pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0023256**
Facility Type	**Municipal**	APS ID	**1070514**
Major / Minor	**Major**	Authorization ID	**1409049**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Upper Gwynedd Township**	Facility Name	**Upper Gwynedd Township WWTP**
Applicant Address	1 Parkside Place	Facility Address	261 Township Line Road
	West Point, PA 19486-0001		North Wales, PA 19454
Applicant Contact	Sandra Zadell	Facility Contact	Dan Farris
Applicant Phone	(215) 699-7777	Facility Phone	(215) 699-5824
Client ID	52550	Site ID	451712
Ch 94 Load Status	Not Overloaded	Municipality	Upper Gwynedd Township
Connection Status	No Limitations	County	Montgomery
Date Application Received	August 30, 2022	EPA Waived?	No
Date Application Accepted	December 2, 2022	If No, Reason	Major Facility
Purpose of Application	NPDES permit renewal.		

1.0 Summary of Review

1.1 General discussion: The Pa Department of Environmental Protection received an NPDES permit renewal application from Environmental Engineering & Management Associates, Inc. (consultant) on August 30, 2022 on behalf of Upper Gwynedd Township (UGT/permittee) for UGT's WWTP (facility). This is a major sewage facility with a design flow of 6.4 MGD that discharges into Wissahickon Creek (TSF, MF) in state watershed 3-F. The current permit expired on February 28, 2023. The terms and conditions of the current permit is automatically extended since the renewal application is received at least 180 days prior to expiration date. Renewal NPDES permit application under Clean Water Program are not covered by PADEP's PDG per 021-2100-001. This fact sheet is developed in accordance with 40 CFR §124.56.

1.2 Changes to existing permit: Added: UV, TN, TP, Total Selenium, E-Coli, Total Zinc, 4,4-DDE (limits), TDS (limit). Removed: Total Iron, Sulfate, Chloride, Bromide, TRC from Part A to Part C.

1.3 Sludge use and disposal description and location(s): Liquid sludge is hauled off to other WWTP

1.4 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.

Approve	Deny	Signatures	Date
√		Reza H. Chowdhury, E.I.T. / Project Manager	June 30, 2023
X		Pravin Patel Pravin C. Patel, P.E. / Environmental Engineer Manager	07/03/2023

2.0 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	6.4
Latitude	40º 11' 24"	Longitude	-75º 17' 1"
Quad Name	Lansdale	Quad Code	1743
Wastewater Description:	Effluent		

Receiving Waters	Wissahickon Creek (TSF, MF)	Stream Code	00844
NHD Com ID	25979140	RMI	19.07
Drainage Area	7.33 mi^2	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	0.44 and 0.1	Q_{7-10} Basis	TMDL/ previous fact sheet
Elevation (ft)	271.74	Slope (ft/ft)	
Watershed No.	3-F	Chapter 93 Class.	TSF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	FLOW REGIME MODIFICATION, NUTRIENTS, PATHOGENS, SILTATION		
Source(s) of Impairment	MUNICIPAL POINT SOURCE DISCHARGES, SOURCE UNKNOWN, URBAN RUNOFF/STORM SEWERS		
TMDL Status	Final-10/09/2003	Name	Wissahickon TMDL

Background/Ambient Data		Data Source
pH (SU)	8.05	WQN0193, median Jul-Sep 2002-2019
Temperature (°C)	21.69	WQN0193, median Jul-Sep 2002-2019
Hardness (mg/L)	205	WQN0193, median Jul-Sep 2002-2019
Other:		

Nearest Downstream Public Water Supply Intake	PWD Queen Lane Water Plant, Philadelphia		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	
PWS RMI	12.6	Distance from Outfall (mi)	19.62

Changes Since Last Permit Issuance:

2.1 Stream flow The nearest StreamGage is 01473900 on Wissahickon Creek at 10.98 RMI, at Fort Washington, PA. Receiving stream's background data was collected from associated WQN station 0193. Per the previous fact sheet "*The Q_{7-10} design flow was previously reduced by the Wissahickon TMDL from 1.53-cfs to 0.44-cfs. The original Q_{7-10} was based on the Q_{7-10} flow established for the USGS gage station (01474000) located near the mouth of Wissahickon Creek. The Q_{7-10} was adjusted by the Wissahickon TMDL to account for the influence of effluent dominated stream conditions. (See Figure 2-2 of the Wissahickon Creek TMDL report.) The adjusted Q_{7-10} was calculated based on the sum of the low-flow discharge from an upstream stormwater pond located at the Merck's West Point facility (0.1-cfs), and on the low-flow discharge from the North Wales STP (0.34-cfs). Moving forward, the Q_{7-10} design flow will be adjusted to account for the fact that the North Wales STP ceased discharging. Therefore, the Q_{7-10} design flow will be reduced to 0.10-cfs."* The WQBELs will be calculated for a Q_{7-10} flow of 0.1 cfs.

2.2 PWS Intake:
The nearest downstream public water supply is PWD's Queen Lane intake, on Schuylkill River at RMI 12.6. Its approximately 19.62 miles downstream of Outfall 001. Discharge from this facility is expected not to impact the PWS intake.

2.3 Wastewater Characteristics:
A median pH of 7.83 was calculated from daily DMR during dry months July through September for the year 2022. The application data indicated an average Total Hardness of 228 mg/l out of 3 samples and average temperature of 23.3^0 C out of 3 sample results.

2.4 Background data:
The WQN station #193 is located on SR73 Bridge in Whitemarsh Township, Montgomery County is approximately 8 miles downstream of the outfall. Background stream data was collected from this station. The data shows a median temperature of 21.69^{0}C, median pH of 8.05, and median hardness of 205 mg/l for the period of July-September 2002-2019. The application data indicated upstream hardness of 150 mg/l and average downstream hardness at Ambler WWTP (monthly data, 2012-2015) of 168 mg/l with a median of 174 mg/l. The facility's collected data will be used for modeling since the sampling point is very close to discharge point.

2.5 Wissahickon TMDL:
Wissahickon Creek Watershed TMDL was finalized on October 9, 2003 that included the Wasteload Allocation (WLA) for Upper Gwynedd Township WWTP in Table D-9. The table is provided below:

Table D-9: Allocations with Flows for North Wales Directed to Upper Gwynedd

WWTP	North Wales	Upper Gwynedd	Ambler	Abington	Upper Dublin
CBOD5 (mg/L)	NA	4.40	10.00	7.50	12.75
NH3-N (mg/L)	NA	0.65	1.50	0.72	2.25
NO3-NO2 (mg/L)	NA	19.93	29.90	30.27	36.71
ORTHO-PO4	NA	1.61	4.68	1.85	1.45

These limits/monitoring requirements were incorporated in the current NPDES permit and will be carried over. The current permit has monitoring for NO3-NO2-N with the understanding that average discharge concentration was below the TMDL and was consistent with TMDL assumptions. A review of the eDMR will be conducted to determine if that is still the case or a numeric NO3-NO2-N limit is warranted. Seasonal Orthophosphate (Ortho-PO4) limit was applied as 0.5 mg/l with the explanation from current Fact Sheet "*The Orthophosphate limit is based on an Adaptive Management Strategy under the Wissahickon Creek TMDL Alternative currently under development. Upper Gwynedd Township is encouraged to achieve a total phosphorus limit of 0.5 mg/l upon completion of treatment plant upgrade."* The current Ortho-PO4 limit will be carried over in this renewal. It is noteworthy that the above table reflects the limits **after** the treatment plant went to upgrade from 5.7 MGD to 6.4 MGD to accept flow from North Wales STP.

2.6 Antidegradation (93.4):
The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. The receiving streams are designated as Warm Water Fishes (WWF) and Migratory Fishes (MF.) No High-Quality stream or Exceptional Value water is impacted by this discharge; therefore, no Antidegradation Analysis is performed for the discharge.

2.7 Stormwater Outfalls:
The renewal application indicated that there are three stormwater outfalls associated with this WWTP. The details are below:

Outfall	Latitude			Longitude			Receiving Stream	Designated use	Drainage Area (sft)
002	40	11	22	-75	17	02	Wissahickon Creek	TSF, MF	317,988
003	40	11	25	-75	17	07	Wissahickon Creek	TSF, MF	74,052
004	40	11	30	-75	17	07	Haines Run, Wissahickon Creek	TSF, MF	26,136

The current permit has listed stormwater parameters in Part A of the permit. The Part C.VI of the permit contains requirements applicable to stormwater outfalls. These requirements, at a minimum, will be carried over in this renewal. Per the permit renewal application, Outfall 004 is inspected in lieu of monitoring since the water quality is similar to Outfalls 002 and 003.

Discharge, Receiving Waters and Water Supply Information

Outfall No. 002 Design Flow (MGD) 0
Latitude 40º 11' 22" Longitude -75º 17' 7"
Quad Name Lansdale Quad Code 1743
Wastewater Description: Stormwater

Receiving Waters Wissahickon Creek (TSF, MF) Stream Code 00844

Discharge, Receiving Waters and Water Supply Information

Outfall No. 003 Design Flow (MGD) 0
Latitude 40º 11' 25" Longitude -75º 17' 7"
Quad Name Lansdale Quad Code 1743
Wastewater Description: Stormwater

Receiving Waters Wissahickon Creek (TSF, MF) Stream Code 00844

Discharge, Receiving Waters and Water Supply Information

Outfall No. 004 Design Flow (MGD) 0
Latitude 40º 11' 30" Longitude -75º 17' 7"
Quad Name Lansdale Quad Code 1743
Wastewater Description: Stormwater

Receiving Waters Unnamed Tributary to Wissahickon Creek (TSF, MF) Stream Code 00844

Changes Since Last Permit Issuance: None

3.0 Treatment Facility Summary

Treatment Facility Name: Upper Gwynedd Township WWTP

WQM Permit No.	Issuance Date
4618413	7/24/2019
4604412	12/6/2017

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration With Solids Removal	Ultraviolet	6.4

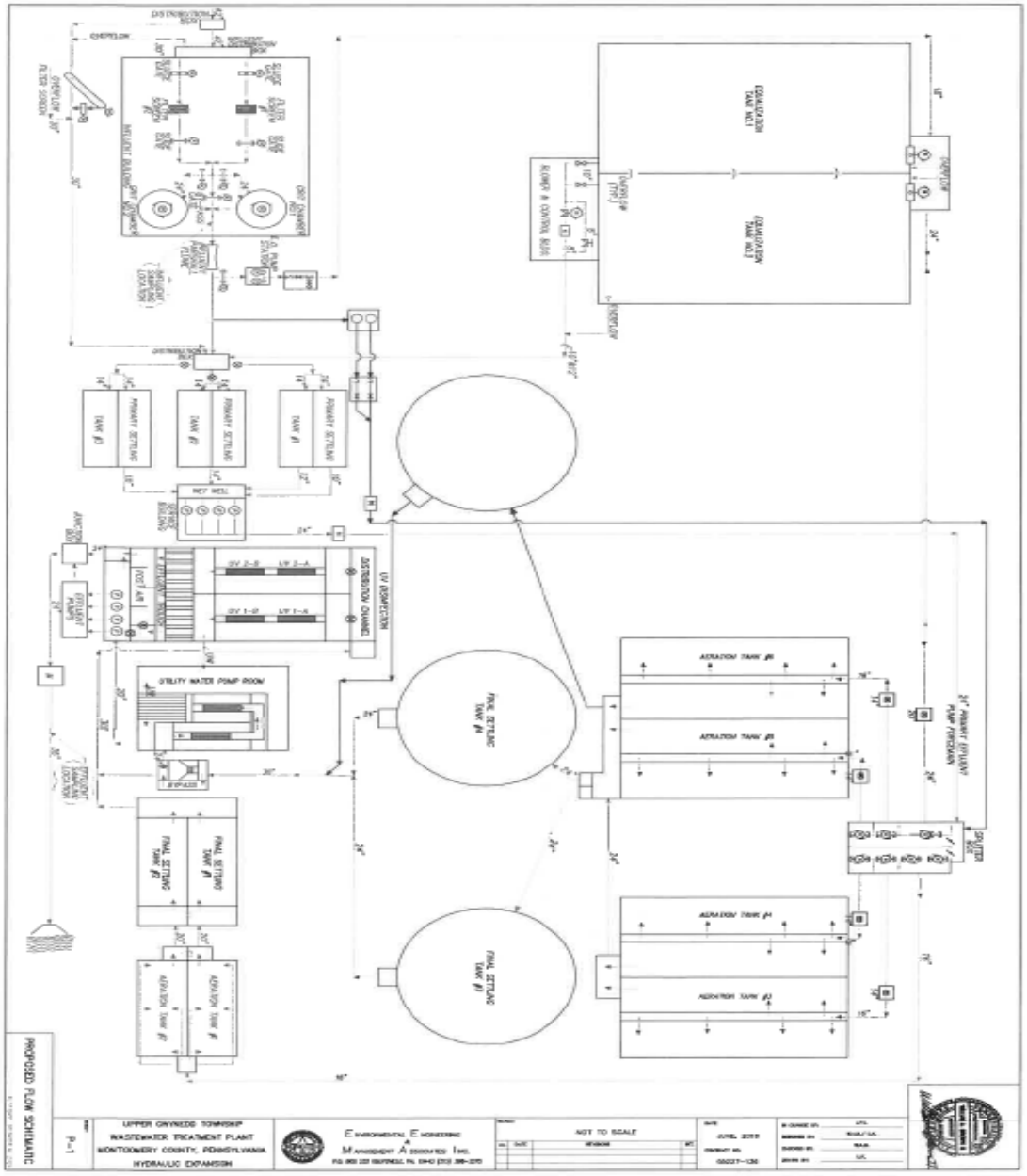
Hydraulic Capacity (MGD)	**Organic Capacity (lbs./day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
7.5	10,842	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: None

