reason	Major Facility

Purpose of Application: NPDES renewal for a POTW with CSO.

Summary of Review

The permittee currently has 4 existing Combined Sewer Overflows (CSOs). They are demonstrating compliance with the nine minimal control requirements through 85% capture. The CSO nine minimal controls (NMCs) and long-term control plan (LTCP) have been previously submitted to the Department and approved by the Department.

The plant and the city's two pump stations were upgraded in 2015 with the proper design capacity to handle peak flows, and no CSO discharge events have occurred since this upgrade was completed.

This facility discharges to the Allegheny River, which contains threatened & endangered species of mussels. A summary of concerns and considerations is included in this fact sheet.

The City of Warren is currently in an EPA approved industrial pretreatment program. None of the industrial users are considered a significant industrial user.

E. Coli monitoring was added per Department SOP. The Department's Toxics Management Spreadsheet (TMS) established reasonable potential for several new parameters with either limits or monitoring requirements, which have been added to this permit.

Sludge use and disposal description and location(s): Sent to landfill, handled by City of Warren.

There is currently 1 open violation for this client (82555) as of 7/30/2025.

Approve	Deny	Signatures	Date
X		Jordan A. Frey, E.I.T. Jordan A. Frey, E.I.T. / Project Manager	July 30, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	September 2, 2025

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

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	6.5
Latitude	41º 50' 20.44"	Longitude	-79º 9' 43.24"
Quad Name	Warren	Quad Code	41079G2
Wastewater Description:	Sewage Effluent		

Receiving Waters	Allegheny River (WWF)	Stream Code	42122
NHD Com ID	112375327	RMI	188.6
Drainage Area	3130	Yield (cfs/mi^2)	0.08
Q_{7-10} Flow (cfs)	250.4	Q_{7-10} Basis	Streamstats
Elevation (ft)	1176	Slope (ft/ft)	---
Watershed No.	16-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	CHLORIDE, MERCURY, OSMOTIC PRESSURE, PATHOGENS, PATHOGENS, TOTAL DISSOLVED SOLIDS (TDS)		
Source(s) of Impairment	INDUSTRIAL POINT SOURCE DISCHARGE, INDUSTRIAL POINT SOURCE DISCHARGE, INDUSTRIAL POINT SOURCE DISCHARGE, SOURCE UNKNOWN, SOURCE UNKNOWN, SOURCE UNKNOWN		
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°F)	25	Default
Hardness (mg/L)	100	Default
Other:		

Nearest Downstream Public Water Supply Intake	Aqua Pennsylvania, Inc. - Emlenton		
PWS Waters	Allegheny River	Flow at Intake (cfs)	1376
PWS RMI	90.0	Distance from Outfall (mi)	>25

Changes Since Last Permit Issuance: A sewer extension and new pump station (Callendar St) were permitted in August 2024.

Other Comments: None.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	002	Design Flow (MGD)	0
Latitude	41º 50' 20"	Longitude	79º 09' 49"
Outfall No.	003	Design Flow (MGD)	0
Latitude	41º 50' 30"	Longitude	79º 08' 45"
Outfall No.	004	Design Flow (MGD)	0
Latitude	41º 50' 26"	Longitude	79º 08' 28"
Outfall No.	005	Design Flow (MGD)	0
Latitude	41º 50' 20"	Longitude	79º 09' 40"
Quad Name		Quad Code	0
Wastewater Description:	Untreated Combined Sewer Overflow		
Receiving Waters	Unnamed Tributary to Allegheny River (CWF)	Stream Code	42122
NHD Com ID	112375101	RMI	
Watershed No.	16-B	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Chlorides, Mercury, Osmotic Pressure, Pathogens, Pathogens, TDS		
Source(s) of Impairment	Industrial Point Source, Industrial Point Source, Industrial Point Source, Source Unknown, Source Unknown, Source Unknown		
TMDL Status		Name	

Changes Since Last Permit Issuance: None.

Other Comments: This is a CSO outfall pipe that bypasses the influent pumps at the plant. The bypass is controlled manually by a valve, with flow monitoring, and would be engaged during an excessive flow event.

Treatment Facility Summary

Treatment Facility Name: Warren City WWTP

WQM Permit No.	Issuance Date
6210404	11/14/2012
6210404 A-1	08/20/2024

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Oxidation Ditch	Gas Chlorine	6.5

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
6.5	6500	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: None.

Other Comments: None.

Compliance History

DMR Data for Outfall 001 (from June 1, 2024 to May 31, 2025)

Parameter	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24
Flow (MGD) Average Monthly	2.76	2.27	2.11	1.99	1.61	2.28	1.36	1.11	1.22	1.32	1.09	1.5
Flow (MGD) Weekly Average	3.14	2.92	2.36	2.92	2.64	2.95	1.82	1.34	1.61	1.2	1.38	2.47
pH (S.U.) Minimum	6.8	6.6	6.6	6.7	6.7	6.7	6.6	6.6	6.4	6.6	6.6	6.7
pH (S.U.) Maximum	7.0	6.9	6.9	6.9	7.0	7.0	6.9	6.9	7.0	7.1	7.0	7.1
DO (mg/L) Instantaneous Minimum	4.87	5.74	6.2	7.03	6.09	6.07	5.58	5.65	5.29	5.23	5.19	5.1
TRC (mg/L) Average Monthly	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2
TRC (mg/L) Instantaneous Maximum	0.37	0.39	0.35	0.45	0.33	0.6	0.38	0.41	0.44	0.41	0.47	0.42
CBOD5 (lbs/day) Average Monthly	47	31	21	56	21	30	11	13	9	9	10	15
CBOD5 (lbs/day) Weekly Average	59	48	35	147	62	39	16	29	12	13	12	30
CBOD5 (mg/L) Average Monthly	2	2	1	3	2	2	1	2	1	1	1	1
CBOD5 (mg/L) Weekly Average	3	3	2	0.45	3	2	1	4	1	1	1	2
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	2049	1886	1754	2210	1588	1712	1629	1607	1649	1537	1724	1887
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	2486	2314	2168	4291	1748	2023	1812	1848	2554	1836	2044	2948
BOD5 (mg/L) Raw Sewage Influent Average Monthly	100	111	118	128	140	102	158	194	186	176	193	185
TSS (lbs/day) Average Monthly	210	57	35	83	79	167	60	18	11	25	14	28

