pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0026298**
Facility Type	**Municipal**	APS ID	**1072264**
Major / Minor	**Major**	Authorization ID	**1411869**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Whitemarsh Township Authority**	Facility Name	**Whitemarsh Township STP**
Applicant Address	2015 Joshua Road	Facility Address	2015 Joshua Road
	Lafayette Hill, PA 19444-2431		Lafayette Hill, PA 19444
Applicant Contact	Brent Wagner	Facility Contact	Thomas Bonjo
Applicant Phone	(484) 344-5230	Facility Phone	(610) 825-1412
Client ID	64396	Site ID	256062
Ch 94 Load Status	Not Overloaded	Municipality	Whitemarsh Township
Connection Status	No Limitations	County	Montgomery
Date Application Received	September 22, 2022	EPA Waived?	No
Date Application Accepted		If No, Reason	Major Facility

Purpose of Application: Permit Renewal.

Summary of Review

Applicant requests renewal of NPDES permit to discharge an average annual flow of 2.0 MGD of treated sewage from the Whitemarsh STP into Schuylkill River. The hydraulic design capacity of the plant for Chapter 94 overload determinations is 4.0 MGD. The organic design capacity for the plant is 3400 lbs/day. The annual average flow for the year 2021 was 1.252 MGD. The highest monthly average flow for the year 2021 was 1.489 MGD. The highest peak instantaneous flow for the year 2021 was 3.358 MGD. The municipalities serve by the Whitemarsh Township STP are Whitemarsh Township, Plymouth Township and Whitpain Township.

The sewage treatment plant consists of a grit chamber, bar screen, primary clarifiers, primary and secondary trickling filters, and secondary clarifiers. Liquid Chlorine is used for disinfection and liquid Sulfur Dioxide for dichlorination. Solids are thickened and dewatered using filter press and cake is send to landfill for final disposal.

Currently the following wastewater treatment chemicals are used at the plant: Chlorine, Sodium Bisulfide, and Sodium Hypochlorite.

The applicant is implementing an EPA approved pretreatment program. The following are the industries connected to the sewer system:

(1) Montgomery County SPCS, (2) SANIPUR US LLC, (3) East-West Label Company, (4) Franklin Cleaning Equipment and supply, (5) Peripheral Dynamics, (6) Ecovyst, Inc. and (7) Lux Global Label

Approve	Deny	Signatures	Date
X		Ketan Thaker Ketan Thaker / Project Manager	11/22/2023
X		Pravin Patel Pravin C. Patel, P.E. / Environmental Engineer Manager	11/22/2023

Summary of Review

Conventional Parameters:

Since last renewal, there are no change in quality and quantity of wastewater, receiving stream characteristic and designation, therefore existing limits for conventional parameters are carried over in this renewal.
From the previous water quality protection report, WQM 7.0 was used to confirm that Whitemarsh STP's existing limits for conventional pollutants (CBOD5, NH3_N, and DO) are adequately protective of instream criteria for dissolved oxygen and ammonia toxicity.

Fecal Coliform: Monthly average limit of #200 /100 ml as a geometric mean and Instantaneous maximum limit of #1000/100ml are included in the permit. Chapter 924.47(a)(4) and DRBC 4.30.4.A.1 references are incorporated give 10% rule on Instantaneous limit of #1000/100ml in winter months.

Total Residual Chlorine: BAT limit of 0.5 mg/l, protective of Chapter 93 criteria are carried over in this renewal.

Total Dissolved Solids: DRBC regulations under section 3.10.4.D.2 requires TDS not to exceed 1000 mg/l, 133% of background or 500 mg/l instream, which is more stringent. An existing limit of 1000 mg/l as a monthly average is carried over in the renewal.

Phosphorus: Receiving stream (Schuylkill) is not determined for nutrient impairment, however, monitoring of phosphorus is continued in the renewal to continued collection of data in the event that the impairment is identified in the future, and waste load allocations are necessary to address the impairment.