3.1 Treatment plant

3.1.1 Summary

Upper Gwynedd Township (UGT) WWTP is a 6.4 MGD Major Sewage Facility (MASF2) located in Upper Gwynedd Township, Montgomery County. UGT WWTP provides tertiary treatment and discharges treated effluent and stormwater from the WWTP area into Wissahickon Creek. The application indicated the following treatment train: influent screen → grit removal → primary clarifiers → activated sludge (with Biomag) → chemical and polymer addition → final clarification → UV disinfection → discharge to Wissahickon Creek through Outfall 001. A process flow diagram is provided below:



3.1.2 Tributary information

The facility receives wastewater from the following tributary municipalities:

Municipality	Flow contribution (%)	Type of sewer system	
		Separate (%)	Combined (%)
Upper Gwynedd Township	91	100	0
North Wales Borough	4	100	0
Worchester Township	2	100	0
Montgomery Township	1	100	0
Lower Gwynedd	1	100	0
Whitpain Township	1	100	0

3.1.3 Wastewater Treatment chemicals

UGT uses the following chemicals to treat the wastewater:

5. Wastewater treatment chemicals:

Chemical Name	Purpose	Maximum Usage Rate	Units
Polyaluminum Chloride	Phosphorus removal	5.5	GPH
Polymer (Zeta Lyte)	Settling Enhancer	2.4	GPH
Sodium Hypochlorite	Backup Disinfection	0	
Sodium Bisulfite	Backup Dechlorination	0	

3.1.4 Industrial/Commercial contributors

The following table summarizes the contributing industrial/commercial facilities:

Facility	Categorical	Letter	Title	SIU	Flow (GPD)				
					Process	NCCW	Sanitary	Other	Total
Colorcon, Inc.	Yes, 40 CFR 414	H	Specialty Organic Chemicals	Yes	9,400	0	0	130,000	139,400
J. Meyer & Sons	Yes, 40 CFR 414	D	Thermoplastic Resins	Yes	0	850	900	0	1,750
Merck and Co.	Yes, 40 CFR 439	A,D	Fermentation products, Mixing/Compounding & Formulation	yes					1,000,000
Precision Tube Co.	Yes, 40 CFR 467, 468, 471			Yes	0	0	2,500	0	2,500
Triumph Controls, Inc.	Yes, 40 CFR 438				0	5	88 employees		500-1000
Visteon	Yes, 40 CFR 438			Yes	0	13,060	22,000	2,600	37,660

3.1.5 Pretreatment

The facility has EPA approved pretreatment program, most recently issued on March 30, 2022.

3.1.5 Biosolids management

The generated liquid sludge/biosolids are liquid hauled by HydroTech Environmental. The two facilities that the sludge is hauled to are DELCORA WWTP and Towamencin WWTP.

4.0 Compliance History

4.1 DMR Data for Outfall 001 (from November 1, 2021 to October 31, 2022)

Parameter	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21
Flow (MGD) Average Monthly	3.23	2.88	2.64	2.79	3.06	4.38	5.623	3.608	3.916	3.586	2.492	2.678
Flow (MGD) Daily Maximum	8.38	6.93	3.24	3.51	3.85	11.91	15.424	4.799	9.823	6.788	2.941	3.697
pH (S.U.) IMIN	7.7	7.74	7.73	7.66	7.6	7.49	7.36	7.58	7.51	7.41	7.68	7.81
pH (S.U.) IMAX	7.98	8.02	7.96	7.93	7.8	7.78	7.84	7.9	8.04	8.01	8.15	8.1
DO (mg/L) imin	8.59	8.0	7.8	7.8	8.3	8.6	9.5	9.6	9.9	9.65	9.4	9.1
TRC (mg/L) Average Monthly	< 0.015	< 0.015	GG	GG	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
TRC (mg/L) IMAX	< 0.015	< 0.015	GG	GG	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
CBOD5 (lbs/day) Average Monthly	< 88	< 74	< 64	< 53	< 52	< 84	152	80	104	< 81	< 43	< 51
CBOD5 (lbs/day) Weekly Average	< 119	95	108	< 56	< 59	< 125	262	127	< 118	< 128	< 50	< 65
CBOD5 (mg/L) Average Monthly	< 3.3	< 3.2	< 2.9	< 2.3	< 2.1	< 2.2	2.9	2.7	3.1	< 2.5	< 2.1	< 2.3
CBOD5 (mg/L) Weekly Average	< 4.2	4.5	4.7	< 2.7	< 2.1	< 3.0	3.4	4.6	3.3	< 3.1	< 2.4	< 2.7
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	4445	4219	4453	3621	3494	5495	5058	4807	5427	5066	4974	5094
BOD5 (mg/L) Raw Sewage Influent Average Monthly	174	179	190	158	137.6	152	117	151	158	166	216	208
TSS (lbs/day) Average Monthly	110	92	110	81	65	< 129	294	117	164	110	67	97
TSS (lbs/day) Raw Sewage Influent Average Monthly	4506	4846	4976	4472	3826	5748	6126	4519	5824	5721	5373	6354
TSS (lbs/day) Weekly Average	267	124	151	96	74	255	643	141	217	147	113	182
TSS (mg/L) Average Monthly	3.5	3.9	5.1	3.5	2.5	< 3.1	5.0	3.9	4.8	3.5	3.2	4.3
TSS (mg/L) Raw Sewage Influent Average Monthly	170	200	213	194	151	155	138	142	175	191	235	258
TSS (mg/L) Weekly Average	6.0	4.0	7.0	4.0	3.0	5.0	8.0	5.0	5.0	4.0	5.1	6.5

Total Dissolved Solids (mg/L) Avg. Monthly	743	722	898	820	838.0	490	680	894	989	536	1120	482
Fecal Coliform (No./100 ml) Geo Mean	39	46	40	30	16	5	3	5	8	8	11	11
Fecal Coliform (No./100 ml) IMAX	168	396	186	136	70	31	307	55	232	44	43	30
Nitrate-Nitrite (mg/L) Average Monthly	< 11.5	21.7	< 13.4	22.5	19.4	20.5	17	20.1	22.8	14	24.8	16.3
Ammonia (lbs/day) Average Monthly	< 3.0	< 2	< 2.0	< 2.0	< 3	< 4.0	< 5	< 3	< 3	< 3	< 2	< 2
Ammonia (mg/L) Average Monthly	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.13	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Orthophosphate (lbs/day) Avg. Monthly	9	10	8	13	10	11	16	10	10	10	7	5
Orthophosphate (mg/L) Average Monthly	0.3	0.4	0.4	0.5	0.4	0.3	0.40		0.30	0.30	0.33	0.21
Total Aluminum (mg/L) Average Monthly	< 282	0.14	0.169	0.243	< 0.1	0.142	< 0.1	0.19	0.116	0.14	0.162	0.203
Total Copper (mg/L) Average Monthly	< 0.011	0.16	0.03	0.017	0.012	0.015	0.013	0.014	0.016	0.007	0.012	0.012
Dissolved Iron (mg/L) Average Monthly	< 0.032	0.076	0.039	0.076	0.072	0.06	0.051	0.056	0.072	0.04	0.063	0.045
Total Iron (mg/L) Average Monthly	< 0.10	< 0.1	< 1.0	0.119	< 0.1	< 0.087	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Sulfate (mg/L) Average Monthly	183	241	182	231	77.9	288	172	232	288	152	144	87.9
Chloride (mg/L) Average Monthly	139	289	202	279	276.0	318	240	318	310	148	275	190
Bromide (mg/L) Average Monthly	< 1.0	< 1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1.0	< 1	< 1.0
Total Hardness (mg/L) Average Monthly	156	256	240	212	226.0	232	190	224	216	156	209	186
Chronic WET - Ceriodaphnia Survival (TUc) Daily Maximum		GG			GG			GG			1.02	
Chronic WET - Ceriodaphnia Reproduction (TUc) Daily Maximum		GG			GG			GG			1.02	
Chronic WET - Pimephales Survival (TUc) Daily Maximum		GG			GG			GG			1.02	

Chronic WET - Pimephales Growth (TUc) Daily Maximum		GG			GG			GG			1.02	

4.2 DMR Data for Outfall 002 (from November 1, 2021 to October 31, 2022)

Parameter	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21
pH (S.U.) Annual Average											6.77	
CBOD5 (mg/L) Annual Average											6.9	
COD (mg/L) Annual Average											39	
TSS (mg/L) Annual Average											13	
Oil and Grease (mg/L) Annual Average											< 5.0	
Fecal Coliform (No./100 ml) Annual Average											> 20000	
TKN (mg/L) Annual Average											0.66	
Total Phosphorus (mg/L) Annual Average											0.82	
Dissolved Iron (mg/L) Annual Average											< 0.100	

4.3 DMR Data for Outfall 003 (from November 1, 2021 to October 31, 2022)

Parameter	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21
pH (S.U.) Annual Average											7.34	
CBOD5 (mg/L) Annual Average											3.7	
COD (mg/L) Annual Average											30.3	
TSS (mg/L) Annual Average											326	
Oil and Grease (mg/L) Annual Average											5.0	

Fecal Coliform (No./100 ml) Annual Average											> 20000	
TKN (mg/L) Annual Average											0.56	
Total Phosphorus (mg/L) Annual Average											0.50	
Dissolved Iron (mg/L) Annual Average											0.332	

4.4 DMR Data for Outfall 004 (from November 1, 2021 to October 31, 2022)

Parameter	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21
pH (S.U.) Annual Average											7.06	
CBOD5 (mg/L) Annual Average											5.3	
COD (mg/L) Annual Average											34.65	
TSS (mg/L) Annual Average											169.5	
Oil and Grease (mg/L) Annual Average											< 5.0	
Fecal Coliform (No./100 ml) Annual Average											> 20000	
TKN (mg/L) Annual Average											0.61	
Total Phosphorus (mg/L) Annual Average											0.66	
Dissolved Iron (mg/L) Annual Average											0.216	

4.5 Discussion on non-compliance

There is currently no eDMR violation against this plant.

4.6 Inspection summary

10/25/2022: CEI conducted. No violation noted. The facility received some mixed results from a study done on sludge thickening unit. They are adding VFDs to the pumps that feed into the thickener and hope that they'll help reduce the overloading the unit receives. Recommended that the aeration units be checked to ensure adequate and even aeration.

06/29/2022: CEI conducted. No violation noted. The plant appeared to be operating properly and well maintained. The permittee indicated that they will bring a primary clarifier that was offline for some time. They are also looking to make some changes to the sludge thickener unit to assist in a more accurate return and waste sludge count. They are planning to bring a new collection system project toward the end of the year to assist in eliminating some heavier I&I during rain events.

08/26/2021: RTPT conducted to verify the installation and operational status of the pumps and equipment for the diversion project from Towamencin WWTP to Upper Gwynedd WWTP. No violation noted.

05/07/2021: RTPT conducted. The facility recently removed and replaced the damaged Alum tank which wasn't online yet. Alum is being fed via temporary pumps near the aeration tanks. All 3 primary clarifiers had been replaced and were online. Overall, the plant appeared to be in good operating condition. The effluent was clear. No violation noted.

01/14/2021: CEI conducted. The plant was still replacing and repairing equipment that was damaged in the August flood but was making progress to being fully online. All three primary clarifiers were online and operable. They have moved PAC chemical storage to temporary sheds for containment and temperature control until the original PAC tank is removed and replaced. The facility was providing adequate treatment. No violation noted.

9/3/2020: RTPT conducted. No violation noted. Recommended to replace or repair any damaged or compromised equipment and replace the influent sampler with a flow paced sampler.

8/18/2020: RTPT conducted. No violation noted. The facility continued to make progress in recovering from the damage caused by the tropical storm. They were hoping to have the largest primary clarifier online by the week's end. Overall, the plant appeared to be providing adequate treatment.

08/05/2020: RTPT conducted. No violation noted. Primary clarifiers and other equipment at the lower level of the plant were flooded out by the tropical storm. Despite the challenging conditions the facility appeared to be on track to normal operational status. There were still partial treatment but disinfecting was occurring and effluent was clear. 05/05/2020: RTPT conducted. No violation noted. The treatment plant appeared to be well maintained and operating properly.

1/7/2020: CEI conducted. No violation identified. The treatment plant looked well maintained and operated.

3/6/2018: CEI conducted. No violation identified.

3/13/2018: SSO inspection conducted to investigate a manhole overflow during televising a sewer line. Approximately 50-60 gallons of sewage overflew the manhole, ran down the street gutter, into the storm drain, and into an UNT to Wissahickon Creek. The SSO was cleaned up right after. The receiving stream was observed, and no sign of solids deposit or gray water observed. Water samples were collected up- and down-stream of the SSO.