TSS (lbs/day) Raw Sewage Influent Average Monthly	1319	1260	1161	1833	1306	1391	1563	1446	1268	1221	1399	1605
TSS (lbs/day) Raw Sewage Influent Daily Maximum	1836	1643	1700	4110	1509	1664	2693	2039	1988	1525	1778	3615
TSS (lbs/day) Weekly Average	502	98	62	216	205	223	106	31	19	42	27	41
TSS (mg/L) Average Monthly	8	3	2	4	6	9	5	2	1	3	1	2
TSS (mg/L) Raw Sewage Influent Average Monthly	65	75	78	110	115	82	150	175	143	139	155	152
TSS (mg/L) Weekly Average	13	5	4	6	10	10	7	4	2	3	3	3
Fecal Coliform (CFU/100 ml) Geometric Mean	4	4	3	5	3	5	2	2	8	11	190	3
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	30.5	360.9	6.3	285.1	33.6	461.1	42.8	34.1	913.9	960.6	237	30.9
Total Nitrogen (lbs/day) Average Quarterly			< 5			< 4			< 5			< 11
Total Nitrogen (mg/L) Average Quarterly			< 0.5			< 0.5			< 0.5			< 0.5
Ammonia (lbs/day) Average Monthly	< 2	< 1	< 2	< 1	< 1	< 1	< 1	< 0.9	< 0.9	< 2	< 0.9	< 2
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Phosphorus (lbs/day) Average Quarterly			21			33			36			5
Total Phosphorus (mg/L) Average Quarterly			2			3.82			3.9			0.21
Total Nickel (mg/L) Average Quarterly			< 0.05			< 0.05			< 0.05			< 0.05
Chloride (mg/L) Average Monthly	100	97.6	125	187	129	85.2	115	69.5	52	55.2	73	67.6

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 6.5
Latitude 41º 50' 21.00" **Longitude** -79º 9' 39.50"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
E. Coli	Report	IMAX	-	92a.61

E. Coli monitoring was added in accordance with the Department SOP on new and reissued permits.

Water Quality-Based Limitations

A "Reasonable Potential Analysis" (Attachment A) determined the following parameters were candidates for limitations: Total Cadmium, Total Copper, and Total Zinc.

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	Limit (ug/l)	SBC	Model
Ammonia-Nitrogen	25		Average Monthly	WQM v.1.0b
CBOD5	25		Average Monthly	WQM v1.0b
Dissolved Oxygen	3.0		Daily Minimum	WQM v.1.0b
Total Residual Chlorine	0.5		Average Monthly	TRC Spreadsheet
Total Cadmium		Report	Average Monthly	Toxics Management Spreadsheet
Total Copper		25.8	Average Monthly	Toxics Management Spreadsheet
Total Zinc		Report	Average Monthly	Toxics Management Spreadsheet

Ammonia-Nitrogen (NH3N) & CBOD5 limits of 25 mg/l, and a Dissolved Oxygen limit of 4.0 mg/l were determined by WQM modeling to be protective. When an NH3-N limit of 25 mg/l is acceptable, monitoring-only can be imposed per the Department's SOP. The Department's TRC Spreadsheet determined a limit of 0.5 mg/l. The Toxics Management Spreadsheet calculated a Total Copper limit of 25.87 mg/l, and weekly monitoring for Total Cadmium & Zinc. A three-year schedule of compliance will be included for Total Copper because the permittee may not be able to achieve the limit upon permit issuance.

Best Professional Judgment (BPJ) Limitations

A dissolved oxygen limit of a minimum of 4.0 mg/l, a TRC IMAX limit of 1.6 mg/l, effluent monitoring for total nitrogen, total phosphorus, and ammonia nitrogen, and raw sewage monitoring for BOD_5 and TSS are placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Annual monitoring for PFAS parameters (PFOA, PFOS, PFBS, and HFPO-DA) was added to the renewed permit in accordance with the Department's PFAS monitoring directive, under the authority of Chapter 92a.51. A footnote was also for discontinuation of sampling requirements for PFAS parameters after four consecutive non-detect are reported for all parameters at or below the Target QLs.

Anti-Backsliding

The previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The previous permit limitations, monitoring requirements, and conditions will be retained:

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	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	1355	2165	XXX	25	40	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	1625	2435	XXX	30	45	60	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/month	Grab
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Phosphorus	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Nickel (µg/L)	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Chloride	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

Threatened and Endangered Mussel Species Concerns and Considerations

The Allegheny River is known to contain state and federally listed threatened and endangered mussel species. Due to the discharge being directly to the Allegheny River, potential impacts to endangered mussel species were evaluated.

The USFWS has indicated in comment letters on other NPDES permits that to protect threatened and endangered mussel species, wastewater discharges containing ammonia-nitrogen (NH_3-N), chloride (Cl^-), zinc and nickel, where mussels or their habitat exist, can be no more than 1.9 mg/l, 78 mg/l, 13.18 µg/l and 7.3 µg/l, respectively. The Department reviewed sampling data for these three parameters to determine potential impacts that the discharge may have to threatened and endangered mussel species.

The Department completed several aquatic biological investigations on the Allegheny River in this area between 2012-2024. These investigations concluded that the effluents from the Warren City WWTP discharge does not appear to impact the endangered mussel species in the Allegheny River.

The Department utilized its Impact Evaluation spreadsheet to calculate the maximum potential impact area of the STP discharge under the worst-case theoretical scenario. This yielded a maximum potential impact area of 0.51 m^2 by the mass balance relationship of loading and assimilative capacity of the stream (Method 2). The Department will retain monitoring for Chloride, Nickel, and Zinc for the next permit term and may conduct an additional survey. Monitoring frequencies for Nickel and Chloride from the previous permit shall be retained, however the Toxics Management Spreadsheet (TMS) modeling justifies a more frequent weekly monitoring.

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%, 60%, 30%, 5%, and 2%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 5%.

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

	***Ceriodaphnia* Results (% Effluent)**			***Pimephales* Results (% Effluent)**			
Test Date	**NOEC Survival**	**NOEC Reproduction**	**LC50**	**NOEC Survival**	**NOEC Growth**	**LC50**	**Pass? ***
9/14/2018	100	100	>100	100	100	>100	Yes
10/8/2019	100	100	>100	100	100	>100	Yes
7/13/2020	100	100	>100	100	100	>100	Yes
7/19/2021	100	100	>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: None.