PCBs: The facility is implementing PCBs PMP as required per established Schuylkill River PCB TMDL. The last PCBs PMP 2022 annual report was submitted on 2/13/2023. Based on the sampling results, the reported concentration during dry weather is 2152 pg/l and reported concentration for wet weather is 4477.29 pg/L. The dry-weather PCB sampling results show an overall decrease in PCBs from both the original baseline concentrations as well as a more significant reduction since the 2015 through 2019 samples. The 2022 wet-weather PCBs are higher than the original dry-weather baseline, but show an overall reduction as compared to the wet-weather 2015 through 2019 data. Therefore, implementation of PMP is continued in this renewal.

Monitoring requirements for Total Nitrogen and E. Coli have been added to this permit renewal and are consistent with SOP.

Influent monitoring for CBOD5, TSS and BOD5 are recommended for the draft permit and carried over from previous permit to check compliance with the 85% removal requirement and Chapter 94 requirement. This requirement is consistent with the requirements of other similar dischargers in the area.

Based on the Toxic Management Spreadsheet calculation; Total Aluminum, Total Copper, Total Thallium, Total Zinc and Acrolein are included in the draft permit.

Review of e-DMRs show that effluent is generally in compliance with permit limits. There were two exceedances for Fecal Coliform and one for Ammonia in the last year.

Sludge use and disposal description and location(s): sewage sludge / biosolids are sent to Pioneer Crossing Landfill for disposal.

Act-14 Notification to Whitemarsh Township on July 25, 2022.
Act-14 Notification to Montgomery County board of Commissioner on July25, 2022.

Permit Conditions:

A. No Stormwater
B. Acquire Necessary Property Rights
C. Proper Sludge Disposal
D. Chlorine Optimization
E. Operator Notification
F. Fecal Coliform Reporting
G. Pretreatment Program Implementation

Summary of Review

H. Solids Management
I. PCBs monitoring and PMP requirement
J. WET Condition
K. Stormwater Outfalls Requirement

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.	002	Design Flow (MGD)	2
Latitude	40Âº 4' 23.91"	Longitude	-75Âº 17' 3.91"
Quad Name	Norristown	Quad Code	1843
Wastewater Description:	Sewage Effluent		

Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	00833
NHD Com ID	25985586	RMI	18.9
Drainage Area	1791.7 sq. miles	Yield (cfs/mi^2)	0.21
Q_{7-10} Flow (cfs)	374.3	Q_{7-10} Basis	Previous WQPR
Elevation (ft)	42.0	Slope (ft/ft)	0.00073
Watershed No.	3-F	Chapter 93 Class.	WWF, MF
Existing Use	Same as Chapter 93	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Nearest Downstream Public Water Supply Intake	Philadelphia Water Department Queen Lane Intake		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	394
PWS RMI	12.3	Distance from Outfall (mi)	6.6

Changes Since Last Permit Issuance: None

Treatment Facility Summary

Treatment Facility Name: Whitemarsh STP

WQM Permit No.	Issuance Date
4612407 A	11/28/2017

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Trickling Filter With Settling	Chlorine with Dichlorination	2

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
4	3400	Not Overloaded	Lime Treatment	Landfill

Changes Since Last Permit Issuance: None

Compliance History

DMR Data for Outfall 002 (from September 1, 2022 to August 31, 2023)