5.0 Existing limits

5.1 For Outfall 001 (treated sewage)

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	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	7.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.016	XXX	0.052	Daily when Discharging	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	470	705	XXX	8.8	13.2 Wkly Avg	17.6	1/day	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	235	352	XXX	4.4	6.6 Wkly Avg	8.8	1/day	24-Hr Composite
Total Suspended Solids	1601	2402	XXX	30.0	45.0 Wkly Avg	60	1/day	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000 (*)	1/day	Grab
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	105	XXX	XXX	1.95	XXX	3.9	1/day	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	35	XXX	XXX	0.65	XXX	1.3	1/day	24-Hr Composite
Orthophosphate Nov 1 - Mar 31	174	XXX	XXX	3.64	XXX	7.28	1/day	24-Hr Composite
Orthophosphate Apr 1 - Oct 31	48	XXX	XXX	1.00	XXX	2	1/day	24-Hr Composite
Aluminum, Total	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Copper, Total	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Iron, Dissolved	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Iron, Total	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Sulfate, Total	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Chloride	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Bromide	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Hardness, Total (as CaCO3)	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Toxicity, Chronic - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	XXX	1.05	XXX	1/quarter	24-Hr Composite
Toxicity, Chronic - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	XXX	1.05	XXX	1/quarter	24-Hr Composite
Toxicity, Chronic - Pimephales Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Toxicity, Chronic - Pimephales Growth (TUc)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite

5.2 For Outfall 002 (Stormwater from eastern portion of WWTP)

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	Annual Average	Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Iron, Dissolved	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

5.3 For Outfall 003 (Stormwater from western portion of WWTP)

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	Annual Average	Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

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	Annual Average	Maximum	Instant. Maximum		
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Iron, Dissolved	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

5.4 For Outfall 004 (Stormwater from northwestern portion of WWTP)

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	Annual Average	Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Iron, Dissolved	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

6.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 5.7
Latitude 40º 11' 22.00" **Longitude** -75º 17' 2.00"
Wastewater Description: Effluent

6.1 Basis for Effluent Limitations

In general, the Clean Water Act (CWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

6.2 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)
Fecal Coliform	200 / 100 ml	Geo Mean	-	DRBC, 92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	1,000 / 100 ml	10% rule	-	DRBC
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
Total Dissolved Solids	1,000	Average Monthly		DRBC

6.3 Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass-based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34

6.4 Water Quality-Based Limitations

6.4.1 Model input data

The following data will be used for modeling, as needed:

- Discharge pH 7.83 (median July-Sep 2022, daily eDMR data)
- Discharge Temperature 23.3°C (Application data)
- Discharge Hardness 228 mg/l (Application data)
- Stream pH 8.05 (WQN#193, median Jul-Sep 2002-2019)
- Stream Temperature 21.7°C (WQN#193, median Jul-Sep 2002-2019)
- Stream Hardness 150 mg/l (Application data, upstream)

The following three nodes were used in modeling:

Node 1:	At the outfall 001 on Wissahickon Creek (00844)	
	Elevation:	271.74 ft (USGS TNM 2.0 viewer, 12/19/2022)
	Drainage Area:	7.33 mi^2 (StreamStat Version 3.0, 12/19/2022)
	River Mile Index:	19.07 (PA DEP eMapPA)
	Low Flow Yield:	0.014 cfs/mi^2
	Q_{7-10}:	0.1 cfs
	Discharge Flow:	6.4 MGD
Node 2:	At confluence with Trewellyn Creek (00886)	
	Elevation:	237.82 ft (USGS TNM 2.0 viewer, 12/19/2022)
	Drainage Area:	12.4 mi^2 (StreamStat Version 3.0, 12/19/2022)
	River Mile Index:	17.23 (PA DEP eMapPA)
	Low Flow Yield:	0.014 cfs/mi^2
	Discharge Flow:	0.0 MGD

6.4.2 WQM 7.0 Model

WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate effluent limits for $CBOD_5$, NH_3-N and DO. The model simulates two basic processes. In the NH_3-N module, the model simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria. The model was utilized for this permit renewal by using Q_{7-10} and current background water quality levels of the stream.

6.4.2.1 NH_3-N

WQM 7.0 suggested NH_3-N limit of 0.65 mg/l as monthly average and 1.3 mg/l as IMAX limit during summer to protect water quality standards. These values are the same as existing permitted limits. The current limits for summer and winter season will be carried over.

6.4.2.2 CBOD5

WQM 7.0 suggests CBOD5 limit of 4.4 mg/l which is the same as existing limit. Existing limit will be carried over.

6.4.2.3 DO

WQM 7.0 suggests minimum DO of 7.0 mg/l which is the model input and same as existing limit. Existing limit will be carried over.

6.4.3 General Discussion on Toxics Management Spreadsheet (TMS)

Based on the available data, PADEP utilizes Toxics Management Spreadsheet (TMS) to (1) evaluate reasonable potential for toxic pollutants to cause or contribute to an excursion above the water quality standards and (2) develop WQBELs for those such toxic pollutants (i.e., 40 CFR § 122.44(d)(1)(i)). It is noteworthy that some of these pollutants that may be reported as “non-detect”, but still exceeded the criteria, were determined to be candidates for modeling because the method detection levels used to analyze those pollutants were higher than target QLs and/or the most stringent Chapter 93 criteria. The model then recommended the appropriate action for the Pollutants of Concerns based on the following logic:

1. In general, establish limits in the draft permit where the effluent concentration determined in B.1 or B.2 equals or exceeds 50% of the WQBEL (i.e., RP is demonstrated). Use the average monthly, maximum daily and instantaneous maximum (IMAX) limits for the permit as recommended by the TMS (or, if appropriate, use a multiplier of 2 times the average monthly limit for the maximum daily limit and 2.5 times the average monthly limit for IMAX).

2. For non-conservative pollutants, in general, establish monitoring requirements where the effluent concentration determined in B.1 or B.2 is between 25% - 50% of the WQBEL.

3. For conservative pollutants, in general, establish monitoring requirements where the effluent concentration determined in B.1 or B.2 is between 10% - 50% of the WQBEL.

NOTE 4 – If the effluent concentration determined in B.1 or B.2 is “non-detect” at or below the target quantitation limit (TQL) for the pollutant as specified in the TMS and permit application, the pollutant may be eliminated as a candidate for

WQBELs or monitoring requirements unless 1) a more sensitive analytical method is available for the pollutant under 40 CFR Part 136 where the quantitation limit for the method is less than the applicable water quality criterion and 2) a detection at the more sensitive method may lead to a determination that an effluent limitation is necessary, considering available dilution at design conditions.

NOTE 5 – If the effluent concentration determined in B.1 or B.2 is a detection below the TQL but above or equal to the applicable water quality criterion, WQBELs or monitoring may be established for the pollutant.

4. Application managers may, on a site- and pollutant-specific basis, deviate from these guidelines where there is specific rationale that is documented in the fact sheet.

Output from the TMS is provided below:

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	750	AFC	Discharge Conc > 10% WQBEL (no RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	303	THH	Discharge Conc > 10% WQBEL (no RP)
Total Selenium	Report	Report	Report	Report	Report	µg/L	5.04	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	240	AFC	Discharge Conc > 10% WQBEL (no RP)
4,4-DDE	0.000001	0.000002	0.00002	0.00003	0.00006	µg/L	0.00002	CRL	Discharge Conc ≥ 50% WQBEL (RP)
UGT Copper	Report	Report	Report	Report	Report	µg/L	172	CFC	Discharge Conc > 10% WQBEL (no RP)

Each of the pollutants is discussed below:

6.4.3.1 Total Aluminum:
TMS recommended monitoring only for Total Aluminum based on a model input AMEC of 260 ug/l and daily CoV of 0.45. The AMEC and CoV was calculated from monthly eDMR Total Aluminum effluent data for last 24 months (April 1, 2021-March 31, 2023). The current permit has monitoring requirement which will be carried over in this renewal.

6.4.3.2 Total Copper:
Based on the current permit's Part C.VI condition "*There is an existing site-specific criteria modification for total recoverable copper for this facility (Pennsylvania Bulletin, Volume 26, No. 15, April 13, 1996). Based on the results of a recalculation and water effects ratio (WER) study and a hardness of 200 mg/l as $CaCO_3$, DEP approved the site-specific chronic and acute life criteria for total recoverable copper of 0.17 mg/l and 0.27 mg/l, respectfully. Without the WER, the site-specific criteria are 0.0348 mg/l (CCC) and 0.0554 mg/l (CMC), respectfully. The basis for the site-specific criteria is as follows:*

CCC = 4.89 x Exp (0.8545 x ln[H] – 0.9773)
CMC = 4.89 x Exp (0.9422 x ln[H] – 0.9772)"

The revised criteria were the input of the TMS model. The AMEC and Daily CoV was calculated to be 35 ug/l and 0.67, respectively, which were calculated from last 2 years of eDMR data. The model suggests that no RP was demonstrated for Total Copper. Existing monitoring requirement will be continued.

6.4.3.3 Dissolved Iron:
TMS recommended monitoring only for Dissolved Iron based on a model input AMEC of 101 ug/l and daily CoV of 0.577. The AMEC and CoV was calculated from monthly eDMR Dissolved Iron effluent data for last 24 months (April 1, 2021-March 31, 2023). The current permit has monitoring requirement which will be carried over in this renewal.

6.4.3.4 Total Selenium:
TMS recommended monitoring only for Total Selenium based on a model input maximum concentration of 0.7 ug/l from application. A quarterly monitoring will be applied to collect more data for a RP analysis during next permit renewal.

6.4.3.5 Total Zinc:
TMS recommended monitoring only for Total Zinc based on a model input maximum concentration of 32 ug/l from application. A quarterly monitoring will be applied to collect more data for a RP analysis during next permit renewal

6.4.3.6 4,4-DDE:
TMS recommended the following limits for 4,4-DDE: AML, MDL, and IMAX concentration of 0.00002 ug/l, 0.00003 ug/l, and 0.00006 ug/l, respectively; mass-based AML of 0.000001 lbs./day and MDL of 0.000002 lbs./day. The recommendation was based on a model input value of 0.006 ug/l (maximum of 3 sample results). Since this is a new parameter with limits requirements, it'll be included in the Pre-draft Survey. It should be noted that the TQL for this pollutant is 0.05 ug/l. Since WQBEL<TQL, the compliance will be demonstrated below TQL. The Part A will have WQBEL, but DMR and WMS will be coded with <0.05 ug/l (or 0.049 ug/l). It should be noted that the maximum concentration is approximately 8 times lower than proposed compliance limit of 0.049 ug/l; therefore, a compliance schedule isn't needed since the facility should be able to meet the limits from the effective date of the permit.

6.4.3.7 Total Iron:
The current permit has monitoring requirements for Total Iron. TMS model didn't recommend monitoring or limits requirements for this parameter based on model input AMEC value of 120 ug/l and daily CoV of 0.125 which were calculated from most recent 24 sample results between April 1, 2021 and March 31, 2023. Current monitoring requirement will be removed.

6.4.3.8 TDS, Sulfate, Chloride, Bromide:
Historically PADEP utilized the following logics to determine limits/monitoring requirements for these special monitoring parameters:

- Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs./day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

PADEP has determined that they have sufficient data over the past 7 years of implementing the special monitoring logic for these parameters and it is no longer needed. The recently approved DRBC Docket 1991-088 CP-10 requires an average quarterly TDS limit of 1,000 mg/l which will be incorporated in this NPDES permit for consistency purpose. The monitoring requirements for Sulfate, Chloride, and Bromide will be removed from the permit.

6.5 TMDL Parameters not covered in section 6.4.2:

6.5.1 Nitrate-Nitrite-N:
As stated in section 2.5 of this report, Wissahickon Creek TMDL has NO_3-NO_2-N WLA of 19.93 mg/l for Upper Gwynedd. A review of last 12 months eDMR data indicated an average discharge concentration of 18.92 mg/l which is less than WLA and hence continuation of monitoring is considered to be consistent with TMDL WLA assumptions, as per the discussion with EPA during last permit issuance. In addition, the TMDL Alternative for the Wissahickon Creek watershed isn't finalized yet for the outstanding impairment issues between the local municipalities and the EPA. Current monitoring will be carried over.

6.5.2 Ortho-P:
As discussed in section 2.5 of this report, existing limits will be carried over.

6.6 Additional Consideration:
6.6.1 Fecal Coliform:
The recent coliform guidance in 25 Pa. code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml and § 92a.47.(a)(5) requires a winter limit of 2,000/100ml as a geometric mean and an instantaneous maximum not greater than 10,000/100ml. Delaware River Basin Commission's (DRBC's) Water Quality Regulations at Section 4.30.4.A requires that during winter season from October through April, the instantaneous maximum concentration of fecal coliform organisms shall not be greater than 1,000 per 100 milliliters in more than 10 percent of the samples tested. Therefore, the summer limit is governed by DEP's regulation while winter limit is governed by DRBC's regulation. These are existing requirements and will be carried over in this renewal.

6.6.2 E. Coli:
Pa Code 25 § 92a. 61 requires monitoring of E. Coli. DEP's SOP titled "Establishing Effluent Limitations for Individual Sewage Permits (BCW-PMT-033, revised March 24, 2021) recommends monthly E. Coli monitoring for major sewage dischargers. This requirement will be applied from this permit term.

6.6.3 pH:
The TBEL for pH is above 6.0 and below 9.0 S.U. (40 CFR §133.102(c) and Pa Code 25 §§ 95.2(1), 92a.47) which are existing limits and will be carried over.

6.6.4 Total Suspended Solids (TSS):
There is no water quality criterion for TSS. The existing limits of 30 mg/L average monthly, 45 mg/l average weekly, and 60 mg/L instantaneous maximum will remain in the permit based on the minimum level of effluent quality attainable by secondary treatment, 25 Pa. Code § 92a.47 and 40CFR 133.102(b). The mass based average monthly and weekly average limits are calculated to be 1,601 lbs./day and 2,402 lbs./day respectively, which are the same as were in existing permit and will be carried over.

6.6.5 UV Disinfection:
PADEP's SOP BCW-PMT-033 recommends UV parameter monitoring where UV is used as a method of disinfection, with the same frequency as would be if Chlorine is used for disinfection. The facility can monitor and report UV Transmittance in %. Daily minimum UV Transmittance will be applied in this renewal.

6.6.6 Total Residual Chlorine (TRC):
The facility utilizes chlorine to control filamentous bacteria in their return line but not for disinfection of the waste stream. The use of chlorine may be considered as a maintenance work. The current permit has AML of 0.016 mg/l and IMAX of 0.052 mg/l in Part A of the permit. The limits will be removed from Part A of the permit and a special condition will be included in the Part C of the permit that will require the permittee to report daily TRC whenever chlorine is utilized for bacterial control or other reason. The existing limits will be carried over in Part C.

6.6.7 Flow and Influent BOD_5 and TSS Monitoring Requirement:
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii). Influent BOD_5 and TSS monitoring requirements are established in the permit per the requirements set in Pa Code 25 Chapter 94.

6.7 Best Professional Judgement (BPJ):
6.7.1 Total Phosphorus:
PADEP's SOP BCW-PMT-033 recommends monitoring for Total Phosphorus for facilities with design flow more than 2000-GPD, which is also supported by Pa Code 25 Ch. 92a.61. A monthly monitoring will be added.

6.7.2 Total Nitrogen:
PADEP's SOP BCW-PMT-033 recommends monitoring for Total Phosphorus for facilities with design flow more than 2000-GPD, which is also supported by Pa Code 25 Ch. 92a.61. A monthly monitoring will be added.