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

Acute Partial Mix Factor (PMFa): **0.069** Chronic Partial Mix Factor (PMFc): **0.479**

1. Determine IWC – Acute (IWCa):

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

[(6.5 MGD x 1.547) / ((250.4 cfs x 0.069) + (6.5 MGD x 1.547))] x 100 = **36.78%**

Is IWCa < 1%? ☐ **YES** ☒ **NO**

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

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

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

[(6.5 MGD x 1.547) / ((250.4 cfs x 0.479) + (6.5 MGD x 1.547))] x 100 = **7.74%**

3. Determine Dilution Series

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

Dilution Series = 100%, 60%, 30%, 8%, and 4%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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

Proposed Effluent Limitations and Monitoring Requirements

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

Interim Limitations:

Outfall 001, Effective Period: Permit Effective Date through Three Years After Permit Effective Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Copper (ug/L)	XXX	XXX	XXX	Report	XXX	Report	1/week	Grab

Final Limitations:

Outfall 001, Effective Period: Three Years After Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Copper (ug/L)	XXX	XXX	XXX	25.8	XXX	64.6	1/week	Grab

Compliance Sampling Location: Outfall 001, after disinfection.

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	1355	2165	XXX	25	40	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	1625	2435	XXX	30	45	60	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/month	Grab
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Phosphorus	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Cadmium (µg/L)	XXX	XXX	XXX	Report	XXX	XXX	1/week	Grab
Total Nickel (µg/L)	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Zinc (µg/L)	XXX	XXX	XXX	Report	XXX	XXX	1/week	Grab
Chloride	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
PFOA (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
PFOS (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
PFBS (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

Compliance Sampling Location: Outfall 001, after disinfection.

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18A	42122	ALLEGHENY 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
188.600	Warren City WW	6.91	50	6.91	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
188.600	Warren City WW	1.35	25	1.35	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)		
188.60	Warren City WWT	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18A	42122	ALLEGHENY RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
188.600	6.500	24.807	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
298.882	1.196	249.933	0.729
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.89	0.488	0.97	1.013
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.079	2.886	Tsivoglou	6
Reach Travel Time (days)			
0.042			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.004	2.88	0.96	7.56
0.008	2.87	0.96	7.56
0.013	2.87	0.95	7.56
0.017	2.86	0.95	7.56
0.021	2.85	0.94	7.56
0.025	2.84	0.94	7.56
0.029	2.84	0.94	7.56
0.034	2.83	0.93	7.56
0.038	2.82	0.93	7.56
0.042	2.82	0.93	7.56

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)
188.600	Warren City WWT	PA0027120	6.500	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

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
18A	42122	ALLEGHENY RIVER	188.600	1176.00	3130.00	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	0.080	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Warren City WWT	PA0027120	6.5000	0.0000	0.0000	0.000	20.00	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	4.00	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
18A	42122	ALLEGHENY RIVER	188.100	1174.00	3150.00	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	0.080	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18A	42122	ALLEGHENY 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												
188.600	250.40	0.00	250.40	10.0555	0.00076	1.196	298.88	249.93	0.73	0.042	24.81	7.00
Q1-10 Flow												
188.600	160.26	0.00	160.26	10.0555	0.00076	NA	NA	NA	0.57	0.053	24.70	7.00
Q30-10 Flow												
188.600	340.54	0.00	340.54	10.0555	0.00076	NA	NA	NA	0.86	0.036	24.86	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Warren City WWTP** NPDES Permit No.: **PA0027120** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Treated 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
6.5	117	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		294									
	Chloride (PWS)	mg/L		195									
	Bromide	mg/L		1.19									
	Sulfate (PWS)	mg/L		38.1									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		26									
	Total Antimony	µg/L		0.3									
	Total Arsenic	µg/L		2									
	Total Barium	µg/L		60									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		134									
	Total Cadmium	µg/L		0.7									
	Total Chromium (III)	µg/L	<	4									
	Hexavalent Chromium	µg/L		2									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L		27									
	Free Cyanide	µg/L		4									
	Total Cyanide	µg/L		12									
	Dissolved Iron	µg/L		67									
	Total Iron	µg/L		79.4									
	Total Lead	µg/L		2									
	Total Manganese	µg/L		18									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	4									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L	<	0.5									
	Total Thallium	µg/L	<	0.05									
	Total Zinc	µg/L		94									
	Total Molybdenum	µg/L	<	4									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	5									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									
	Carbon Tetrachloride	µg/L	<	0.5									
	Chlorobenzene	µg/L		0.5									
	Chlorodibromomethane	µg/L	<	0.5									
	Chloroethane	µg/L	<	0.5									
	2-Chloroethyl Vinyl Ether	µg/L	<	0.5									

Group 3	Chloroform	µg/L	<	15.8									
	Dichlorobromomethane	µg/L	<	4.9									
	1,1-Dichloroethane	µg/L	<	0.5									
	1,2-Dichloroethane	µg/L	<	0.5									
	1,1-Dichloroethylene	µg/L	<	0.5									
	1,2-Dichloropropane	µg/L	<	0.5									
	1,3-Dichloropropylene	µg/L	<	0.5									
	1,4-Dioxane	µg/L	<	0.1									
	Ethylbenzene	µg/L	<	0.5									
	Methyl Bromide	µg/L	<	0.5									
	Methyl Chloride	µg/L	<	0.5									
	Methylene Chloride	µg/L	<	0.5									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5									
	Tetrachloroethylene	µg/L	<	0.5									
	Toluene	µg/L	<	0.5									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.5									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.5									
	Vinyl Chloride	µg/L	<	0.5									
Group 4	2-Chlorophenol	µg/L	<	10									
	2,4-Dichlorophenol	µg/L	<	10									
	2,4-Dimethylphenol	µg/L	<	10									
	4,6-Dinitro-o-Cresol	µg/L	<	10									
	2,4-Dinitrophenol	µg/L	<	10									
	2-Nitrophenol	µg/L	<	10									
	4-Nitrophenol	µg/L	<	10									
	p-Chloro-m-Cresol	µg/L	<	10									
	Pentachlorophenol	µg/L	<	10									
	Phenol	µg/L	<	10									
	2,4,6-Trichlorophenol	µg/L	<	10									
Group 5	Acenaphthene	µg/L	<	2.5									
	Acenaphthylene	µg/L	<	2.5									
	Anthracene	µg/L	<	2.5									
	Benzidine	µg/L	<	50									
	Benzo(a)Anthracene	µg/L	<	2.5									
	Benzo(a)Pyrene	µg/L	<	2.5									
	3,4-Benzofluoranthene	µg/L	<	2.5									
	Benzo(ghi)Perylene	µg/L	<	2.5									
	Benzo(k)Fluoranthene	µg/L	<	2.5									
	Bis(2-Chloroethoxy)Methane	µg/L	<	5									
	Bis(2-Chloroethyl)Ether	µg/L	<	5									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5									
	4-Bromophenyl Phenyl Ether	µg/L	<	5									
	Butyl Benzyl Phthalate	µg/L	<	5									
	2-Chloronaphthalene	µg/L	<	5									
	4-Chlorophenyl Phenyl Ether	µg/L	<	5									
	Chrysene	µg/L	<	2.5									
	Dibenzo(a,h)Anthrancene	µg/L	<	2.5									
	1,2-Dichlorobenzene	µg/L	<	0.5									
	1,3-Dichlorobenzene	µg/L	<	0.5									
	1,4-Dichlorobenzene	µg/L	<	0.5									
	3,3-Dichlorobenzidine	µg/L	<	5									
	Diethyl Phthalate	µg/L	<	5									
	Dimethyl Phthalate	µg/L	<	5									
	Di-n-Butyl Phthalate	µg/L	<	5									
	2,4-Dinitrotoluene	µg/L	<	5									
	2,6-Dinitrotoluene	µg/L	<	5									
	Di-n-Octyl Phthalate	µg/L	<	5									
	1,2-Diphenylhydrazine	µg/L	<	10									
	Fluoranthene	µg/L	<	2.5									
	Fluorene	µg/L	<	2.5									
	Hexachlorobenzene	µg/L	<	5									
	Hexachlorobutadiene	µg/L	<	0.5									
	Hexachlorocyclopentadiene	µg/L	<	5									
	Hexachloroethane	µg/L	<	5									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5									