Parameter	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22
Flow (MGD) Average Monthly	1.122	1.301	1.229	1.072	1.162	1.06	1.005	1.174	1.244	1.006	1.105	1.033
Flow (MGD) Daily Maximum	1.769	1.549	2.561	2.147	2.971	1.942	1.247	2.267	1.45	1.751	2.427	2.54
pH (S.U.) Instantaneous Minimum	7.4	7.4	7.5	7.5	7.0	7.1	7.1	7.0	7.2	7.0	7.2	6.9
pH (S.U.) Instantaneous Maximum	8.7	8.5	8.2	8.3	8.2	7.9	8.1	8.1	7.9	8.0	7.9	7.9
DO (mg/L) Instantaneous Minimum	5.1	5.4	6.0	6.5	7.0	7.9	8.0	8.5	7.9	6.9	7.1	5.4
TRC (mg/L) Average Monthly	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2
TRC (mg/L) Instantaneous Maximum	0.4	0.3	0.76	0.5	0.36	0.5	0.5	0.33	0.3	0.23	0.3	0.6
CBOD5 (lbs/day) Average Monthly	98	130	136	115	143	125	115	131	188	118	165	132
CBOD5 (lbs/day) Influent Average Monthly	1466	1804	1646	1437	1564	1102	1939	1509	1712	2337	1731	1687
CBOD5 (lbs/day) Weekly Average	117	146	191	165	155	153	193	230	236	145	193	174
CBOD5 (mg/L) Average Monthly	10	13	13	12	16	15	14	13	19	14	19	16
CBOD5 (mg/L) Influent Average Monthly	152	170	172	159	180	129	283	156	185	263	197	209
CBOD5 (mg/L) Weekly Average	16	17	16	14	19	18	25	16	27	17	25	19
BOD5 (lbs/day) Influent Average Monthly	1512	1786	1765	1406	1733	1235	2694	1890	2192	3162	2332	2166

BOD5 (mg/L) Influent Average Monthly	164	160	181	156	201	143	334	198	239	363	264	263
TSS (lbs/day) Average Monthly	65	103	130	130	109	109	98	86	95	81	125	103
TSS (lbs/day) Influent Average Monthly	1689	2436	1531	1114	1407	1217	2146	1809	1951	2190	2070	1926
TSS (lbs/day) Weekly Average	96	159	186	242	129	127	138	180	125	97	231	148
TSS (mg/L) Average Monthly	7	9	12	13	13	13	12	8	10	9	13	12
TSS (mg/L) Influent Average Monthly	180	228	163	129	163	137	255	187	217	246	229	241
TSS (mg/L) Weekly Average	12	14	16	17	17	15	18	12	15	12	17	16
Total Dissolved Solids (mg/L) Average Quarterly			648.0			600.0			762.0			678.0
Total Dissolved Solids (mg/L) Daily Maximum			648.0			600.0			762.0			678.0
Fecal Coliform (No./100 ml) Geometric Mean	4	9	< 20	4	< 1	1	2	< 2	4	4	10	4
Fecal Coliform (No./100 ml) Instantaneous Maximum	31	300	3900	20000	< 2	5	3	5	52	240	48	78
Ammonia (lbs/day) Average Monthly	122	131	119	89	108	110	149	181	172	193	125	111
Ammonia (mg/L) Average Monthly	13	12	12	10	12	12	18	18	18	22	15	14
Total Phosphorus (lbs/day) Average Monthly	22	21	36	23	26	19	18	19	20	23	24	26
Total Phosphorus (mg/L) Average Monthly	2.3	1.9	3.8	2.5	3.04	2.2	2.2	1.9	2.2	2.7	2.7	3.2
Total Copper (mg/L) Average Quarterly			0.027			0.021			0.022			0.018
Sulfate (mg/L) Average Quarterly			42.8			28			30.5			50

Chloride (mg/L) Average Quarterly			227			233			126			240
Bromide (mg/L) Average Quarterly			< 1.0			< 1.0			< 1.0			< 1.0

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
03F	833	SCHUYLKILL RIVER	**19.450**	42.80	1788.52	0.00028	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	0.100	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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
Whitemarsh STP	PA0026298	2.0000	2.0000	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	5.00	8.24	0.00	0.00
NH3-N	20.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL 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												
19.450	178.85	0.00	178.85	3.094	0.00028	1.189	249.25	209.57	0.61	0.055	20.09	7.00
Q1-10 Flow												
19.450	114.47	0.00	114.47	3.094	0.00028	NA	NA	NA	0.48	0.070	20.13	7.00
Q30-10 Flow												
19.450	243.24	0.00	243.24	3.094	0.00028	NA	NA	NA	0.73	0.046	20.06	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		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL 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
19.450	Whitemarsh STP	16.58	40	16.58	40	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
19.450	Whitemarsh STP	1.88	20	1.88	20	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)		
19.45	Whitemarsh STP	25	25	20	20	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
19.450	2.000	20.085	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
249.249	1.189	209.567	0.614
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.39	0.258	0.34	0.705
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.188	0.803	Tsivoglou	6
Reach Travel Time (days)			
0.055			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.005	2.39	0.34	8.18
0.011	2.38	0.34	8.17
0.016	2.38	0.34	8.17
0.022	2.38	0.33	8.16
0.027	2.37	0.33	8.15
0.033	2.37	0.33	8.15
0.038	2.37	0.33	8.14
0.044	2.36	0.33	8.13
0.049	2.36	0.33	8.13
0.055	2.36	0.33	8.12