6.7.3 Total Hardness:
Existing Total Hardness monitoring will be continued to evaluate toxicity of Total Copper and/or other hardness-based pollutants.

6.7.4 Monitoring Frequency and Sample Types:
Otherwise specified above, the monitoring frequency and sample type of compliance monitoring for existing parameters are recommended by DEP's SOP and Permit Writers Manual and/or on a case-by-case basis using best professional judgment (BPJ).

7.0 Anti-Backsliding
The proposed limits are at least as stringent as current permit; therefore, anti-backsliding isn't applicable. Removing "monitoring only" requirements and limits from Part A to Part C aren't considered as backsliding.

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 0
Latitude 40º 11' 22.00" **Longitude** -75º 17' 2.00"
Wastewater Description: Stormwater from eastern portion of the WWTP

Development of Effluent Limitations

Outfall No. 003 **Design Flow (MGD)** 0
Latitude 40º 11' 25.00" **Longitude** -75º 17' 7.00"
Wastewater Description: Stormwater from western portion of the WWTP

Development of Effluent Limitations

Outfall No. 004 **Design Flow (MGD)** 0
Latitude 40º 11' 30.00" **Longitude** -75º 17' 7.00"
Wastewater Description: Stormwater from northwestern portion of the WWTP

UGT has three stormwater only outfalls, 002, 003, and 004. Per Phase II Stormwater regulations, major POTWs are required to have a permit for the discharge of stormwater. 40 CFR 122.26(b)(14)(IX) requires that the stormwater from major sewage facilities are to be covered under NPDES permit. The current permit has monitoring requirements in Part A and Part C of the permit. Current monitoring requirements will be carried over. The PPC plan is in place and is updated on July 2022. The following table was taken from updated PPC plan. Sector specific BMPs are in place. Drainage areas corresponding to the outfalls are 317,988 sft for Outfall 002, 74,052 sft for Outfall 003, and 26,136 sft for Outfall 004. Outfall 004 is inspected in lieu of sampling since the industrial activities/stormwater quality is similar to that of Outfall 002 and 003.

Table 3.1

Summary of Potential Pollutant Sources/Best Management Practices Applied

Item No.	Location for Potential Sources of Stormwater	Notes:	Storage Location	Storage Volume	Potential Pollutants in Stormwater	EPA Reportable Release Gallons/Pounds	SPCC Reportable Release Gallons/Pounds	Type of BMP Applied	Affected Outfall
1	Lab and Operations Building	1, 3	Outside	500 gal.	Heating Oil	25 gal / 175 lbs	1,000 gals to Navigational Waters OR two (2) discharges of 42 gals within 12 months	Secondary spill Containment Absorbent Materials	002
2	BioMag Building	1, 2, 3	Indoors Basement	540 gal. (Two 270 gal. tanks)	Heating Oil	25 gal / 175 lbs	1,000 gals to Navigational Waters OR two (2) discharges of 42 gals within 12 months	Secondary spill Containment Absorbent Materials Drainage Control Drain Seal	
3	BioMag Building	1, 2, 3	Outside		Liquid Sludge Hauling			Drainage Control	003
4	BioMag Building/Garage	1, 2, 3	Indoors	1,000 gal. tank / 250 gal tote	12.5% Sodium Hypochlorite	80 gal. / 100 lbs		Drainage Control Steel Post Barricades Secondary Spill Containment	003
5	Tertiary Building	1, 2, 3	Indoors	550 gal.	38% Sodium Bisulfite	1,186 gal / 5,000 lbs		Secondary spill Containment Drain Seal	003
6	Service Building	1, 2, 3	Indoors Basement	270 gal.	Heating Oil	25 gal / 175 lbs	1,000 gals to Navigational Waters OR two (2) discharges of 42 gals within 12 months	Secondary spill Containment Absorbent Materials Drain Seal	003
7	Small Garage	1, 2, 3	Indoors Basement	270 gal.	Heating Oil	25 gal / 175 lbs	1,000 gals to Navigational Waters OR two (2) discharges of 42 gals within 12 months	Secondary spill Containment Absorbent Materials Drain Seal	003
	Blower Building	1, 3	Indoors	250 gal.	Liquid Emulsion Polymer			Secondary spill Containment Absorbent Materials No Open Container	002
8	Generator Substations	1, 2, 3	Indoors	1,000 / 1,500 gal.	Diesel Fuel	25 gal / 175 lbs	1,000 gals to Navigational Waters OR two (2) discharges of 42 gals within 12 months	Secondary spill Containment Absorbent Materials Drain Seal Spill Kit	002 003
9	BioMag Building	1, 2, 3	Indoors Basement	5,000 gal	34% Aluminum Chloride	210 gal / 1000 lbs		Secondary spill Containment Absorbent Materials Drainage Control Drain Seal	002

Notes:

1: See Site Plan in Appendix B for exact locations of chemical storage areas.

2: In the advent of a spill, a spill berm and drain seals will be installed to protect the potentially effected stormwater outfall.

3: To decide if a spill or release contained within the facility boundary and below EPA Reportable Release (gallons/pounds) is reportable- See PA 91.33 — Incidents causing or threatening pollution (Appendix J)

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: **4 quarterly tests for 1st year, annually thereafter.**

The dilution series used for the tests was:
1. For first three years: 100%, 98%, 95%, 48%, and 24%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 95%.
2. After three years: 100%, 98%, 73%, 49%, and 24%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 98%.

Per previous fact sheet, quarterly sampling was required since the tests were performed (during last renewal review) by QC Laboratories and the analytical results were considered unreliable. Two dilution series corresponding to two design flows (5.7 MGD and 6.4 MGD).

Summary of Four Most Recent Test Results

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

TST Data Analysis

(NOTE – In lieu of recording information below, the application manager may attach the DEP WET Analysis Spreadsheet).

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
3/13/2018	Pass	Pass	Pass	Pass
4/10/2018	Pass	Pass	Pass	Pass
9/18/2018	Pass	Pass	Pass	Pass
11/13/2018	Pass	Pass	Pass	Pass
11/26/2019	Pass	Pass	Pass	Pass
12/22/2020	Pass	Pass	Pass	Pass
12/7/2021	Pass	Pass	Pass	Pass

***** *A "passing" result is that in which the replicate data for the TIWC is not statistically significant from the control condition. This is exhibited when the calculated t value ("T-Test Result") is greater than the critical t value. A "failing" result is exhibited when the calculated t value ("T-Test Result") is less than the critical t 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: Four quarterly results showed passing, so the permittee returned to annual sampling.

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

Acute Partial Mix Factor (PMFa): **1** Chronic Partial Mix Factor (PMFc): **1**

1. Determine IWC – Acute (IWCa):

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

[(6.4 MGD x 1.547) / ((0.1 cfs x 1) + (6.4 MGD x 1.547))] x 100 = **99%**

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

If the discharge is to the tidal portion of the Delaware River, indicate how the type of test was determined:

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

2a. Determine Target IWCa (If Acute Tests Required)

TIWCa = IWCa / 0.3 = **%**

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

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

[(6.4 MGD x 1.547) / ((0.1 cfs x 1) + (6.4 MGD x 1.547))] x 100 = **99%**

3. Determine Dilution Series

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

Dilution Series = 100%, 99%, 74%, 50%, and 25%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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

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

N/A

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

N/A

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through End of Interim Period 1.

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 Quarterly	Daily Maximum	Instant. Maximum		
4,4-DDE (ug/L)	XXX	XXX	XXX	Report	Report	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: At Outfall 001

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: End of Interim Period 1 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 Quarterly	Maximum	Instant. Maximum		
4,4-DDE (ug/L)	XXX	XXX	XXX	0.049	XXX	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: At Outfall 001

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	7.0	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	470	705	XXX	8.8	13.2 Wkly Avg	17.6	1/day	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	235	352	XXX	4.4	6.6 Wkly Avg	8.8	1/day	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Total Suspended Solids	1601	2402	XXX	30.0	45.0 Wkly Avg	60	1/day	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	1000.0 Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Ultraviolet light transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded

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)	Required
	Average Monthly	Weekly Average	Instantaneous Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	105	XXX	XXX	1.95	XXX	3.9	1/day	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	35	XXX	XXX	0.65	XXX	1.3	1/day	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Orthophosphate Nov 1 - Feb 28	53	XXX	XXX	1.00	XXX	XXX	1/day	24-Hr Composite
Orthophosphate Apr 1 - Oct 31	27	XXX	XXX	0.5	XXX	XXX	1/day	24-Hr Composite
Aluminum, Total	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Copper, Total	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Iron, Dissolved	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Selenium, Total	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	24-Hr Composite
Zinc, Total	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	24-Hr Composite
Hardness, Total (as CaCO3)	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Toxicity, Chronic - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite
Toxicity, Chronic - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite
Toxicity, Chronic - Pimephales Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite
Toxicity, Chronic - Pimephales Growth (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite

Compliance Sampling Location: At Outfall 001

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Annual Average	Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Iron, Dissolved	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

Compliance Sampling Location: At Outfall 002

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 003, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Annual Average	Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Iron, Dissolved	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

Compliance Sampling Location: At Outfall 003

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 004, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Annual Average	Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Iron, Dissolved	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

Compliance Sampling Location: At Outfall 004

Other Comments: Inspected in lieu of sampling.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☒	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: BCW-PMT-033
☐	Other:

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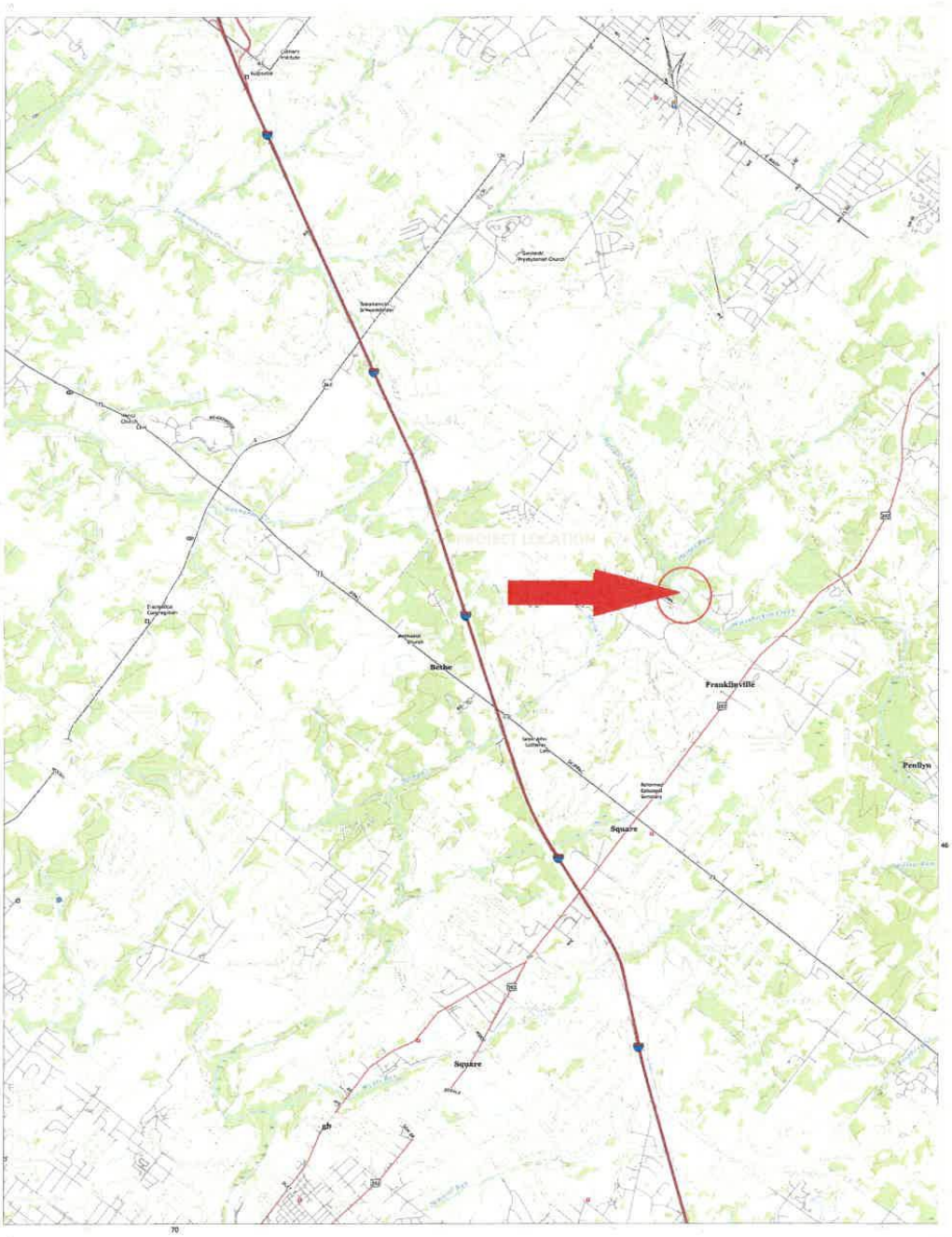
Locational Map