	Isophorone	µg/L	<	5										
	Naphthalene	µg/L	<	0.5										
	Nitrobenzene	µg/L	<	5										
	n-Nitrosodimethylamine	µg/L	<	5										
	n-Nitrosodi-n-Propylamine	µg/L	<	5										
	n-Nitrosodiphenylamine	µg/L	<	5										
	Phenanthrene	µg/L	<	2.5										
	Pyrene	µg/L	<	2.5										
	1,2,4-Trichlorobenzene	µg/L	<	0.5										
Group 6	Aldrin	µg/L	<											
	alpha-BHC	µg/L	<											
	beta-BHC	µg/L	<											
	gamma-BHC	µg/L	<											
	delta BHC	µg/L	<											
	Chlordane	µg/L	<											
	4,4-DDT	µg/L	<											
	4,4-DDE	µg/L	<											
	4,4-DDD	µg/L	<											
	Dieldrin	µg/L	<											
	alpha-Endosulfan	µg/L	<											
	beta-Endosulfan	µg/L	<											
	Endosulfan Sulfate	µg/L	<											
	Endrin	µg/L	<											
	Endrin Aldehyde	µg/L	<											
	Heptachlor	µg/L	<											
	Heptachlor Epoxide	µg/L	<											
	PCB-1016	µg/L	<											
	PCB-1221	µg/L	<											
	PCB-1232	µg/L	<											
	PCB-1242	µg/L	<											
	PCB-1248	µg/L	<											
	PCB-1254	µg/L	<											
	PCB-1260	µg/L	<											
	PCBs, Total	µg/L	<											
	Toxaphene	µg/L	<											
	2,3,7,8-TCDD	ng/L	<											
Group 7	Gross Alpha	pCi/L												
	Total Beta	pCi/L	<											
	Radium 226/228	pCi/L	<											
	Total Strontium	µg/L	<											
	Total Uranium	µg/L	<											
	Osmotic Pressure	mOs/kg												

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Warren City WWTP, NPDES Permit No. PA0027120, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: _____ 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	042122	188.6	1176	3130			Yes
End of Reach 1	042122	188.1	1174	3150			Yes

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

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	188.6	0.08										100	7		
End of Reach 1	188.1	0.08													

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	188.6														
End of Reach 1	188.1														

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Toxics Management Spreadsheet
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Model Results

Warren City WWTP, NPDES Permit No. PA0027120, Outfall 001

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

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ ***AFC*** CCT (min): 15 PMF: 0.069 Analysis Hardness (mg/l): 106.25 Analysis pH: 7.00

Pollutants	Stream Conc	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	2,040	
Total Antimony	0	0		0	1,100	1,100	2,992	
Total Arsenic	0	0		0	340	340	925	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	57,120	
Total Boron	0	0		0	8,100	8,100	22,032	
Total Cadmium	0	0		0	2.136	2.27	6.17	Chem Translator of 0.941 applied
Total Chromium (III)	0	0		0	598.767	1,895	5,154	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	44.3	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	258	
Total Copper	0	0		0	14.229	14.8	40.3	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	59.8	
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	68.984	88.2	240	Chem Translator of 0.782 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	4.48	Chem Translator of 0.85 applied
Total Nickel	0	0		0	492.877	494	1,343	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	3.570	4.2	11.4	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	177	
Total Zinc	0	0		0	123.357	126	343	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	8.16	
Acrylonitrile	0	0		0	650	650	1,768	
Benzene	0	0		0	640	640	1,741	

Bromoform	0	0		0	1,800	1,800	4,896	
Carbon Tetrachloride	0	0		0	2,800	2,800	7,616	
Chlorobenzene	0	0		0	1,200	1,200	3,264	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	48,960	
Chloroform	0	0		0	1,900	1,900	5,168	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	40,800	
1,1-Dichloroethylene	0	0		0	7,500	7,500	20,400	
1,2-Dichloropropane	0	0		0	11,000	11,000	29,920	
1,3-Dichloropropylene	0	0		0	310	310	843	
Ethylbenzene	0	0		0	2,900	2,900	7,888	
Methyl Bromide	0	0		0	550	550	1,496	
Methyl Chloride	0	0		0	28,000	28,000	76,160	
Methylene Chloride	0	0		0	12,000	12,000	32,640	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	2,720	
Tetrachloroethylene	0	0		0	700	700	1,904	
Toluene	0	0		0	1,700	1,700	4,624	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	18,496	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	8,160	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	9,248	
Trichloroethylene	0	0		0	2,300	2,300	6,256	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,523	
2,4-Dichlorophenol	0	0		0	1,700	1,700	4,624	
2,4-Dimethylphenol	0	0		0	660	660	1,795	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	218	
2,4-Dinitrophenol	0	0		0	660	660	1,795	
2-Nitrophenol	0	0		0	8,000	8,000	21,760	
4-Nitrophenol	0	0		0	2,300	2,300	6,256	
p-Chloro-m-Cresol	0	0		0	160	160	435	
Pentachlorophenol	0	0		0	8.723	8.72	23.7	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,251	
Acenaphthene	0	0		0	83	83.0	226	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	816	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.36	
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	81,600	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	12,240	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	734	
Butyl Benzyl Phthalate	0	0		0	140	140	381	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	

Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	2,230	
1,3-Dichlorobenzene	0	0		0	350	350	952	
1,4-Dichlorobenzene	0	0		0	730	730	1,986	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	10,880	
Dimethyl Phthalate	0	0		0	2,500	2,500	6,800	
Di-n-Butyl Phthalate	0	0		0	110	110	299	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	4,352	
2,6-Dinitrotoluene	0	0		0	990	990	2,693	
1,2-Diphenylhydrazine	0	0		0	15	15.0	40.8	
Fluoranthene	0	0		0	200	200	544	
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	27.2	
Hexachlorocyclopentadiene	0	0		0	5	5.0	13.6	
Hexachloroethane	0	0		0	60	60.0	163	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	27,200	
Naphthalene	0	0		0	140	140	381	
Nitrobenzene	0	0		0	4,000	4,000	10,880	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	46,240	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	816	
Phenanthrene	0	0		0	5	5.0	13.6	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	354	

☑ ***CFC*** CCT (min): 720 PMF: 0.479 Analysis Hardness (mg/l): 101.32 Analysis pH: 7.00

Pollutants	Stream Conc	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	2,842	
Total Arsenic	0	0		0	150	150	1,937	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	52,957	
Total Boron	0	0		0	1,600	1,600	20,666	
Total Cadmium	0	0		0	0.248	0.27	3.53	Chem Translator of 0.908 applied
Total Chromium (III)	0	0		0	74.912	87.1	1,125	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	134	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	245	
Total Copper	0	0		0	9.056	9.43	122	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	67.2	
Dissolved Iron	0	0		0	N/A	N/A	N/A	

Total Iron	0	0		0	1,500	1,500	38,853	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.553	3.23	41.8	Chem Translator of 0.789 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	11.7	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.585	52.7	681	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	64.4	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	168	
Total Zinc	0	0		0	119.455	121	1,565	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	38.7	
Acrylonitrile	0	0		0	130	130	1,679	
Benzene	0	0		0	130	130	1,679	
Bromoform	0	0		0	370	370	4,779	
Carbon Tetrachloride	0	0		0	560	560	7,233	
Chlorobenzene	0	0		0	240	240	3,100	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	45,207	
Chloroform	0	0		0	390	390	5,037	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	40,041	
1,1-Dichloroethylene	0	0		0	1,500	1,500	19,375	
1,2-Dichloropropane	0	0		0	2,200	2,200	28,416	
1,3-Dichloropropylene	0	0		0	61	61.0	788	
Ethylbenzene	0	0		0	580	580	7,492	
Methyl Bromide	0	0		0	110	110	1,421	
Methyl Chloride	0	0		0	5,500	5,500	71,040	
Methylene Chloride	0	0		0	2,400	2,400	30,999	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	2,712	
Tetrachloroethylene	0	0		0	140	140	1,808	
Toluene	0	0		0	330	330	4,262	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	18,083	
1,1,1-Trichloroethane	0	0		0	610	610	7,879	
1,1,2-Trichloroethane	0	0		0	680	680	8,783	
Trichloroethylene	0	0		0	450	450	5,812	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	1,421	
2,4-Dichlorophenol	0	0		0	340	340	4,392	
2,4-Dimethylphenol	0	0		0	130	130	1,679	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	207	
2,4-Dinitrophenol	0	0		0	130	130	1,679	
2-Nitrophenol	0	0		0	1,600	1,600	20,666	
4-Nitrophenol	0	0		0	470	470	6,071	
p-Chloro-m-Cresol	0	0		0	500	500	6,458	
Pentachlorophenol	0	0		0	6.693	6.69	86.4	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,175	
Acenaphthene	0	0		0	17	17.0	220	
Anthracene	0	0		0	N/A	N/A	N/A	

Benzidine	0	0		0	59	59.0	762	
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.29	
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	77,499	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	11,754	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	697	
Butyl Benzyl Phthalate	0	0		0	35	35.0	452	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	2,067	
1,3-Dichlorobenzene	0	0		0	69	69.0	891	
1,4-Dichlorobenzene	0	0		0	150	150	1,937	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	10,333	
Dimethyl Phthalate	0	0		0	500	500	6,458	
Di-n-Butyl Phthalate	0	0		0	21	21.0	271	
2,4-Dinitrotoluene	0	0		0	320	320	4,133	
2,6-Dinitrotoluene	0	0		0	200	200	2,583	
1,2-Diphenylhydrazine	0	0		0	3	3.0	38.7	
Fluoranthene	0	0		0	40	40.0	517	
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	25.8	
Hexachlorocyclopentadiene	0	0		0	1	1.0	12.9	
Hexachloroethane	0	0		0	12	12.0	155	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	27,124	
Naphthalene	0	0		0	43	43.0	555	
Nitrobenzene	0	0		0	810	810	10,462	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	43,916	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	762	
Phenanthrene	0	0		0	1	1.0	12.9	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	336	

☑ ***THH*** CCT (min): 720 PMF: 0.479 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc	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	72.3	

Total Arsenic	0	0		0	10	10.0	129	
Total Barium	0	0		0	2,400	2,400	30,999	
Total Boron	0	0		0	3,100	3,100	40,041	
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	51.7	
Dissolved Iron	0	0		0	300	300	3,875	
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	12,916	
Total Mercury	0	0		0	0.050	0.05	0.65	
Total Nickel	0	0		0	610	610	7,879	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	3.1	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	38.7	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	1,292	
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	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	426	
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	878	
Methyl Bromide	0	0		0	100	100.0	1,292	
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	736	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	1,292	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	129,164	
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	387	
2,4-Dichlorophenol	0	0		0	10	10.0	129	
2,4-Dimethylphenol	0	0		0	100	100.0	1,292	

4,6-Dinitro-o-Cresol	0	0		0	2	2.0	25.8	
2,4-Dinitrophenol	0	0		0	10	10.0	129	
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	51,666	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	904	
Anthracene	0	0		0	300	300	3,875	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	2,583	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	1.29	
2-Chloronaphthalene	0	0		0	800	800	10,333	
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	12,916	
1,3-Dichlorobenzene	0	0		0	7	7.0	90.4	
1,4-Dichlorobenzene	0	0		0	300	300	3,875	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	7,750	
Dimethyl Phthalate	0	0		0	2,000	2,000	25,833	
Di-n-Butyl Phthalate	0	0		0	20	20.0	258	
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	258	
Fluorene	0	0		0	50	50.0	646	
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	51.7	
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	439	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	129	
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	258	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.9	

☑ ***CRL*** CCT (min): 720 PMF: 0.710 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc	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	3.99	
Benzene	0	0		0	0.58	0.58	38.6	
Bromoform	0	0		0	7	7.0	465	
Carbon Tetrachloride	0	0		0	0.4	0.4	26.6	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	53.2	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	379	
Dichlorobromomethane	0	0		0	0.95	0.95	63.2	
1,2-Dichloroethane	0	0		0	9.9	9.9	658	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	59.8	
1,3-Dichloropropylene	0	0		0	0.27	0.27	17.9	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	1,330	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	13.3	