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL 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)
19.450	Whitemarsh STP	PA0026298	2.000	CBOD5	25		
				NH3-N	20	40	
				Dissolved Oxygen			5

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.2, February 2021

Model Results

Whitemarsh Township STP, NPDES Permit No. PA0026298, Outfall 002

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.063 Analysis Hardness (mg/l): 133.43 Analysis pH: 7.09

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	3,477	
Total Antimony	0	0		0	1,100	1,100	5,100	
Total Arsenic	0	0		0	340	340	1,576	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	97,359	
Total Boron	0	0		0	8,100	8,100	37,553	
Total Cadmium	0	0		0	2.665	2.86	13.3	Chem Translator of 0.932 applied
Total Chromium (III)	0	0		0	721.580	2,283	10,587	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	75.5	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	440	
Total Copper	0	0		0	17.636	18.4	85.2	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	102	
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	88.279	118	546	Chem Translator of 0.749 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	7.64	Chem Translator of 0.85 applied
Total Nickel	0	0		0	597.636	599	2,776	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	5.283	6.22	28.8	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	301	
Total Zinc	0	0		0	149.620	153	709	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	13.9	
Acrylonitrile	0	0		0	650	650	3,014	

Benzene	0	0		0	640	640	2,967	
Bromoform	0	0		0	1,800	1,800	8,345	
Carbon Tetrachloride	0	0		0	2,800	2,800	12,981	
Chlorobenzene	0	0		0	1,200	1,200	5,563	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	83,451	
Chloroform	0	0		0	1,900	1,900	8,809	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	69,542	
1,1-Dichloroethylene	0	0		0	7,500	7,500	34,771	
1,2-Dichloropropane	0	0		0	11,000	11,000	50,998	
1,3-Dichloropropylene	0	0		0	310	310	1,437	
Ethylbenzene	0	0		0	2,900	2,900	13,445	
Methyl Bromide	0	0		0	550	550	2,550	
Methyl Chloride	0	0		0	28,000	28,000	129,813	
Methylene Chloride	0	0		0	12,000	12,000	55,634	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	4,636	
Tetrachloroethylene	0	0		0	700	700	3,245	
Toluene	0	0		0	1,700	1,700	7,881	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	31,526	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	13,908	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	15,763	
Trichloroethylene	0	0		0	2,300	2,300	10,663	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	2,596	
2,4-Dichlorophenol	0	0		0	1,700	1,700	7,881	
2,4-Dimethylphenol	0	0		0	660	660	3,060	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	371	
2,4-Dinitrophenol	0	0		0	660	660	3,060	
2-Nitrophenol	0	0		0	8,000	8,000	37,089	
4-Nitrophenol	0	0		0	2,300	2,300	10,663	
p-Chloro-m-Cresol	0	0		0	160	160	742	
Pentachlorophenol	0	0		0	9.520	9.52	44.1	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	2,133	
Acenaphthene	0	0		0	83	83.0	385	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	1,391	
Benzo(a)Anthracene	0	0		0	0.5	0.5	2.32	
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	139,085	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	20,863	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	1,252	
Butyl Benzyl Phthalate	0	0		0	140	140	649	
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	3,802	
1,3-Dichlorobenzene	0	0		0	350	350	1,623	
1,4-Dichlorobenzene	0	0		0	730	730	3,384	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	18,545	
Dimethyl Phthalate	0	0		0	2,500	2,500	11,590	
Di-n-Butyl Phthalate	0	0		0	110	110	510	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	7,418	
2,6-Dinitrotoluene	0	0		0	990	990	4,590	
1,2-Diphenylhydrazine	0	0		0	15	15.0	69.5	
Fluoranthene	0	0		0	200	200	927	
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	46.4	
Hexachlorocyclopentadiene	0	0		0	5	5.0	23.2	
Hexachloroethane	0	0		0	60	60.0	278	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	46,362	
Naphthalene	0	0		0	140	140	649	
Nitrobenzene	0	0		0	4,000	4,000	18,545	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	78,815	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	1,391	
Phenanthrene	0	0		0	5	5.0	23.2	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	603	