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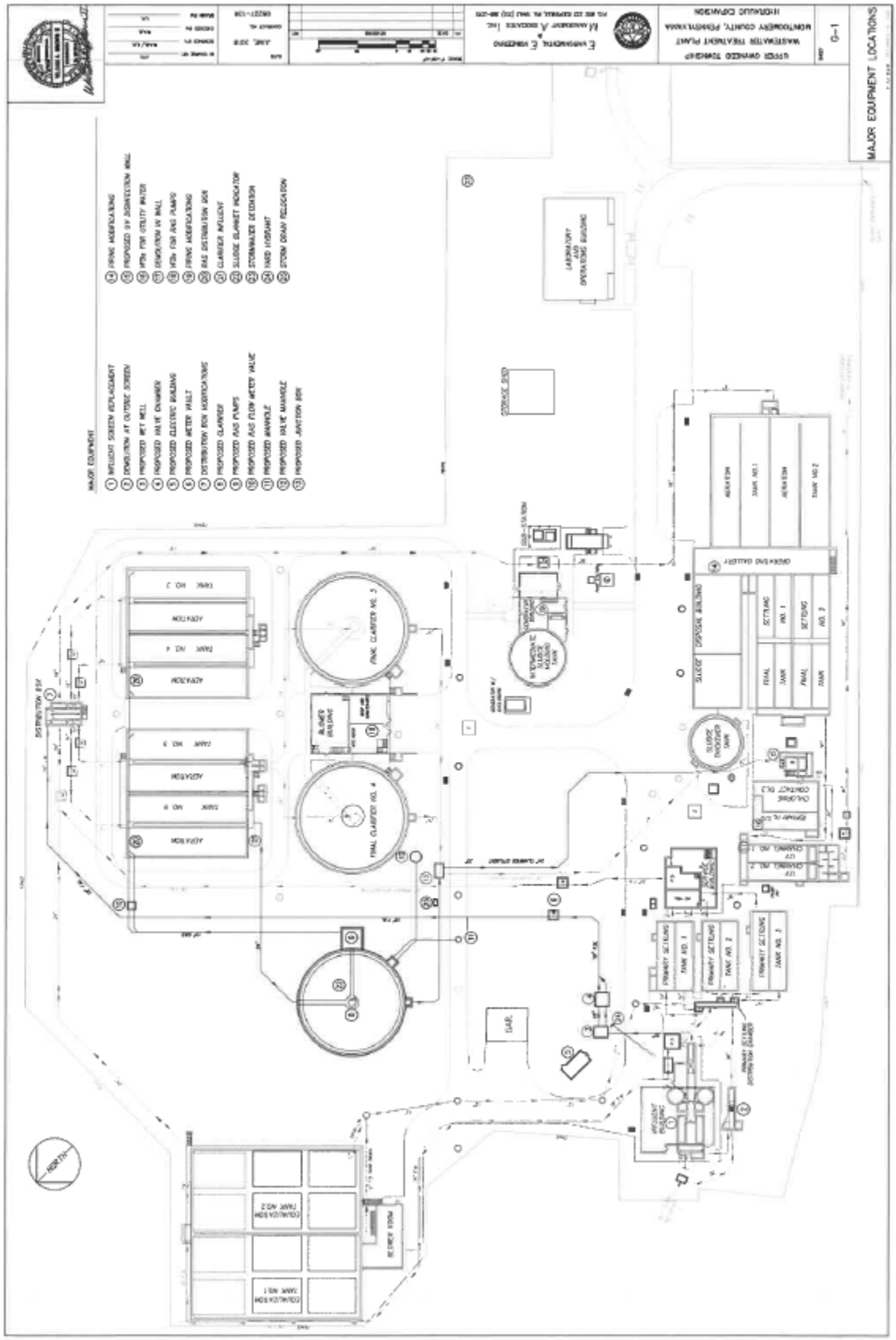
Major Equipment Layout



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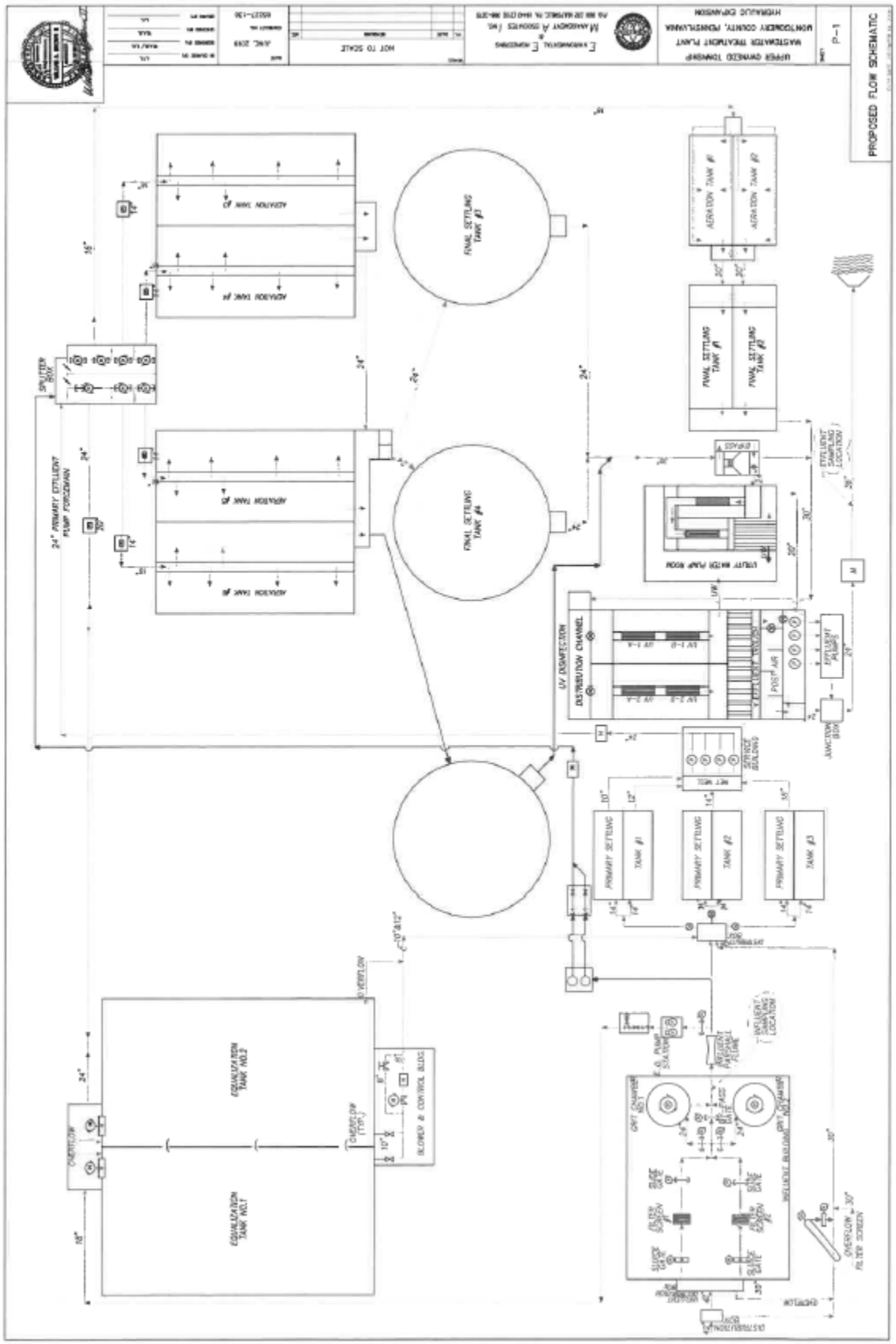
Flow Schematic



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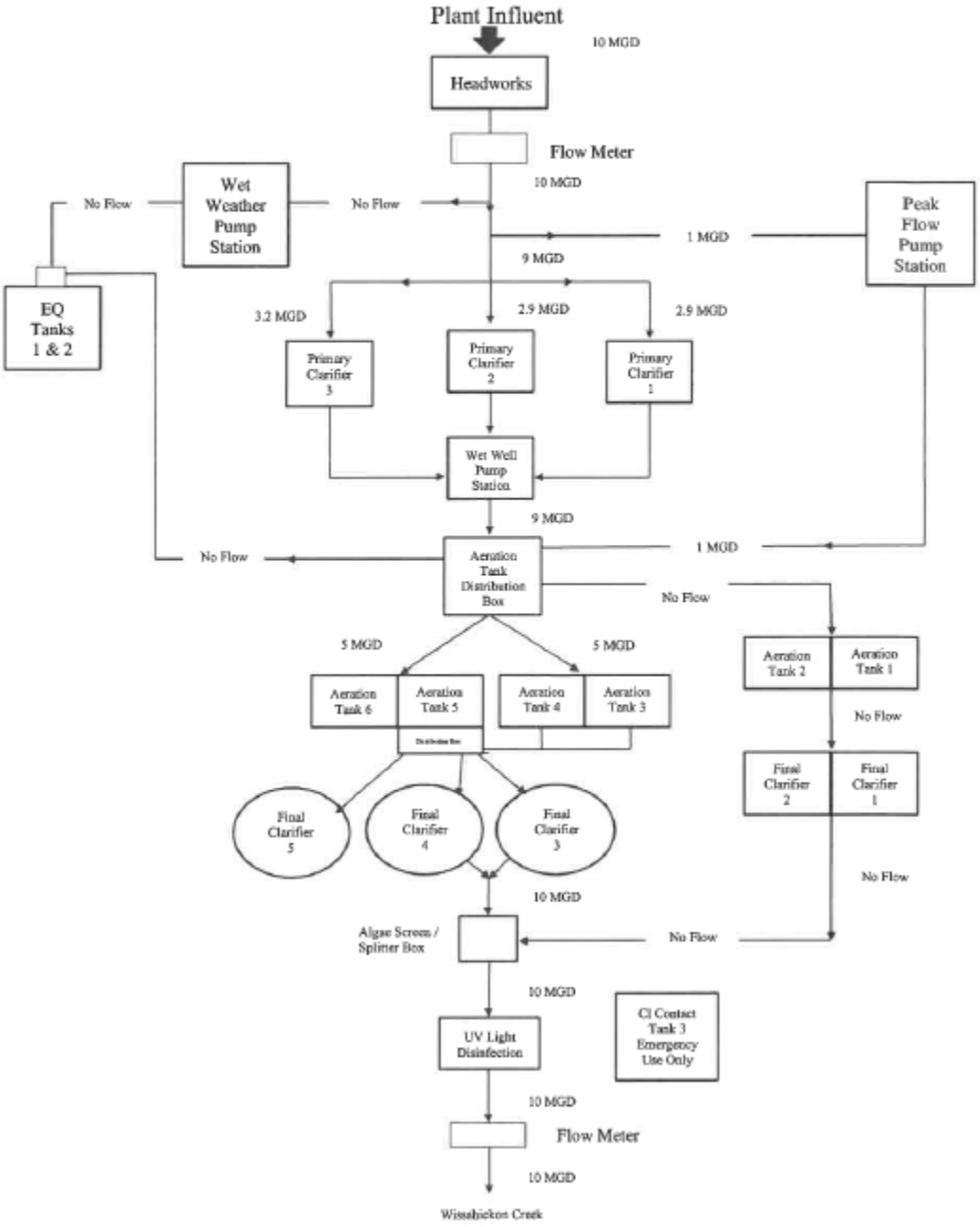
High Flow Maintenance Plan Stage 1 for flow up to 10 MGD

Flow Schematic 2 - High Flow Maintenance –

Stage 1 - Influent Flow Rate up to 10 MGD

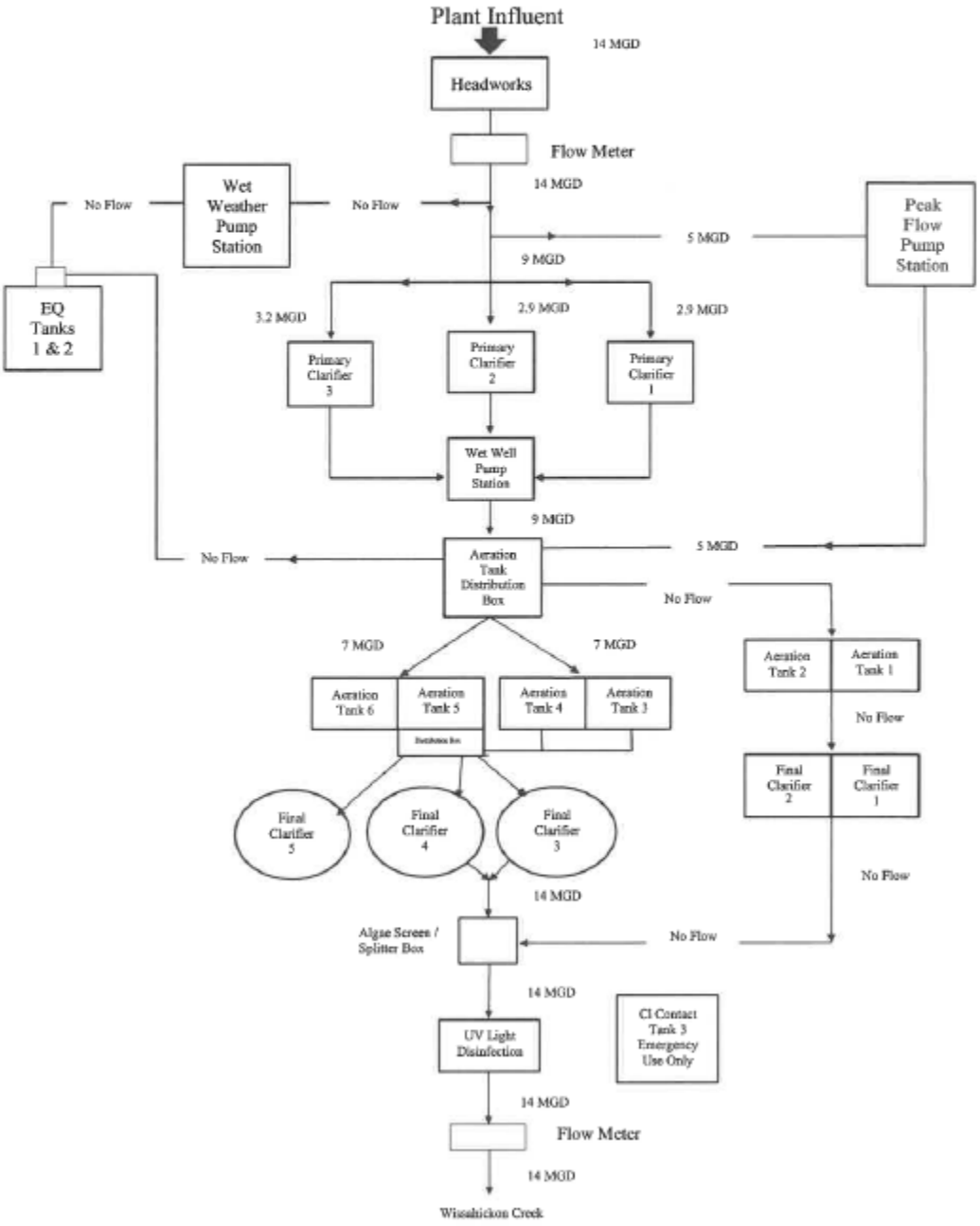


Permit No. PA0023256

High Flow Maintenance Plan Stage 2 for flow up to 14 MGD

Flow Schematic 3 - High Flow Maintenance –

Stage 2 - Influent Flow Rate 14 MGD



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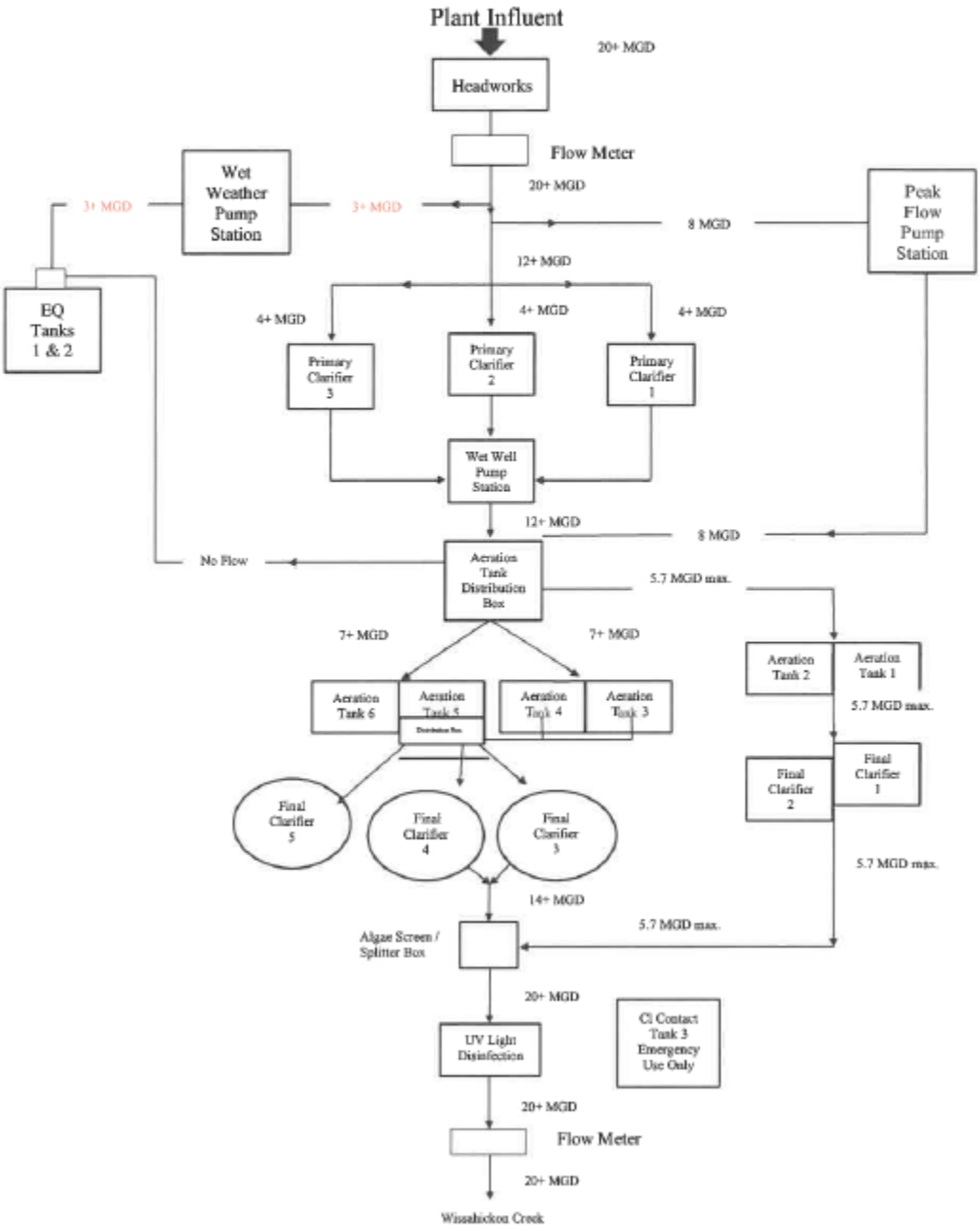
High Flow Maintenance Plan for extreme high flow > 30 MGD

Flow Schematic 4 - High Flow Maintenance –

Stage 3 - *Extreme High Flow Event* Influent Flow Rate 20+ MGD, 30+ MGD



Permit No. PA0023256

StreamStats at Outfall 001

PA0023256 at Outfall 001

Region ID: PA
Workspace ID: PA20221207202613228000
Clicked Point (Latitude, Longitude): 40.18984, -75.28394
Time: 2022-12-07 15:26:37 -0500

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	1.5842	degrees
DRNAREA	Area that drains to a point on a stream	7.33	square miles
ROCKDEP	Depth to rock	4	feet
URBAN	Percentage of basin with urban development	60.1343	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	7.33	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	1.5842	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4	feet	4.13	5.21
URBAN	Percent Urban	60.1343	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

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

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.456	ft^3/s
30 Day 2 Year Low Flow	0.828	ft^3/s

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StreamStats at Node 2

PA0023256 at node 2

Region ID: PA
Workspace ID: PA20221219143647554000
Clicked Point (Latitude, Longitude): 40.18605, -75.25440
Time: 2022-12-19 09:37:07 -0500

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	1.9248	degrees
DRNAREA	Area that drains to a point on a stream	12.4	square miles
ROCKDEP	Depth to rock	4	feet
URBAN	Percentage of basin with urban development	45.3331	percent

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Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	12.4	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	1.9248	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4	feet	4.13	5.21
URBAN	Percent Urban	45.3331	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

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

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.817	ft^3/s
30 Day 2 Year Low Flow	1.41	ft^3/s
7 Day 10 Year Low Flow	0.288	ft^3/s
30 Day 10 Year Low Flow	0.519	ft^3/s
90 Day 10 Year Low Flow	1.32	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

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Permit No. PA0023256

WQM 7.0

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
03F	844	WISSAHICKON CREEK	19.070	271.74	7.33	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	0.014	0.10	0.00	0.000	0.000	0.0	0.00	0.00	21.70	8.05	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
UGT WWTP	PA0023256	6.4000	6.4000	6.4000	0.000	23.00	7.83

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	4.40	2.00	0.00	1.50
Dissolved Oxygen	7.00	8.24	0.00	0.00
NH3-N	0.65	0.00	0.00	0.70

Permit No. PA0023256

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	844	WISSAHICKON CREEK	17.230	237.82	12.40	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	0.014	0.00	0.00	0.000	0.000	0.0	0.00	0.00	21.70	8.05	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

Permit No. PA0023256

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
03F	844	WISSAHICKON CREEK

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												
19.070	0.10	0.00	0.10	9.9008	0.00349	.699	29.95	42.85	0.48	0.235	22.99	7.83
Q1-10 Flow												
19.070	0.06	0.00	0.06	9.9008	0.00349	NA	NA	NA	0.48	0.236	22.99	7.83
Q30-10 Flow												
19.070	0.14	0.00	0.14	9.9008	0.00349	NA	NA	NA	0.48	0.235	22.98	7.83

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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	7		

Permit No. PA0023256

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
03F	844	WISSAHICKON CREEK

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
19.070	UGT WWTP	2.86	1.3	2.86	1.3	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
19.070	UGT WWTP	.77	.65	.77	.65	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)		
19.07	UGT WWTP	4.4	4.4	.65	.65	7	7	0	0

Permit No. PA0023256

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03F	844	WISSAHICKON CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
19.070	6.400	22.987	7.832
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
29.949	0.699	42.846	0.478
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.38	1.492	0.64	0.881
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.012	12.217	Tsivoglou	7
Reach Travel Time (days)			
0.235			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.024	4.20	0.63	7.15
0.047	4.04	0.62	7.26
0.071	3.88	0.60	7.36
0.094	3.72	0.59	7.44
0.118	3.58	0.58	7.51
0.141	3.44	0.57	7.57
0.165	3.30	0.56	7.62
0.188	3.17	0.55	7.67
0.212	3.05	0.53	7.71
0.235	2.93	0.52	7.75

Permit No. PA0023256

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
03F	844	WISSAHICKON CREEK

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)
19.070	UGT WWTP	PA0023256	6.400	CBOD5	4.4		
				NH3-N	0.65	1.3	
				Dissolved Oxygen			7

Permit No. PA0023256

Toxics Management Spreadsheet (TMS)

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Upper Gwynedd Township WWTP** NPDES Permit No.: **PA0023256** 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
6.4	228	7.83						

					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											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		260			0.45						
	Total Antimony	µg/L		0.5									
	Total Arsenic	µg/L		0.9									
	Total Barium	µg/L		90									
	Total Beryllium	µg/L	<	0.1									
	Total Boron	µg/L		145									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L	<	0.1									
	Total Cobalt	µg/L	<	0.2									
	Total Copper	mg/L											
	Free Cyanide	µg/L	<	0.5									
	Total Cyanide	µg/L		10									
	Dissolved Iron	µg/L		101			0.577						
	Total Iron	µg/L		120			0.125						
	Total Lead	µg/L	<	0.3									
	Total Manganese	µg/L	<	2									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		2									
	Total Phenols (Phenolics) (PWS)	µg/L		34									
	Total Selenium	µg/L		0.7									
	Total Silver	µg/L		0.4									
	Total Thallium	µg/L	<	0.4									
	Total Zinc	µg/L		32									
	Total Molybdenum	µg/L		6									
	Acrolein	µg/L	<	1									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	0.5									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									

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Group 3	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									
	Chloroform	µg/L		0.3									
	Dichlorobromomethane	µg/L	<	0.5									
	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		0.2									
	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	<	0.16									
	2,4-Dichlorophenol	µg/L	<	0.21									
	2,4-Dimethylphenol	µg/L	<	0.35									
	4,6-Dinitro-o-Cresol	µg/L	<	1.14									
	2,4-Dinitrophenol	µg/L	<	1.77									
	2-Nitrophenol	µg/L	<	0.21									
	4-Nitrophenol	µg/L	<	1.33									
	p-Chloro-m-Cresol	µg/L	<	0.24									
	Pentachlorophenol	µg/L	<	0.47									
	Phenol	µg/L	<	0.18									
	2,4,6-Trichlorophenol	µg/L	<	0.21									
Group 5	Acenaphthene	µg/L	<	0.33									
	Acenaphthylene	µg/L	<	0.32									
	Anthracene	µg/L	<	0.3									
	Benzidine	µg/L	<	0.57									
	Benzo(a)Anthracene	µg/L	<	0.25									
	Benzo(a)Pyrene	µg/L	<	0.23									
	3,4-Benzofluoranthene	µg/L	<	0.25									
	Benzo(ghi)Perylene	µg/L	<	0.38									
	Benzo(k)Fluoranthene	µg/L	<	0.31									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.22									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.25									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.25									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	1.49									
	4-Bromophenyl Phenyl Ether	µg/L	<	0.37									
	Butyl Benzyl Phthalate	µg/L	<	0.98									
	2-Chloronaphthalene	µg/L	<	0.33									
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.32									
	Chrysene	µg/L	<	0.48									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.38									
	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	<	0.7									
	Diethyl Phthalate	µg/L	<	0.8									
	Dimethyl Phthalate	µg/L	<	0.48									
	Di-n-Butyl Phthalate	µg/L	<	2.5									
	2,4-Dinitrotoluene	µg/L	<	0.43									

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	2,6-Dinitrotoluene	µg/L	<	0.42									
	Di-n-Octyl Phthalate	µg/L		2.06									
	1,2-Diphenylhydrazine	µg/L	<	0.49									
	Fluoranthene	µg/L	<	0.59									
	Fluorene	µg/L	<	0.29									
	Hexachlorobenzene	µg/L	<	0.39									
	Hexachlorobutadiene	µg/L	<	0.25									
	Hexachlorocyclopentadiene	µg/L	<	0.37									
	Hexachloroethane	µg/L	<	0.44									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.36									
	Isophorone	µg/L	<	0.24									
	Naphthalene	µg/L	<	0.24									
	Nitrobenzene	µg/L	<	0.22									
	n-Nitrosodimethylamine	µg/L	<	0.22									
	n-Nitrosodi-n-Propylamine	µg/L	<	0.39									
	n-Nitrosodiphenylamine	µg/L	<	0.34									
	Phenanthrene	µg/L	<	0.39									
	Pyrene	µg/L	<	0.55									
	1,2,4-Trichlorobenzene	µg/L	<	0.25									
Group 6	Aldrin	µg/L	<	0.005									
	alpha-BHC	µg/L	<	0.005									
	beta-BHC	µg/L	<	0.005									
	gamma-BHC	µg/L	<	0.005									
	delta BHC	µg/L	<	0.02									
	Chlordane	µg/L	<	0.5									
	4,4-DDT	µg/L	<	0.02									
	4,4-DDE	µg/L		0.006									
	4,4-DDD	µg/L	<	0.02									
	Dieldrin	µg/L	<	0.02									
	alpha-Endosulfan	µg/L	<	0.02									
	beta-Endosulfan	µg/L	<	0.005									
	Endosulfan Sulfate	µg/L	<	0.02									
	Endrin	µg/L	<	0.005									
	Endrin Aldehyde	µg/L	<	0.02									
	Heptachlor	µg/L	<	0.005									
	Heptachlor Epoxide	µg/L	<	0.02									
	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	<	0.5									
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											
	UGT Copper	µg/L		35			0.67						

Permit No. PA0023256

Stream / Surface Water Information

Upper Gwynedd Township WWTP, NPDES Permit No. PA0023256, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Wissahickon Creek

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	000844	19.07	271.74	7.33			Yes
End of Reach 1	000844	17.23	237.82	12.4			Yes

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

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	19.07	0.014										150	8.05		
End of Reach 1	17.23	0.014										150	8.05		

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	19.07														
End of Reach 1	17.23														

Model Results

Upper Gwynedd Township WWTP, NPDES Permit No. PA0023256, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.004 PMF: 1 Analysis Hardness (mg/l): 227.2 Analysis pH: 7.83

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 Aluminum	0	0		0	750	750	758	
Total Antimony	0	0		0	1,100	1,100	1,111	
Total Arsenic	0	0		0	340	340	344	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	21,218	
Total Boron	0	0		0	8,100	8,100	8,184	
Total Cadmium	0	0		0	4.469	4.91	4.96	Chem Translator of 0.91 applied
Hexavalent Chromium	0	0		0	16	16.3	16.5	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	96.0	
Free Cyanide	0	0		0	22	22.0	22.2	
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	155.823	232	234	Chem Translator of 0.671 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	1.66	Chem Translator of 0.85 applied
Total Nickel	0	0		0	937.531	939	949	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	13.196	15.5	15.7	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	65.7	
Total Zinc	0	0		0	234.877	240	243	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	3.03	
Acrylonitrile	0	0		0	650	650	657	
Benzene	0	0		0	640	640	647	
Bromoform	0	0		0	1,800	1,800	1,819	
Carbon Tetrachloride	0	0		0	2,800	2,800	2,829	
Chlorobenzene	0	0		0	1,200	1,200	1,212	

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Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	18,187	
Chloroform	0	0		0	1,900	1,900	1,920	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	15,155	
1,1-Dichloroethylene	0	0		0	7,500	7,500	7,578	
1,2-Dichloropropane	0	0		0	11,000	11,000	11,114	
1,3-Dichloropropylene	0	0		0	310	310	313	
Ethylbenzene	0	0		0	2,900	2,900	2,930	
Methyl Bromide	0	0		0	550	550	556	
Methyl Chloride	0	0		0	28,000	28,000	28,290	
Methylene Chloride	0	0		0	12,000	12,000	12,124	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,010	
Tetrachloroethylene	0	0		0	700	700	707	
Toluene	0	0		0	1,700	1,700	1,718	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	6,870	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	3,031	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	3,435	
Trichloroethylene	0	0		0	2,300	2,300	2,324	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	566	
2,4-Dichlorophenol	0	0		0	1,700	1,700	1,718	
2,4-Dimethylphenol	0	0		0	660	660	667	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	80.8	
2,4-Dinitrophenol	0	0		0	660	660	667	
2-Nitrophenol	0	0		0	8,000	8,000	8,083	
4-Nitrophenol	0	0		0	2,300	2,300	2,324	
p-Chloro-m-Cresol	0	0		0	160	160	162	
Pentachlorophenol	0	0		0	20.124	20.1	20.3	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	465	
Acenaphthene	0	0		0	83	83.0	83.9	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	303	
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.51	
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	30,311	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	4,547	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	273	
Butyl Benzyl Phthalate	0	0		0	140	140	141	
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	828	
1,3-Dichlorobenzene	0	0		0	350	350	354	

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1,4-Dichlorobenzene	0	0		0	730	730	738	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	4,041	
Dimethyl Phthalate	0	0		0	2,500	2,500	2,526	
Di-n-Butyl Phthalate	0	0		0	110	110	111	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	1,617	
2,6-Dinitrotoluene	0	0		0	990	990	1,000	
1,2-Diphenylhydrazine	0	0		0	15	15.0	15.2	
Fluoranthene	0	0		0	200	200	202	
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	10.1	
Hexachlorocyclopentadiene	0	0		0	5	5.0	5.05	
Hexachloroethane	0	0		0	60	60.0	60.6	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	10,104	
Naphthalene	0	0		0	140	140	141	
Nitrobenzene	0	0		0	4,000	4,000	4,041	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	17,176	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	303	
Phenanthrene	0	0		0	5	5.0	5.05	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	131	
Aldrin	0	0		0	3	3.0	3.03	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	0.95	0.95	0.96	
Chlordane	0	0		0	2.4	2.4	2.42	
4,4-DDT	0	0		0	1.1	1.1	1.11	
4,4-DDE	0	0		0	1.1	1.1	1.11	
4,4-DDD	0	0		0	1.1	1.1	1.11	
Dieldrin	0	0		0	0.24	0.24	0.24	
alpha-Endosulfan	0	0		0	0.22	0.22	0.22	
beta-Endosulfan	0	0		0	0.22	0.22	0.22	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.086	0.086	0.087	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.52	0.52	0.53	
Heptachlor Epoxide	0	0		0	0.5	0.5	0.51	
Toxaphene	0	0		0	0.73	0.73	0.74	
UGT Copper	0	0		0	270	270	273	

☑ *CFC* CCT (min): 0.004 PMF: 1 Analysis Hardness (mg/l): 227.2 Analysis pH: 7.83

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 Aluminum	0	0		0	N/A	N/A	N/A	

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Total Antimony	0	0		0	220	220	222	
Total Arsenic	0	0		0	150	150	152	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	4,142	
Total Boron	0	0		0	1,600	1,600	1,617	
Total Cadmium	0	0		0	0.435	0.5	0.5	Chem Translator of 0.875 applied
Hexavalent Chromium	0	0		0	10	10.4	10.5	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	19.2	
Free Cyanide	0	0		0	5.2	5.2	5.25	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,516	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	6.072	9.04	9.14	Chem Translator of 0.671 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	0.92	Chem Translator of 0.85 applied
Total Nickel	0	0		0	104.131	104	106	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	5.04	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	13.1	
Total Zinc	0	0		0	236.798	240	243	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	3.03	
Acrylonitrile	0	0		0	130	130	131	
Benzene	0	0		0	130	130	131	
Bromoform	0	0		0	370	370	374	
Carbon Tetrachloride	0	0		0	560	560	566	
Chlorobenzene	0	0		0	240	240	242	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	3,536	
Chloroform	0	0		0	390	390	394	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	3,132	
1,1-Dichloroethylene	0	0		0	1,500	1,500	1,516	
1,2-Dichloropropane	0	0		0	2,200	2,200	2,223	
1,3-Dichloropropylene	0	0		0	61	61.0	61.6	
Ethylbenzene	0	0		0	580	580	586	
Methyl Bromide	0	0		0	110	110	111	
Methyl Chloride	0	0		0	5,500	5,500	5,557	
Methylene Chloride	0	0		0	2,400	2,400	2,425	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	212	
Tetrachloroethylene	0	0		0	140	140	141	
Toluene	0	0		0	330	330	333	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	1,415	
1,1,1-Trichloroethane	0	0		0	610	610	616	
1,1,2-Trichloroethane	0	0		0	680	680	687	
Trichloroethylene	0	0		0	450	450	455	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	

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2-Chlorophenol	0	0		0	110	110	111	
2,4-Dichlorophenol	0	0		0	340	340	344	
2,4-Dimethylphenol	0	0		0	130	130	131	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	16.2	
2,4-Dinitrophenol	0	0		0	130	130	131	
2-Nitrophenol	0	0		0	1,600	1,600	1,617	
4-Nitrophenol	0	0		0	470	470	475	
p-Chloro-m-Cresol	0	0		0	500	500	505	
Pentachlorophenol	0	0		0	15.440	15.4	15.6	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	91.9	
Acenaphthene	0	0		0	17	17.0	17.2	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	59.6	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.1	
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	6,062	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	919	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	54.6	
Butyl Benzyl Phthalate	0	0		0	35	35.0	35.4	
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	162	
1,3-Dichlorobenzene	0	0		0	69	69.0	69.7	
1,4-Dichlorobenzene	0	0		0	150	150	152	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	808	
Dimethyl Phthalate	0	0		0	500	500	505	
Di-n-Butyl Phthalate	0	0		0	21	21.0	21.2	
2,4-Dinitrotoluene	0	0		0	320	320	323	
2,6-Dinitrotoluene	0	0		0	200	200	202	
1,2-Diphenylhydrazine	0	0		0	3	3.0	3.03	
Fluoranthene	0	0		0	40	40.0	40.4	
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	2.02	
Hexachlorocyclopentadiene	0	0		0	1	1.0	1.01	
Hexachloroethane	0	0		0	12	12.0	12.1	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	2,122	
Naphthalene	0	0		0	43	43.0	43.4	

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Nitrobenzene	0	0		0	810	810	818	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	3,435	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	59.6	
Phenanthrene	0	0		0	1	1.0	1.01	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	26.3	
Aldrin	0	0		0	0.1	0.1	0.1	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0043	0.004	0.004	
4,4-DDT	0	0		0	0.001	0.001	0.001	
4,4-DDE	0	0		0	0.001	0.001	0.001	
4,4-DDD	0	0		0	0.001	0.001	0.001	
Dieldrin	0	0		0	0.056	0.056	0.057	
alpha-Endosulfan	0	0		0	0.056	0.056	0.057	
beta-Endosulfan	0	0		0	0.056	0.056	0.057	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.036	0.036	0.036	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.0038	0.004	0.004	
Heptachlor Epoxide	0	0		0	0.0038	0.004	0.004	
Toxaphene	0	0		0	0.0002	0.0002	0.0002	
UGT Copper	0	0		0	170	170	172	

☑ ***THH*** CCT (min): 0.004 PMF: 1 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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	5.66	
Total Arsenic	0	0		0	10	10.0	10.1	
Total Barium	0	0		0	2,400	2,400	2,425	
Total Boron	0	0		0	3,100	3,100	3,132	
Total Cadmium	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	
Free Cyanide	0	0		0	4	4.0	4.04	
Dissolved Iron	0	0		0	300	300	303	
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	1,010	
Total Mercury	0	0		0	0.050	0.05	0.051	
Total Nickel	0	0		0	610	610	616	

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Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.24	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	3.03	
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	101	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	5.76	
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	33.3	
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	68.7	
Methyl Bromide	0	0		0	100	100.0	101	
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	57.6	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	101	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	10,104	
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	30.3	
2,4-Dichlorophenol	0	0		0	10	10.0	10.1	
2,4-Dimethylphenol	0	0		0	100	100.0	101	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	2.02	
2,4-Dinitrophenol	0	0		0	10	10.0	10.1	
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	4,041	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	70.7	
Anthracene	0	0		0	300	300	303	
Benzidine	0	0		0	N/A	N/A	N/A	

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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	202	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	0.1	
2-Chloronaphthalene	0	0		0	800	800	808	
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	1,010	
1,3-Dichlorobenzene	0	0		0	7	7.0	7.07	
1,4-Dichlorobenzene	0	0		0	300	300	303	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	606	
Dimethyl Phthalate	0	0		0	2,000	2,000	2,021	
Di-n-Butyl Phthalate	0	0		0	20	20.0	20.2	
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	20.2	
Fluorene	0	0		0	50	50.0	50.5	
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	4.04	
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	34.4	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	10.1	
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	20.2	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.071	
Aldrin	0	0		0	N/A	N/A	N/A	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	4.2	4.2	4.24	
Chlordane	0	0		0	N/A	N/A	N/A	
4,4-DDT	0	0		0	N/A	N/A	N/A	
4,4-DDE	0	0		0	N/A	N/A	N/A	

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4,4-DDD	0	0		0	N/A	N/A	N/A	
Dieldrin	0	0		0	N/A	N/A	N/A	
alpha-Endosulfan	0	0		0	20	20.0	20.2	
beta-Endosulfan	0	0		0	20	20.0	20.2	
Endosulfan Sulfate	0	0		0	20	20.0	20.2	
Endrin	0	0		0	0.03	0.03	0.03	
Endrin Aldehyde	0	0		0	1	1.0	1.01	
Heptachlor	0	0		0	N/A	N/A	N/A	
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	N/A	N/A	N/A	
UGT Copper	0	0		0	N/A	N/A	N/A	

☑ *CRL* CCT (min): 0.291 PMF: 1 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 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	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	0.066	
Benzene	0	0		0	0.58	0.58	0.64	
Bromoform	0	0		0	7	7.0	7.72	
Carbon Tetrachloride	0	0		0	0.4	0.4	0.44	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	0.88	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	

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Dichlorobromomethane	0	0		0	0.95	0.95	1.05	
1,2-Dichloroethane	0	0		0	9.9	9.9	10.9	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	0.99	
1,3-Dichloropropylene	0	0		0	0.27	0.27	0.3	
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	22.1	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	0.22	
Tetrachloroethylene	0	0		0	10	10.0	11.0	
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	0.61	
Trichloroethylene	0	0		0	0.6	0.6	0.66	
Vinyl Chloride	0	0		0	0.02	0.02	0.022	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	0.033	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	1.65	
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	0.0001	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.001	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.0001	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.001	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.011	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.033	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	0.35	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	0.13	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.0001	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	

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1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	0.055	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	0.055	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.055	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.033	
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	0.00009	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.011	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	0.11	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.001	
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	0.0008	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.006	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	3.64	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	
Aldrin	0	0		0	0.0000008	8.00E-07	8.82E-07	
alpha-BHC	0	0		0	0.0004	0.0004	0.0004	
beta-BHC	0	0		0	0.008	0.008	0.009	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0003	0.0003	0.0003	
4,4-DDT	0	0		0	0.00003	0.00003	0.00003	
4,4-DDE	0	0		0	0.00002	0.00002	0.00002	
4,4-DDD	0	0		0	0.0001	0.0001	0.0001	
Dieldrin	0	0		0	0.000001	0.000001	0.000001	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000006	0.000006	0.000007	
Heptachlor Epoxide	0	0		0	0.00003	0.00003	0.00003	
Toxaphene	0	0		0	0.0007	0.0007	0.0008	
UGT Copper	0	0		0	N/A	N/A	N/A	

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

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No. Samples/Month: 4

Pollutants	*Mass Limits* AML (lbs/day)	*Mass Limits* MDL (lbs/day)	*Concentration Limits* AML	*Concentration Limits* MDL	*Concentration Limits* IMAX	*Concentration Limits* Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	750	AFC	Discharge Conc > 10% WQBEL (no RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	303	THH	Discharge Conc > 10% WQBEL (no RP)
Total Selenium	Report	Report	Report	Report	Report	µg/L	5.04	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	240	AFC	Discharge Conc > 10% WQBEL (no RP)
4,4-DDE	0.000001	0.000002	0.00002	0.00003	0.00006	µg/L	0.00002	CRL	Discharge Conc ≥ 50% WQBEL (RP)
UGT Copper	Report	Report	Report	Report	Report	µg/L	172	CFC	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 Antimony	5.66	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	10.1	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	2,425	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	1,617	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	N/A	N/A	Discharge Conc < TQL
Hexavalent Chromium	N/A	N/A	Discharge Conc < TQL
Total Cobalt	N/A	N/A	Discharge Conc < TQL
Free Cyanide	4.04	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Total Iron	1,516	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	9.14	µg/L	Discharge Conc < TQL
Total Manganese	1,010	µg/L	Discharge Conc < TQL
Total Mercury	0.051	µg/L	Discharge Conc < TQL
Total Nickel	106	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Silver	15.5	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	0.24	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.0	µg/L	Discharge Conc < TQL
Acrylonitrile	0.066	µg/L	Discharge Conc < TQL
Benzene	0.64	µg/L	Discharge Conc < TQL
Bromoform	7.72	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	0.44	µg/L	Discharge Conc < TQL
Chlorobenzene	101	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	0.88	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS

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2-Chloroethyl Vinyl Ether	3,536	µg/L	Discharge Conc < TQL
Chloroform	5.76	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	1.05	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	10.9	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	33.3	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	0.99	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	0.3	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	68.7	µg/L	Discharge Conc < TQL
Methyl Bromide	101	µg/L	Discharge Conc < TQL
Methyl Chloride	5,557	µg/L	Discharge Conc < TQL
Methylene Chloride	22.1	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	0.22	µg/L	Discharge Conc < TQL
Tetrachloroethylene	11.0	µg/L	Discharge Conc < TQL
Toluene	57.6	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	101	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	616	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	0.61	µg/L	Discharge Conc < TQL
Trichloroethylene	0.66	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.022	µg/L	Discharge Conc < TQL
2-Chlorophenol	30.3	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	10.1	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	101	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	2.02	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	10.1	µg/L	Discharge Conc < TQL
2-Nitrophenol	1,617	µg/L	Discharge Conc < TQL
4-Nitrophenol	475	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	160	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.033	µg/L	Discharge Conc < TQL
Phenol	4,041	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	1.65	µg/L	Discharge Conc < TQL
Acenaphthene	17.2	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	303	µg/L	Discharge Conc < TQL
Benzidine	0.0001	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.001	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.0001	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.001	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.011	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.033	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	202	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	0.35	µg/L	Discharge Conc < TQL

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4-Bromophenyl Phenyl Ether	54.6	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.1	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	808	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.13	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.0001	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	162	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	7.07	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	152	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	0.055	µg/L	Discharge Conc < TQL
Diethyl Phthalate	606	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	505	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	20.2	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	0.055	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.055	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.033	µg/L	Discharge Conc < TQL
Fluoranthene	20.2	µg/L	Discharge Conc < TQL
Fluorene	50.5	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.00009	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.011	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	1.01	µg/L	Discharge Conc < TQL
Hexachloroethane	0.11	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.001	µg/L	Discharge Conc < TQL
Isophorone	34.4	µg/L	Discharge Conc < TQL
Naphthalene	43.4	µg/L	Discharge Conc < TQL
Nitrobenzene	10.1	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.0008	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.006	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	3.64	µg/L	Discharge Conc < TQL
Phenanthrene	1.01	µg/L	Discharge Conc < TQL
Pyrene	20.2	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.071	µg/L	Discharge Conc < TQL
Aldrin	8.82E-07	µg/L	Discharge Conc < TQL
alpha-BHC	0.0004	µg/L	Discharge Conc < TQL
beta-BHC	0.009	µg/L	Discharge Conc < TQL
gamma-BHC	0.95	µg/L	Discharge Conc < TQL
delta BHC	N/A	N/A	No WQS
Chlordane	0.0003	µg/L	Discharge Conc < TQL
4,4-DDT	0.00003	µg/L	Discharge Conc < TQL
4,4-DDD	0.0001	µg/L	Discharge Conc < TQL
Dieldrin	0.000001	µg/L	Discharge Conc < TQL
alpha-Endosulfan	0.057	µg/L	Discharge Conc < TQL
beta-Endosulfan	0.057	µg/L	Discharge Conc < TQL
Endosulfan Sulfate	20.2	µg/L	Discharge Conc < TQL

Endrin	0.03	µg/L	Discharge Conc < TQL
Endrin Aldehyde	1.01	µg/L	Discharge Conc < TQL
Heptachlor	0.000007	µg/L	Discharge Conc < TQL
Heptachlor Epoxide	0.00003	µg/L	Discharge Conc < TQL
Toxaphene	0.0002	µg/L	Discharge Conc < TQL

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WETT: 2018 four quarterly analysis

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.95
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: UGT WWTP

Permit No.: PA0023256

Test Completion Date: 3/13/2018

Replicate No.	Control	TIWC
1	10	9
2	9	10
3	10	9
4	10	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.250
Std Dev.	0.500	0.500
# Replicates	4	4

T-Test Result	5.1314
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 4/10/2018

Replicate No.	Control	TIWC
1	10	10
2	9	10
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	10.000
Std Dev.	0.500	0.000
# Replicates	4	4

T-Test Result	12.5523
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	PASS

Test Completion Date: 9/18/2018

Replicate No.	Control	TIWC
1	10	9
2	9	9
3	10	10
4	10	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.250
Std Dev.	0.500	0.500
# Replicates	4	4

T-Test Result	5.1314
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 11/13/2018

Replicate No.	Control	TIWC
1	9	8
2	8	9
3	9	7
4	9	7
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	8.750	7.750
Std Dev.	0.500	0.957
# Replicates	4	4

T-Test Result	2.6124
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

Permit No. PA0023256

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.95
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: UGT WWTP

Permit No.: PA0023256

Test Completion Date: 3/13/2018

Replicate No.	Control	TIWC
1	0.296	0.313
2	0.289	0.368
3	0.382	0.367
4	0.318	0.394
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.321	0.361
Std Dev.	0.042	0.034
# Replicates	4	4

T-Test Result	5.1362
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 4/10/2018

Replicate No.	Control	TIWC
1	0.409	0.326
2	0.452	0.412
3	0.419	0.421
4	0.393	0.368
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.418	0.382
Std Dev.	0.025	0.044
# Replicates	4	4

T-Test Result	2.8591
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

Test Completion Date: 9/18/2018

Replicate No.	Control	TIWC
1	0.387	0.376
2	0.372	0.401
3	0.444	0.543
4	0.389	0.398
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.398	0.430
Std Dev.	0.032	0.076
# Replicates	4	4

T-Test Result	3.2722
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

Test Completion Date: 11/13/2018

Replicate No.	Control	TIWC
1	0.261	0.299
2	0.311	0.344
3	0.265	0.349
4	0.306	0.278
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.286	0.318
Std Dev.	0.026	0.035
# Replicates	4	4

T-Test Result	5.1739
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Permit No. PA0023256

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.95
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: UGT WWTP

Permit No.: PA0023256

Replicate No.	Test Completion Date 3/13/2018 Control	TIWC
1	1	0
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	0.900
Std Dev.	0.000	0.316
# Replicates	10	10
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Replicate No.	Test Completion Date 4/10/2018 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	0	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	

Replicate No.	Test Completion Date 9/18/2018 Control	TIWC
1	0	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	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	

Replicate No.	Test Completion Date 11/13/2018 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	

Permit No. PA0023256

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.95
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: UGT WWTP

Permit No.: PA0023256

Test Completion Date: 3/13/2018

Replicate No.	Control	TIWC
1	39	0
2	38	32
3	27	23
4	30	39
5	40	37
6	41	31
7	30	32
8	25	36
9	36	38
10	32	39
11		
12		
13		
14		
15		
Mean	33.800	30.700
Std Dev.	5.731	11.851
# Replicates	10	10

T-Test Result	1.3420
Deg. of Freedom	13
Critical T Value	0.8702
Pass or Fail	PASS

Test Completion Date: 4/10/2018

Replicate No.	Control	TIWC
1	34	36
2	30	34
3	32	36
4	32	31
5	28	29
6	30	31
7	34	35
8	25	34
9	31	34
10	24	34
11		
12		
13		
14		
15		
Mean	30.000	33.400
Std Dev.	3.432	2.319
# Replicates	10	10

T-Test Result	9.9491
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Test Completion Date: 9/18/2018

Replicate No.	Control	TIWC
1	0	24
2	30	38
3	27	29
4	33	35
5	24	30
6	17	29
7	31	30
8	25	28
9	30	32
10	29	35
11		
12		
13		
14		
15		
Mean	24.600	31.000
Std Dev.	9.766	4.082
# Replicates	10	10

T-Test Result	4.7328
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Test Completion Date: 11/13/2018

Replicate No.	Control	TIWC
1	32	33
2	36	39
3	40	35
4	38	31
5	36	38
6	33	37
7	32	36
8	26	36
9	32	37
10	38	43
11		
12		
13		
14		
15		
Mean	34.300	36.500
Std Dev.	4.111	3.274
# Replicates	10	10

T-Test Result	7.5759
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Permit No. PA0023256

WET Summary and Evaluation

Facility Name	UGT WWTP
Permit No.	PA0023256
Design Flow (MGD)	6.4
Q_{7-10} Flow (cfs)	0.1
PMF_a	1
PMF_c	1

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	3/13/18	4/10/18	9/18/18	11/13/18
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	3/13/18	4/10/18	9/18/18	11/13/18
Pimephales	Growth	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	3/13/18	4/10/18	9/18/18	11/13/18
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	3/13/18	4/10/18	9/18/18	11/13/18
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	Chronic
TIWC	99 % Effluent
Dilution Series	25, 50, 74, 99, 100 % Effluent
Permit Limit	None
Permit Limit Species	

Permit No. PA0023256

WETT: 2019-2021 annual sampling analysis

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.98
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: UGT WWTP

Permit No.: PA0023256

Test Completion Date: 12/7/2021

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

T-Test Result	3.2125
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	PASS

Test Completion Date: 12/22/2020

Replicate No.	Control	TIWC
1	10	10
2	10	9
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	9.750
Std Dev.	0.000	0.500
# Replicates	4	4

T-Test Result	7.6643
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	PASS

Test Completion Date: 11/26/2019

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

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

Test Completion Date:

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

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

Permit No. PA0023256

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.98
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: UGT WWTP

Permit No.: PA0023256

Replicate No.	Test Completion Date: 12/7/2021 Control	TIWC
1	0.326	0.342
2	0.341	0.337
3	0.336	0.311
4	0.332	0.324
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.334	0.329
Std Dev.	0.006	0.014
# Replicates	4	4
T-Test Result	10.6324	
Deg. of Freedom	4	
Critical T Value	0.7407	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 12/22/2020 Control	TIWC
1	0.327	0.389
2	0.347	0.417
3	0.405	0.526
4	0.36	0.483
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.360	0.454
Std Dev.	0.033	0.062
# Replicates	4	4
T-Test Result	5.4910	
Deg. of Freedom	4	
Critical T Value	0.7407	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/26/2019 Control	TIWC
1	0.422	0.426
2	0.413	0.418
3	0.439	0.579
4	0.356	0.434
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.408	0.464
Std Dev.	0.036	0.077
# Replicates	4	4
T-Test Result	3.8982	
Deg. of Freedom	4	
Critical T Value	0.7407	
Pass or Fail	PASS	

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

Permit No. PA0023256

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.98
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: UGT WWTP

Permit No.: PA0023256

Replicate No.	Test Completion Date: 12/7/2021 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	

Replicate No.	Test Completion Date: 12/22/2020 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	

Replicate No.	Test Completion Date: 11/26/2019 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	

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

Permit No. PA0023256

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.98
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: UGT WWTP

Permit No.: PA0023256

Replicate No.	Test Completion Date: 12/7/2021 Control	TIWC
1	37	29
2	33	32
3	41	34
4	28	30
5	41	39
6	35	25
7	36	38
8	37	37
9	38	34
10	39	36
11		
12		
13		
14		
15		
Mean	36.500	33.400
Std Dev.	3.894	4.427
# Replicates	10	10

T-Test Result	3.5922
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

Replicate No.	Test Completion Date: 12/22/2020 Control	TIWC
1	22	36
2	33	43
3	36	32
4	34	36
5	34	35
6	37	36
7	38	38
8	38	42
9	40	42
10	34	44
11		
12		
13		
14		
15		
Mean	34.600	38.400
Std Dev.	4.971	4.061
# Replicates	10	10

T-Test Result	7.1419
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Replicate No.	Test Completion Date: 11/26/2019 Control	TIWC
1	25	32
2	28	26
3	16	30
4	26	36
5	16	32
6	24	33
7	24	30
8	29	28
9	14	41
10	24	34
11		
12		
13		
14		
15		
Mean	22.600	32.200
Std Dev.	5.317	4.237
# Replicates	10	10

T-Test Result	8.2881
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

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

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

Permit No. PA0023256

WET Summary and Evaluation

Facility Name	UGT WWTP
Permit No.	PA0023256
Design Flow (MGD)	6.4
Q_{7-10} Flow (cfs)	0.1
PMF_a	1
PMF_c	1

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	12/7/21	12/22/20	11/26/19	
Pimephales	Survival	PASS	PASS	PASS	

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	12/7/21	12/22/20	11/26/19	
Pimephales	Growth	PASS	PASS	PASS	

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	12/7/21	12/22/20	11/26/19	
Ceriodaphnia	Survival	PASS	PASS	PASS	

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	12/7/21	12/22/20	11/26/19	
Ceriodaphnia	Reproduction	PASS	PASS	PASS	

Reasonable Potential? NO

Permit Recommendations

Test Type	Chronic
TIWC	99 % Effluent
Dilution Series	25, 50, 74, 99, 100 % Effluent
Permit Limit	None
Permit Limit Species	