Tetrachloroethylene	0	0		0	10	10.0	665	
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	36.6	
Trichloroethylene	0	0		0	0.6	0.6	39.9	
Vinyl Chloride	0	0		0	0.02	0.02	1.33	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	1.99	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	99.7	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.007	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.066	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.007	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.066	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.66	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	1.99	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	21.3	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	7.98	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.007	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	3.32	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	3.32	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	3.32	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	1.99	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.005	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.66	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	6.65	

Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.066	
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	0.047	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.33	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	219	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Cadmium	Report	Report	Report	Report	Report	µg/L	3.53	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	1.4	2.19	25.8	40.3	64.6	µg/L	25.8	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	220	AFC	Discharge Conc > 10% WQBEL (no RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	1,308	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	72.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	129	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	30,999	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	14,122	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	1,125	µg/L	Discharge Conc < TQL
Hexavalent Chromium	28.4	µg/L	Discharge Conc ≤ 10% WQBEL

Total Cobalt	166	µg/L	Discharge Conc < TQL
Free Cyanide	38.4	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	3,875	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	38,853	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	41.8	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	12,916	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.65	µg/L	Discharge Conc < TQL
Total Nickel	681	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	64.4	µg/L	Discharge Conc < TQL
Total Silver	7.32	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	3.1	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	5.23	µg/L	Discharge Conc < TQL
Acrylonitrile	3.99	µg/L	Discharge Conc < TQL
Benzene	38.6	µg/L	Discharge Conc < TQL
Bromoform	465	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	26.6	µg/L	Discharge Conc < TQL
Chlorobenzene	1,292	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	53.2	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	31,381	µg/L	Discharge Conc < TQL
Chloroform	379	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	63.2	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	658	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	426	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	59.8	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	17.9	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	878	µg/L	Discharge Conc < TQL
Methyl Bromide	959	µg/L	Discharge Conc < TQL
Methyl Chloride	48,815	µg/L	Discharge Conc < TQL
Methylene Chloride	1,330	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	13.3	µg/L	Discharge Conc < TQL
Tetrachloroethylene	665	µg/L	Discharge Conc < TQL
Toluene	736	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	1,292	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	5,230	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	36.6	µg/L	Discharge Conc < TQL
Trichloroethylene	39.9	µg/L	Discharge Conc < TQL
Vinyl Chloride	1.33	µg/L	Discharge Conc < TQL
2-Chlorophenol	387	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	129	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,151	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	25.8	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	129	µg/L	Discharge Conc < TQL
2-Nitrophenol	13,947	µg/L	Discharge Conc < TQL

4-Nitrophenol	4,010	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	279	µg/L	Discharge Conc < TQL
Pentachlorophenol	1.99	µg/L	Discharge Conc < TQL
Phenol	51,666	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	99.7	µg/L	Discharge Conc < TQL
Acenaphthene	145	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	3,875	µg/L	Discharge Conc < TQL
Benzidine	0.007	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.066	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.007	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.066	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.66	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	1.99	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	2,583	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	21.3	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	471	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	1.29	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	10,333	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	7.98	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.007	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,430	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	90.4	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	1,273	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	3.32	µg/L	Discharge Conc < TQL
Diethyl Phthalate	6,974	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	4,359	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	192	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	3.32	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	3.32	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	1.99	µg/L	Discharge Conc < TQL
Fluoranthene	258	µg/L	Discharge Conc < TQL
Fluorene	646	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.005	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.66	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	8.72	µg/L	Discharge Conc < TQL
Hexachloroethane	6.65	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.066	µg/L	Discharge Conc < TQL
Isophorone	439	µg/L	Discharge Conc < TQL
Naphthalene	244	µg/L	Discharge Conc < TQL
Nitrobenzene	129	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.047	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.33	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	219	µg/L	Discharge Conc < TQL
Phenanthrene	8.72	µg/L	Discharge Conc < TQL

TRC Spreadsheet

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

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

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 7.918	1.3.2.iii	WLA cfc = 7.712
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 2.951	5.1d	LTA_cfc = 4.483

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		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)**

7/30/2025

Outfall 001

Facility: Warren City WWTP					
Permit Number: PA0027120			Effective:	Expiration:	
Outfall No: 001					
Location:					
Discharge to: Allegheny River					
Site Specific Mussel Survey Completed:					

Discharge and Stream Characteristics			Comments
Q_S	Stream Flow	134.75 MGD / 47.325 cfs	
Q_D	Discharge Flow	6.5 MGD / 10.05845 cfs	
$C_{S(Cl^-)}$	Instream chloride Concentration	mg/L	
$C_{E(Cl^-)}$	Discharge chloride (existing)	195 mg/L	
$C_{P(Cl^-)}$	Discharge chloride (proposed)	mg/L	
$C_{S(Ni)}$	Instream nickel Concentration	µg/L	
$C_{E(Ni)}$	Discharge nickel (existing)	4 µg/L	
$C_{P(Ni)}$	Discharge nickel (proposed)	µg/L	
$C_{S(Zn)}$	Instream zinc Concentration	µg/L	
$C_{E(Zn)}$	Discharge zinc (existing)	94 µg/L	
$Zn_{P(Zn)}$	Discharge zinc (proposed)	µg/L	
$C_{S(Cu)}$	Instream copper Concentration	µg/L	
$C_{E(Cu)}$	Discharge copper (existing)	µg/L	
$Zn_{P(Cu)}$	Discharge copper (proposed)	µg/L	
$C_{S(NH3-N)}$	Instream NH^3-N	mg/L	
$C_{E(NH3-N)}$	Discharge NH^3-N (existing)	0.8 mg/L	
$C_{P(NH3-N)}$	Discharge NH^3-N (proposed)	mg/L	
pH_S	Instream pH	7 S.U.	
T_S	Instream Temp.	25 °C	Default value for a WWF
$C_{C(NH3-N)}$	Ammonia criteria	1.367 mg/L	From ammonia criteria comparison spreadsheet -using instream pH and Temp
$C_{C(Cl^-)}$	Chloride criteria	78 mg/L	USFWS criteria
$C_{C(Ni)}$	Nickel criteria	7.3 µg/L	USFWS criteria
$C_{C(Zn)}$	Zinc criteria	13.18 µg/L	USFWS criteria
$C_{C(Cu)}$	Copper criteria	10 µg/L	USFWS criteria
W_S	Stream width	21 meters	Google Earth (Approximate)