☑ ***CFC*** CCT (min): 720 PMF: 0.436 Analysis Hardness (mg/l): 105.92 Analysis pH: 7.01

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	5,762	
Total Arsenic	0	0		0	150	150	3,929	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	107,388	
Total Boron	0	0		0	1,600	1,600	41,907	
Total Cadmium	0	0		0	0.256	0.28	7.4	Chem Translator of 0.907 applied
Total Chromium (III)	0	0		0	77.688	90.3	2,366	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	272	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	498	
Total Copper	0	0		0	9.407	9.8	257	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	136	

Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	88,209	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.679	3.42	89.7	Chem Translator of 0.783 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	23.7	Chem Translator of 0.85 applied
Total Nickel	0	0		0	54.599	54.8	1,434	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	131	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	340	
Total Zinc	0	0		0	124.036	126	3,295	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	78.6	
Acrylonitrile	0	0		0	130	130	3,405	
Benzene	0	0		0	130	130	3,405	
Bromoform	0	0		0	370	370	9,691	
Carbon Tetrachloride	0	0		0	560	560	14,668	
Chlorobenzene	0	0		0	240	240	6,286	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	91,672	
Chloroform	0	0		0	390	390	10,215	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	81,196	
1,1-Dichloroethylene	0	0		0	1,500	1,500	39,288	
1,2-Dichloropropane	0	0		0	2,200	2,200	57,623	
1,3-Dichloropropylene	0	0		0	61	61.0	1,598	
Ethylbenzene	0	0		0	580	580	15,191	
Methyl Bromide	0	0		0	110	110	2,881	
Methyl Chloride	0	0		0	5,500	5,500	144,057	
Methylene Chloride	0	0		0	2,400	2,400	62,861	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	5,500	
Tetrachloroethylene	0	0		0	140	140	3,667	
Toluene	0	0		0	330	330	8,643	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	36,669	
1,1,1-Trichloroethane	0	0		0	610	610	15,977	
1,1,2-Trichloroethane	0	0		0	680	680	17,811	
Trichloroethylene	0	0		0	450	450	11,786	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	2,881	
2,4-Dichlorophenol	0	0		0	340	340	8,905	
2,4-Dimethylphenol	0	0		0	130	130	3,405	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	419	
2,4-Dinitrophenol	0	0		0	130	130	3,405	
2-Nitrophenol	0	0		0	1,600	1,600	41,907	
4-Nitrophenol	0	0		0	470	470	12,310	
p-Chloro-m-Cresol	0	0		0	30	30.0	786	
Pentachlorophenol	0	0		0	7.304	7.3	191	

Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	2,383	
Acenaphthene	0	0		0	17	17.0	445	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	1,545	
Benzo(a)Anthracene	0	0		0	0.1	0.1	2.62	
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	157,153	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	23,835	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	1,414	
Butyl Benzyl Phthalate	0	0		0	35	35.0	917	
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	4,191	
1,3-Dichlorobenzene	0	0		0	69	69.0	1,807	
1,4-Dichlorobenzene	0	0		0	150	150	3,929	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	20,954	
Dimethyl Phthalate	0	0		0	500	500	13,096	
Di-n-Butyl Phthalate	0	0		0	21	21.0	550	
2,4-Dinitrotoluene	0	0		0	320	320	8,381	
2,6-Dinitrotoluene	0	0		0	200	200	5,238	
1,2-Diphenylhydrazine	0	0		0	3	3.0	78.6	
Fluoranthene	0	0		0	40	40.0	1,048	
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	52.4	
Hexachlorocyclopentadiene	0	0		0	1	1.0	26.2	
Hexachloroethane	0	0		0	12	12.0	314	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	55,003	
Naphthalene	0	0		0	43	43.0	1,126	
Nitrobenzene	0	0		0	810	810	21,216	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	89,053	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	1,545	
Phenanthrene	0	0		0	1	1.0	26.2	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	681	

☑ ***THH*** CCT (min): 720 PMF: 0.436 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	147	
Total Arsenic	0	0		0	10	10.0	262	
Total Barium	0	0		0	2,400	2,400	62,861	
Total Boron	0	0		0	3,100	3,100	81,196	
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	140	140	3,667	
Dissolved Iron	0	0		0	300	300	7,858	
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	26,192	
Total Mercury	0	0		0	0.050	0.05	1.31	
Total Nickel	0	0		0	610	610	15,977	
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	6.29	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	6	6.0	157	
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	130	130	3,405	
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	864	
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	530	530	13,882	
Methyl Bromide	0	0		0	47	47.0	1,231	
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	1,300	1,300	34,050	
1,2-trans-Dichloroethylene	0	0		0	140	140	3,667	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
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	81	81.0	2,122	
2,4-Dichlorophenol	0	0		0	77	77.0	2,017	
2,4-Dimethylphenol	0	0		0	380	380	9,953	
4,6-Dinitro-o-Cresol	0	0		0	13	13.0	340	
2,4-Dinitrophenol	0	0		0	69	69.0	1,807	
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	10,400	10,400	272,398	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	670	670	17,549	
Anthracene	0	0		0	8,300	8,300	217,394	
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	1,400	1,400	36,669	
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	150	150	3,929	
2-Chloronaphthalene	0	0		0	1,000	1,000	26,192	
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	420	420	11,001	
1,3-Dichlorobenzene	0	0		0	420	420	11,001	
1,4-Dichlorobenzene	0	0		0	420	420	11,001	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	17,000	17,000	445,266	
Dimethyl Phthalate	0	0		0	270,000	270,000	7,071,867	
Di-n-Butyl Phthalate	0	0		0	2,000	2,000	52,384	
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	130	130	3,405	
Fluorene	0	0		0	1,100	1,100	28,811	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	

Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	40	40.0	1,048	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.0038	0.004	0.1	
Isophorone	0	0		0	35	35.0	917	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	17	17.0	445	
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	830	830	21,739	
1,2,4-Trichlorobenzene	0	0		0	35	35.0	917	

☑ ***CRL*** CCT (min): 720 PMF: 0.669 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	0.051	0.051	7.68	
Benzene	0	0		0	1.2	1.2	181	