Ammonia Criteria Calculations:

	pH_S	7	S.U.	*(Default value is 7.0)*
	T_S	25	°C	*(Default value is 20 ° for a CWF and 25° for a WWF)*

Acute Criteria

	METHOD and UNITS	CRITERIA	Comments	
	Old CMC (mg TAN/L) =	6.764		
	EPA 2013 CMC (mg TAN/L) =	11.073	Oncorhynchus present	* formula on pg. 41 (plateaus at 15.7 C)
		11.073	Oncorhynchus absent	* formula on pg. 42 (plateaus at 10.2 C)

Chronic Criteria

	METHOD and UNITS	CRITERIA	COMMENTS
	Old CMC (mg TAN/L) =	1.341	
$C_{C(NH3-N)}$	EPA 2013 CMC (mg TAN/L) =	1.367	* formula on pg. 46 (plateaus at 7 C)

Endangered Mussel Species Impact Area Calculations:

Existing Area of Impact

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

Approximate Area of Impact Determined from Survey =	N/A m^2	(Enter N/A if no site specific survey has been completed)
Existing Mussel Density within Area of Impact =		
Rabbitsfoot *(Quadrula cylindrical)*	per m^2	
Northern Riffleshell *(Epioblasma torulosa rangiana)*	per m^2	
Rayed Bean *(Villosa fabalis)*	per m^2	
Clubshell *(Pleurobema clava)*	per m^2	
Sheepnose *(Plethobasus cyphyus)*	per m^2	
Snuffbox *(Epioblasma triquetra)*	per m^2	
TOTAL	0 per m^2	

Method 1 - Utilizing Site Specific Mussel Survey Information

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

This method utilizes a simple comparison of the size of the existing area of impact as determined from a site specific mussel survey and the chlorides in the existing discharge compared to the chlorides in the proposed discharge after the facility upgrades treatment technologies. This method is only applicable to where the stream impairment is caused by TDS and/or chlorides as the plume has been delineated through conductivity measurements.

A.	Area of Impact Determined from Survey:	N/A	m^2
B.	Chlorides in Existing Discharge:	195	mg/L
C.	Chlorides in Proposed Discharge after Treatment Facility Upgrades:	174	mg/L
D.	Approximate Area of Impact after Treatment Facility Upgrades:	N/A	m^2

A/B = D/C Therefore, D = (A*C)/B

7/30/2025

Outfall 001

Facility:		
Permit Number:	**Effective:**	**Expiration:**
Outfall No:		
Location:		
Discharge to:		
Site Specific Mussel Survey Completed:		

Endangered Mussel Species Impact Area Calculations: (continued...)

Method 2 - Mass Balance Relationship of Loading and Assimilative Capacity of Stream

Chloride (Cl⁻)	$L_{S(Cl^-)}$ = Available Chloride Loading in Stream = $C_{C(Cl^-)} - C_{S(Cl^-)} \times Q_S$(MGD) X 8.34 =	87,658 lbs/Day
	$L_{D\text{-}MAX(Cl^-)}$ = Current Maximum Discharge Chloride Loading exceeding criteria = $(C_{E(Cl^-)} - C_{E(Cl^-)}) \times Q_D$(MGD) X 8.34 =	6,343 lbs/Day
	$\%_{E(Cl^-)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Cl^-)} / L_{S(Cl^-)}$ =	7% of Stream Capacity
	$L_{D(Cl^-)}$ = Proposed Discharge Cl^- Loading exceeding criteria after Treatment Facility Upgrades = $(C_{P(Cl^-)} - C_{P(Cl^-)}) \times Q_D$(MGD) X 8.34 =	-4228.38 lbs/Day
	$\%_{P(Cl^-)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Cl^-)} / L_{S(Cl^-)}$ =	-4.82% of Stream Capacity
	Proposed Area of Impact due to Chloride * = $(\%_{P(Cl^-)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.51 m^2
Nickel (Ni)	$L_{S(Ni)}$ = Available Nickel Loading in Stream = $C_{C(Ni)} - C_{S(Ni)} \times Q_S$(MGD) X 8.34 =	8,204 lbs/Day
	$L_{D\text{-}MAX(Ni)}$ = Current Maximum Discharge Nickel Loading exceeding criteria = $(C_{E(Ni)} - C_{E(Ni)}) \times Q_D$(MGD) X 8.34 =	-179 lbs/Day
	$\%_{E(Ni)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Ni)} / L_{S(Ni)}$ =	0% of Stream Capacity
	$L_{D(Ni)}$ = Proposed Discharge Ni Loading exceeding criteria after Treatment Facility Upgrades = $(C_{P(Ni)} - C_{P(Ni)}) \times Q_D$(MGD) X 8.34 =	-395.733 lbs/Day
	$\%_{P(Ni)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Ni)} / L_{S(Ni)}$ =	-4.82% of Stream Capacity
	Proposed Area of Impact due to Nickel * = $(\%_{P(Ni)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.51 m^2
Zinc (Zn)	$L_{S(Zn)}$ = Available Zinc Loading in Stream = $C_{C(Zn)} - C_{S(Zn)} \times Q_S$(MGD) X 8.34 =	14,812 lbs/Day
	$L_{D\text{-}MAX(Zn)}$ = Current Maximum Discharge Zinc Loading exceeding criteria = $(C_{E(Zn)} - C_{E(Zn)}) \times Q_D$(MGD) X 8.34 =	4,381 lbs/Day
	$\%_{E(Zn)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Zn)} / L_{S(Zn)}$ =	30% of Stream Capacity
	$L_{D(Zn)}$ = Proposed Discharge Zn Loading exceeding criteria after Treatment Facility Upgrades = $(C_{P(Zn)} - C_{P(Zn)}) \times Q_D$(MGD) X 8.34 =	-714.4878 lbs/Day
	$\%_{P(Zn)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Zn)} / L_{S(Zn)}$ =	-4.82% of Stream Capacity
	Proposed Area of Impact due to Zinc * = $(\%_{P(Zn)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.51 m^2
Copper (Cu)	$L_{S(Cu)}$ = Available Copper Loading in Stream = $C_{C(Cu)} - C_{S(Cu)} \times Q_S$(MGD) X 8.34 =	11,238 lbs/Day
	$L_{D\text{-}MAX(Cu)}$ = Current Maximum Discharge Copper Loading exceeding criteria = $(C_{E(Cu)} - C_{E(Cu)}) \times Q_D$(MGD) X 8.34 =	-542 lbs/Day
	$\%_{E(Cu)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Cu)} / L_{S(Cu)}$ =	0% of Stream Capacity
	$L_{D(Cu)}$ = Proposed Discharge Cu Loading exceeding criteria after Treatment Facility Upgrades = $(C_{P(Cu)} - C_{P(Cu)}) \times Q_D$(MGD) X 8.34 =	-542.1 lbs/Day
	$\%_{P(Cu)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Cu)} / L_{S(Cu)}$ =	-4.82% of Stream Capacity
	Proposed Area of Impact due to Copper* = $(\%_{P(Cu)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.51 m^2
Ammonia-Nitrogen (NH3-N)	$L_{S(NH3\text{-}N)}$ = Available NH3-N Loading in Stream = $C_{C(NH3\text{-}N)} - C_{S(NH3\text{-}N)} \times Q_S$(MGD) X 8.34 =	1,536 lbs/Day
	$L_{D\text{-}MAX(NH3\text{-}N)}$ = Current Maximum Discharge NH3-N Loading = $C_{E(NH3\text{-}N)} \times Q_D$(MGD) X 8.34 =	43 lbs/Day
	$\%_{E(NH3\text{-}N)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(NH3\text{-}N)} / L_{S(NH3\text{-}N)}$ =	3% of Stream Capacity
	$L_{D(NH3\text{-}N)}$ = Proposed Discharge NH3-N Loading after Treatment Facility Upgrades = $C_{P(NH3\text{-}N)} - C_{C(NH3\text{-}N)} \times Q_D$(MGD) X 8.34 =	-74 lbs/Day
	$\%_{P(NH3\text{-}N)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(NH3\text{-}N)} / L_{S(NH3\text{-}N)}$ =	-4.82% of Stream Capacity
	Proposed Area of Impact due to NH3-N * = $(\%_{P(NH3\text{-}N)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.51 m^2

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.05
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name
City of Warren WWTP

Permit No.
PA0027120

Test Completion Date: 9/4/2018

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: 10/8/2019

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	0
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: 7/13/2020

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: 7/19/2021

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	0	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	0.900	1.000
Std Dev.	0.316	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)	0.05
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: City of Warren WWTP

Permit No.: PA0027120

Test Completion Date: 9/4/2018

Replicate No.	Control	TIWC
1	35	33
2	36	32
3	33	33
4	27	35
5	34	36
6	34	33
7	36	35
8	32	31
9	33	31
10	30	37
11		
12		
13		
14		
15		
Mean	33.000	33.600
Std Dev.	2.789	2.066
# Replicates	10	10

T-Test Result	9.5202
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	**PASS**

Test Completion Date: 10/8/2019

Replicate No.	Control	TIWC
1	30	33
2	30	31
3	31	35
4	31	6
5	36	34
6	35	31
7	33	28
8	33	30
9	32	32
10	30	30
11		
12		
13		
14		
15		
Mean	32.100	29.000
Std Dev.	2.132	8.340
# Replicates	10	10

T-Test Result	1.8340
Deg. of Freedom	11
Critical T Value	0.8755
Pass or Fail	**PASS**

Test Completion Date: 7/13/2020

Replicate No.	Control	TIWC
1	30	25
2	28	25
3	26	25
4	26	28
5	29	25
6	29	28
7	29	23
8	20	23
9	24	30
10	28	30
11		
12		
13		
14		
15		
Mean	26.900	26.200
Std Dev.	3.035	2.616
# Replicates	10	10

T-Test Result	5.4942
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	**PASS**

Test Completion Date: 7/19/2021

Replicate No.	Control	TIWC
1	27	29
2	21	26
3	33	34
4	12	29
5	26	33
6	33	30
7	32	32
8	30	34
9	16	27
10	29	29
11		
12		
13		
14		
15		
Mean	25.900	30.300
Std Dev.	7.310	2.830
# Replicates	10	10

T-Test Result	5.5738
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	**PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.05
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name

City of Warren WWTP

Permit No.

PA0027120

Replicate No.	Test Completion Date: 9/4/2018 Control	TIWC
1	1	1
2	1	1
3	0.9	1
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.975	1.000
Std Dev.	0.050	0.000
# Replicates	4	4

T-Test Result	26.1497
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

Replicate No.	Test Completion Date: 10/8/2019 Control	TIWC
1	1	1
2	1	1
3	1	0.9
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	1.000	0.975
Std Dev.	0.000	0.050
# Replicates	4	4

T-Test Result	17.8623
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

Replicate No.	Test Completion Date: 7/14/2020 Control	TIWC
1	0.9	1
2	1	1
3	1	1
4	1	0.9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.975	0.975
Std Dev.	0.050	0.050
# Replicates	4	4

T-Test Result	14.8898
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Replicate No.	Test Completion Date: 7/20/2021 Control	TIWC
1	1	1
2	0.9	1
3	1	0.8
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.975	0.950
Std Dev.	0.050	0.100
# Replicates	4	4

T-Test Result	8.0396
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	**PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.05
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name

City of Warren WWTP

Permit No.

PA0027120

Replicate No.	Test Completion Date 9/4/2018 Control	TIWC
1	0.218	0.198
2	0.207	0.203
3	0.253	0.271
4	0.292	0.263
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.243	0.234
Std Dev.	0.038	0.039
# Replicates	4	4

T-Test Result	2.1550
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Replicate No.	Test Completion Date 10/8/2019 Control	TIWC
1	0.435	0.453
2	0.384	0.383
3	0.385	0.34
4	0.352	0.427
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.389	0.401
Std Dev.	0.034	0.050
# Replicates	4	4

T-Test Result	3.8928
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Replicate No.	Test Completion Date 7/14/2020 Control	TIWC
1	0.448	0.4556
2	0.425	0.407
3	0.479	0.476
4	0.387	0.453
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.435	0.448
Std Dev.	0.039	0.029
# Replicates	4	4

T-Test Result	5.9193
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Replicate No.	Test Completion Date 7/20/2021 Control	TIWC
1	0.316	0.313
2	0.295	0.354
3	0.306	0.265
4	0.312	0.331
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.307	0.316
Std Dev.	0.009	0.038
# Replicates	4	4

T-Test Result	4.4453
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

WET Summary and Evaluation

Facility Name	City of Warren WWTP
Permit No.	PA0027120
Design Flow (MGD)	6.5
Q_{7-10} Flow (cfs)	250.4
PMF_a	0.07
PMF_c	0.48

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	9/4/18		7/13/20	7/19/21
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	9/4/18	10/8/19	7/13/20	7/19/21
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	9/4/18	10/8/19	7/14/20	7/20/21
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	9/4/18		7/14/20	7/20/21
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**	
TIWC	**8**	% Effluent
Dilution Series	**4, 8, 30, 60, 100**	% Effluent
Permit Limit	**None**	
Permit Limit Species		