Bromoform	0	0		0	4.3	4.3	648	
Carbon Tetrachloride	0	0		0	0.23	0.23	34.6	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.4	0.4	60.2	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	858	
Dichlorobromomethane	0	0		0	0.55	0.55	82.8	
1,2-Dichloroethane	0	0		0	0.38	0.38	57.2	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	0.34	0.34	51.2	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	4.6	4.6	693	
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	25.6	
Tetrachloroethylene	0	0		0	0.69	0.69	104	
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	0.59	0.59	88.8	
Trichloroethylene	0	0		0	2.5	2.5	376	
Vinyl Chloride	0	0		0	0.025	0.025	3.76	
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	0.270	0.27	40.7	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	211	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.000086	0.00009	0.013	
Benzo(a)Anthracene	0	0		0	0.0038	0.004	0.57	
Benzo(a)Pyrene	0	0		0	0.0038	0.004	0.57	
3,4-Benzofluoranthene	0	0		0	0.0038	0.004	0.57	
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	0.57	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	4.52	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	1.2	1.2	181	
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	0.0038	0.004	0.57	
Dibenzo(a,h)Anthrancene	0	0		0	0.0038	0.004	0.57	
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	0.021	0.021	3.16	
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	7.53	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	7.53	
1,2-Diphenylhydrazine	0	0		0	0.036	0.036	5.42	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00028	0.0003	0.042	
Hexachlorobutadiene	0	0		0	0.44	0.44	66.3	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	1.4	1.4	211	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
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	0.00069	0.0007	0.1	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.75	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	497	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	2,229	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	54.6	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Thallium	Report	Report	Report	Report	Report	µg/L	6.29	THH	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	455	AFC	Discharge Conc > 10% WQBEL (no RP)
Acrolein	Report	Report	Report	Report	Report	µg/L	8.91	AFC	Discharge Conc > 25% 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 Antimony	147	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	62,404	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	24,070	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	7.4	µg/L	Discharge Conc < TQL
Total Chromium (III)	2,366	µg/L	Discharge Conc < TQL
Hexavalent Chromium	48.4	µg/L	Discharge Conc < TQL
Total Cobalt	282	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	65.4	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	7,858	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	88,209	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	89.7	µg/L	Discharge Conc < TQL
Total Manganese	26,192	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	1.31	µg/L	Discharge Conc < TQL
Total Nickel	1,434	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	131	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	18.5	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrylonitrile	7.68	µg/L	Discharge Conc < TQL
Benzene	181	µg/L	Discharge Conc < TQL
Bromoform	648	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	34.6	µg/L	Discharge Conc < TQL
Chlorobenzene	3,405	µg/L	Discharge Conc < TQL
Chlorodibromomethane	60.2	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	53,489	µg/L	Discharge Conc < TQL
Chloroform	858	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	82.8	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	57.2	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	864	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	32,688	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	51.2	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	8,618	µg/L	Discharge Conc < TQL

Methyl Bromide	1,231	µg/L	Discharge Conc < TQL
Methyl Chloride	83,205	µg/L	Discharge Conc < TQL
Methylene Chloride	693	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	25.6	µg/L	Discharge Conc < TQL
Tetrachloroethylene	104	µg/L	Discharge Conc < TQL
Toluene	5,052	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	3,667	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	8,915	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	88.8	µg/L	Discharge Conc < TQL
Trichloroethylene	376	µg/L	Discharge Conc < TQL
Vinyl Chloride	3.76	µg/L	Discharge Conc < TQL
2-Chlorophenol	1,664	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	2,017	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,961	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	238	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	1,807	µg/L	Discharge Conc < TQL
2-Nitrophenol	23,773	µg/L	Discharge Conc < TQL
4-Nitrophenol	6,835	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	475	µg/L	Discharge Conc < TQL
Pentachlorophenol	28.3	µg/L	Discharge Conc < TQL
Phenol	272,398	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	211	µg/L	Discharge Conc < TQL
Acenaphthene	247	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	217,394	µg/L	Discharge Conc < TQL
Benzidine	0.013	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.57	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.57	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.57	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.57	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	4.52	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	36,669	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	181	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	802	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	416	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	26,192	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.57	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.57	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	2,437	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	1,040	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	2,169	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	3.16	µg/L	Discharge Conc < TQL
Diethyl Phthalate	11,886	µg/L	Discharge Conc < TQL

Dimethyl Phthalate	7,429	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	327	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	7.53	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	7.53	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	5.42	µg/L	Discharge Conc < TQL
Fluoranthene	594	µg/L	Discharge Conc < TQL
Fluorene	28,811	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.042	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	29.7	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	14.9	µg/L	Discharge Conc < TQL
Hexachloroethane	178	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.1	µg/L	Discharge Conc < TQL
Isophorone	917	µg/L	Discharge Conc < TQL
Naphthalene	416	µg/L	Discharge Conc < TQL
Nitrobenzene	445	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.1	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.75	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	497	µg/L	Discharge Conc < TQL
Phenanthrene	14.9	µg/L	Discharge Conc < TQL
Pyrene	21,739	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	386	µg/L	Discharge Conc < TQL

Whole Effluent Toxicity (WET)

For Outfall 002, ☐ **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%, 3%, 2%, and 1%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 1%.

WET Summary and Evaluation

Facility Name	Whitemarsh Township Water Pollution Control Center
Permit No.	PA0026298
Design Flow (MGD)	2
Q_{7-10} Flow (cfs)	374.3
PMF_a	0.142
PMF_c	0.985

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/20/19	3/17/20	10/12/20	2/1/21
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/20/19	3/17/20	10/12/20	2/1/21
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/20/19	3/17/20	10/13/20	2/2/20
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	8/20/19	3/17/20	10/13/20	2/2/21
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**
TIWC	**1** % Effluent
Dilution Series	**1, 2, 30, 60, 100** % Effluent
Permit Limit	**None**
Permit Limit Species	

PMFa and PMFc values used in the analysis are taken from previous PENTOXSD reports.

Based on the review of the WET test reports, test of significant toxicity (TST) was performed using DEP's WET Analysis Spreadsheet. There is no reasonable potential, and no WET limits are recommended. The standard WET condition based on the DEP WET SOP is incorporated in Part C of the draft permit.

TRC Spreadsheet PA0026298.xls

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9 — **Whitemarsh STP PA0026298**

373.54	= Q stream (cfs)	0.1	= CV Daily
2	= Q discharge (MGD)	0.1	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 38.532	1.3.2.iii	WLA cfc = 37.558
PENTOXSD TRG	5.1a	LTAMULT afc = 0.797	5.1c	LTAMULT cfc = 0.891
PENTOXSD TRG	5.1b	LTA_afc= 30.706	5.1d	LTA_cfc = 33.479

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.043	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 0.902	

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)**

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 2
Latitude 40º 4' 26.00" **Longitude** -75º 17' 4.00"
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)

Water Quality-Based Limitations

A “Reasonable Potential Analysis” determined the following parameters were candidates for limitations/monitoring:

Parameter	Limit (mg/l)	SBC	Model
Aluminum, Total	Report	Av. Qtrly	Toxic Management Spreadsheet (TMS)
Copper, Total	Report	Av. Qtrly	TMS
Thallium, Total	Report	Av. Qtrly	TMS
Zinc, Total	Report	Av. Qtrly	TMS
Acrolein	Report	Av. Qtrly	TMS

Anti-Backsliding

Sulfate, Chloride and Bromide monitoring are eliminated from the permit.
Discharge concentrations for Sulfate, Chloride are much lower than the criterion, and there is no criterion for Bromide. Historically PADEP compared the effluent concentration of Bromide with a threshold of >1.0 mg/l for facilities with flow greater than 0.1 MGD or 10 mg/l for flows less than 0.1 MGD. If this criterion is met, a monitoring requirement was added in the permit. Since PADEP has more than 7-years’ worth of data on these special parameters, a monitoring is no longer implemented unless required by other agencies, e.g. DRBC. Therefore, it is recommended that the existing monitoring requirements for Sulfate, Chloride and Bromide to be removed. This is justified by the anti-backsliding prohibition exception as stated in 40 CFR 122.44(l)(2)(i)(B)(1).

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.3	1/day	Grab
CBOD5	417	667	XXX	25	40	50	2/week	24-Hr Composite
CBOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	500	750	XXX	30	45	60	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	1000.0 Avg Qrtly	2000.0 Daily Max	2500	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	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	XXX	XXX	Report	1/month	Grab

Outfall 002, 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 Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Ammonia	333	XXX	XXX	20	XXX	40	2/week	24-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Aluminum	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Copper	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Thallium	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Zinc	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Acrolein	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
PCBs (Dry Weather) (pg/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite
PCBs (Wet Weather) (pg/L)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	24-Hr Composite
Chronic WET - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite
Chronic WET - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite
Chronic WET - Pimephales Survival (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite
Chronic WET - Pimephales Growth (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite