pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0026166**
Facility Type	**Municipal**	APS ID	**1021177**
Major / Minor	**Major**	Authorization ID	**1322891**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Warminster Municipal Authority Bucks County**	Facility Name	**Warminster Township STP & Sewer System**
Applicant Address	415 Gibson Avenue PO Box 2279	Facility Address	1050 Log College Drive
	Warminster, PA 18974-4163		Warminster, PA 18974-1825
Applicant Contact	Timothy Hagey	Facility Contact	George Pfeiffer
Applicant Phone	(215) 675-3301	Facility Phone	(215) 675-6113
Client ID	64798	Site ID	446058
Ch 94 Load Status	Not Overloaded	Municipality	Warminster Township
Connection Status	No Limitations	County	Bucks
Date Application Received	August 5, 2020	EPA Waived?	No
Date Application Accepted		If No, Reason	Major Facility, Pretreatment

Purpose of Application: Application for a renewal of an NPDES permit for discharge of treated Sewage

Summary of Review

Permittee requests renewal of NPDES permit to discharge an average annual design flow of 8.18 mgd, and a maximum monthly flow of 13.5 MGD of treated sewage to Little Neshaminy Creek via Outfall 001; and 0.75 MGD to an UNT to Little Neshaminy Creek at Five Ponds Golf Course via Outfall 002.

The facility design includes: bar screen, grit chamber, primary settling, activated sludge using A/O technology, secondary settling, and UV disinfection. Aluminum sulfate is added as required for phosphorus removal. Other wastewater treatment chemicals include chlorine for back-up disinfection, ferric chloride and polymer for centrifuge operations and caustic soda for alkalinity adjustments. Wasted sludge is thickened, anaerobically digested, dewatered, and hauled to a landfill for disposal.

Water quality modeling is performed using Department's WQM. No changes to assumptions, flows, etc., so effluent limits remain unchanged for CBOD5, NH3-N, and DO.

Current limit for phosphorus, Nitrate-Nitrite as N and Total Kjeldahl Nitrogen remain unchanged for this renewal.

Based on DEP's toxics model spreadsheet, limits have been established for Total Iron, Total Aluminum and zinc has been added in this renewal as report only. A compliance schedule has been added for Copper, for in order to take benefit of the site-specific criterion for copper. If the permittee chooses not to proceed with developing updated site-specific study for copper criteria using BLM, the proposed copper limit will be based on statewide copper criteria and will be effective beginning of Month 59.

"Solids Management" language has been added in Part C conditions in this renewal.

Approve	Deny	Signatures	Date
X		*Vasantha* Vasantha Palakurti / Environmental Engineering Specialist	November 16, 2020
X		*Pravin Patel* Pravin C. Patel, P.E. / Environmental Engineer Manager	November 16, 2020

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

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	8.18
Latitude	40Âº 13' 52.09"	Longitude	-75Âº 6' 34.34"
Quad Name	Hatboro	Quad Code	1745
Wastewater Description:	Treated sewage from Log College STP		
Receiving Waters	Little Neshaminy Creek	Stream Code	02638
NHD Com ID	25479926	RMI	6.3
Drainage Area	29.4	Yield (cfs/mi^2)	0.057
Q_{7-10} Flow (cfs)	1.7	Q_{7-10} Basis	Previous Permit
Elevation (ft)	190	Slope (ft/ft)	
Watershed No.	2-F	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	FLOW REGIME MODIFICATION, NUTRIENTS, ORGANIC ENRICHMENT, PATHOGENS, POLYCHLORINATED BIPHENYLS (PCBS), SILTATION		
Source(s) of Impairment	MUNICIPAL POINT SOURCE DISCHARGES, MUNICIPAL POINT SOURCE DISCHARGES, SOURCE UNKNOWN, SOURCE UNKNOWN, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS		
TMDL Status	Final	Name	Neshaminy Creek

Design Conditions (From previous permit)

Log College STP discharges to Little Neshaminy Creek, a major tributary of Neshaminy Creek. Major sewage treatment plants located upstream of Log College STP include Horsham Township Park Creek STP (2.25 MGD), Montgomery Township Eureka STP (2.4 MGD), and Willow Grove Air Station STP (1.0 MGD). Major sewage treatment plants located downstream of Log College STP include Warminster Township (USNADC) STP (1.2 MGD). Note that the Horsham Township Park Creek STP recently increased their design flow from 1.0 MGD to 2.25 MGD, and that Willow Grove Air Station STP was decommissioned. There is also some discussion that the Warminster Township USNADC STP plans to divert their flow to Log College STP.

Based on a drainage area of 29.4 mi^2, the Q_{7-10} stream flow at Log College STP is estimated at 1.7-cfs. The Q_{7-10} flow is estimated based on the USGS stream gage located on Neshaminy Creek near Langhorne, PA. (Q_{7-10} = 11.9-cfs at a drainage area of 210 mi^2) (Reference: USGS low-flow statistics website)

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0.75
Latitude	40Âº 13' 1.46"	Longitude	75° 6’ 57.80”
Quad Name	Hatboro	Quad Code	1745
Wastewater Description:	Treated sewage from Log College STP		
Receiving Waters	Unnamed Tributary to Little Neshaminy Creek (WWF, MF)	Stream Code	
NHD Com ID	25479750	RMI	
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	2-F	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	FLOW REGIME MODIFICATION, PATHOGENS, POLYCHLORINATED BIPHENYLS (PCBS), SILTATION		
Source(s) of Impairment	SOURCE UNKNOWN, SOURCE UNKNOWN, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS		
TMDL Status	Final	Name	Neshaminy Creek

Other Comments: During the period from June to October, up to 0.75 MGD of effluent may be diverted to Five Ponds Golf Course for irrigation. Flow is measured within the diversion channel and analytical results for parameters sampled at Outfall 001 may also be reported for Outfall 002.

Outfalls 001 – 007: Stormwater from Log College STP property.

Compliance History

DMR Data for Outfall 001 (from September 1, 2019 to August 31, 2020)

Parameter	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19
Flow (MGD) Average Monthly	4.998	4.57	5.001	5.921	7.905	7.803	8.776	6.876	8.263	5.612	5.174	4.731
Flow (MGD) Daily Maximum	15.257	11.40	5.873	6.939	17.962	11.276	11.955	15.011	18.645	9.964	8.197	5.599
pH (S.U.) Minimum	6.8	6.9	6.8	6.4	6.5	6.7	7.1	7.1	6.7	6.8	6.8	6.9
pH (S.U.) Instantaneous Maximum	7.3	7.5	7.3	7.2	6.9	6.9	6.8	6.8	7.2	7.3	7.4	7.4
DO (mg/L) Minimum	6.5	7.0	6.8	7.3	7.8	7.7	7.6	8.2	7.1	7.3	7.4	6.3
CBOD5 (lbs/day) Average Monthly	< 144	< 113	< 108	< 163	< 281	< 348	< 252	< 273	< 437	< 124	< 142	< 130
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	6986	5147	6141	8623	9587	11571	8900	8476	13034	7345	9036	7166
CBOD5 (lbs/day) Weekly Average	247	< 159	< 144	< 198	< 550	518	< 350	< 370	< 817	< 151	< 217	182
CBOD5 (mg/L) Average Monthly	< 3	< 3	< 3	< 3	4	< 5	< 3	< 5	< 6	< 3	< 3	< 3
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	178	140	166	176	149	175	123	152	200	159	215	182
CBOD5 (mg/L) Weekly Average	< 4	< 3	< 3	< 4	< 5	9	4	6	< 8	< 3	4	4
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	8067	8457	9452	11821	13263	12345	11470	12085	9146	9859	13816	9972
BOD5 (mg/L) Raw Sewage Influent Average Monthly	204	238	249	257	203	204	164	222	144	226	300	252
TSS (lbs/day) Average Monthly	364	249	< 217	< 233	< 543	< 822	< 375	470	1574	146	< 267	718

TSS (lbs/day) Raw Sewage Influent Average Monthly	8237	7195	6958	8363	8623	9381	9495	7312	10003	7351	9610	6981
TSS (lbs/day) Weekly Average	1202	471	476	310	< 1390	1467	559	974	3783	186	620	2215
TSS (mg/L) Average Monthly	5	6	< 6	5	< 6	< 13	< 5	8	18	3	6	16
TSS (mg/L) Raw Sewage Influent Average Monthly	207	193	186	172	132	148	132	134	153	161	225	176
TSS (mg/L) Weekly Average	12	10	9	6	11	26	8	14	31	4	14	48
Total Dissolved Solids (lbs/day) Average Monthly	17124	16346	17117	19524	25493	24161	26088	21004	24301	18389	21981	19728
Total Dissolved Solids (mg/L) Average Monthly	421.0	458.0	464.0	421.0	386.0	392	371.0	379.0	376.0	420.0	480.0	500.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 25	< 22	74	< 6	< 6	26	18	21	< 12	< 13	< 32	66
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	900	738	755.0	54	78	530	100	480	470	400	664	560
UV Transmittance (%) Minimum	50	62	65	71	71	61	72	71	69	71	74	62
Nitrate-Nitrite (lbs/day) Average Monthly	330	303	347	412	537	< 554	283	256	357	< 419	388	376
Nitrate-Nitrite (mg/L) Average Monthly	8.1	8.1	9.78	6.72	6.86	< 9.37	4.95	4.3	6.17	< 8.4	9.1	9.4
Total Nitrogen (lbs/day) Average Monthly	< 313	315	427	< 490	< 628	654	459	385	< 704	< 486	317	795
Total Nitrogen (mg/L) Average Monthly	6.71	8.22	12	< 7.99	< 8.03	11.06	8.02	6.5	< 12.16	9.37	8.5	17
Ammonia (lbs/day) Average Monthly	< 18	< 14	< 22	15	< 25	< 14	80	89	< 58	8	< 16	< 14
Ammonia (mg/L) Average Monthly	0.4	< 0.3	< 0.6	< 0.3	< 0.4	< 0.2	1.0	1.5	< 0.8	< 0.2	< 0.4	< 0.4
TKN (lbs/day) Average Monthly	52	78	95	78	92	100	176	129	347	48	59	560

TKN (mg/L) Average Monthly	1.12	2.03	2.23	1.27	1.17	1.69	3.07	2.2	5.99	0.97	1.6	12
Total Phosphorus (lbs/day) Average Monthly	38	32	25	37	78	95	93	70	67	30	29	43
Total Phosphorus (mg/L) Average Monthly	0.8	0.8	0.7	0.7	1.2	1.5	1.3	1.0	0.9	0.6	0.7	1.0
Total Aluminum (mg/L) Average Monthly	0.04	0.13	0.08	0.14	0.08	0.02	3	0.07	0.03	0.06	0.06	2.15
Total Copper (mg/L) Average Monthly	0.01	0.011	0.01	0.01	0.013	0.012	0.015	0.015	0.013	0.013	0.016	0.117
Dissolved Iron (mg/L) Average Monthly	0.05	0.07	0.06	0.03	< 0.02	0.04	0.05	0.05	0.06	0.05	0.7	0.05
Total Iron (mg/L) Average Monthly	0.08	0.12	0.1	0.04	0.05	0.07	0.08	0.1	0.08	0.07	0.15	0.97
Sulfate (mg/L) Average Monthly	34.5	34	47	42	39	37	38	32	32	38	30	41
Chloride (mg/L) Average Monthly	97.5	133	153	109	109	147	152	128	111	116	141	126
Bromide (mg/L) Average Monthly	< 0.12	< 0.1	< 1	< 1	< 1	< 1	< 1	< 1	2	< 2	< 2	< 2
Total Hardness (mg/L) Average Monthly	124	113	114	116	127	136	137	124	124	130	137	141
Chronic WET - Ceriodaphnia Survival (TUc) Daily Maximum			1.14			1.14			1.14			
Chronic WET - Ceriodaphnia Reproduction (TUc) Daily Maximum			1.14			1.14			1.14			
Chronic WET - Pimephales Survival (TUc) Daily Maximum			1.14			1.14			1.14			
Chronic WET - Pimephales Growth (TUc) Daily Maximum			1.14			1.14			1.14			

DMR Data for Outfall 002 (from September 1, 2019 to August 31, 2020)

Parameter	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19
Flow (MGD) Average Monthly	0.164	0.168	0.196					0.079	0.0585	0.136	0.178	0.193
Flow (MGD) Daily Maximum	0.238	192	0.205					0.079	0.0585	0.203	0.198	0.199
pH (S.U.) Minimum	6.8	6.9	6.9					6.8	6.9	6.9	6.9	6.9
pH (S.U.) Maximum	7.3	7.5	7.3					6.8	6.9	6.9	7.4	7.4
DO (mg/L) Minimum	6.5	7.1	6.8					8.6	8.5	7.9	7.2	6.3
CBOD5 (lbs/day) Average Monthly	4	4	6					3	1	< 4	< 4	< 5
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	248	198	275					123	131	173	368	246
CBOD5 (lbs/day) Weekly Average	< 6	5	5					3	< 1	< 4	5	6
CBOD5 (mg/L) Average Monthly	< 3	3	3					4	< 2	3	< 3	< 3
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	178	142	168					186	64	141	247	182
CBOD5 (mg/L) Weekly Average	< 4	4	3					4	< 2	3	4	4
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	243	342	297					159	95	318	538	311
BOD5 (mg/L) Raw Sewage Influent Average Monthly	204	238	181					241	195	188.0	340	252
TSS (lbs/day) Average Monthly	5	9	7					2	2	2	7	23
TSS (lbs/day) Raw Sewage Influent Average Monthly	289	276	270					92	70	167	355	232
TSS (lbs/day) Weekly Average	8	16	7					2	2	2	11	64

TSS (mg/L) Average Monthly	5	6	4					3	4	2	5	16
TSS (mg/L) Raw Sewage Influent Average Monthly	207	196	165					140	143	134	239	176
TSS (mg/L) Weekly Average	12	10	4					3	4	2	10	48
Total Dissolved Solids (lbs/day) Average Monthly	495	660	810					207	203	804	796	638
Total Dissolved Solids (mg/L) Average Monthly	421	458	493					314	416.0	475.0	502.0	500
Fecal Coliform (CFU/100 ml) Geometric Mean	25	< 23	109					5	7	10	56	66
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	900	755	755					5	7	13	664	560
UV Transmittance (%) Minimum	50	62	68					78	76	76	69	62
Nitrate-Nitrite (lbs/day) Average Monthly	11	12	17					3	3	< 14.22	14	12
Nitrate-Nitrite (mg/L) Average Monthly	8.1	8.3	10.8					4.3	6.17	< 8.4	9.1	9.4
Total Nitrogen (lbs/day) Average Monthly	< 1	12	20					4.3	< 5.9	< 15.86	14	26
Total Nitrogen (mg/L) Average Monthly	6.71	8.22	12.81					6.5	< 12.16	< 9.37	8.5	17
Ammonia (lbs/day) Average Monthly	< 1	< 0.4	< 0.5					1	< 0.05	< 0.1	0.5	< 0.5
Ammonia (mg/L) Average Monthly	< 0.4	< 0.3	0.3					1.7	< 0.1	< 0.1	< 0.4	< 0.4
TKN (lbs/day) Average Monthly	0.2	3	3					1.5	2.9	1.64	3	18
TKN (mg/L) Average Monthly	1.12	2.03	2.01					2.2	5.99	0.97	1.6	12
Total Phosphorus (lbs/day) Average Monthly	1	1	1					0.8	0.1	< 1	0.8	1

Total Phosphorus (mg/L) Average Monthly	0.8	0.9	0.7					1.2	0.3	0.3	0.6	1.0
Total Aluminum (mg/L) Average Monthly	0.04	0.13	0.11					0.07	0.03	0.06	0.06	2.15
Total Copper (mg/L) Average Monthly	< 0.01	0.011	0.01					0.015	0.013	0.013	0.016	0.117
Dissolved Iron (mg/L) Average Monthly	0.05	0.07	0.05					0.05	0.06	0.05	0.07	0.05
Total Iron (mg/L) Average Monthly	0.08	0.12	0.11					0.1	0.08	0.07	0.15	0.97
Sulfate (mg/L) Average Monthly	34.5	34	59					32	32	38	30	41
Chloride (mg/L) Average Monthly	97.5	133	152					128	111	116	141	126
Bromide (mg/L) Average Monthly	< 0.12	< 0.1	< 1					< 1	< 2	2	< 2	< 2
Total Hardness (mg/L) Average Monthly	124	113	106					124	124	130	137	141

DMR Data for Outfall 004 (from September 1, 2019 to August 31, 2020)

Parameter	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19
pH (S.U.) Annual Average									5.0			
CBOD5 (mg/L) Annual Average									< 2.0			
COD (mg/L) Annual Average									< 25			
TSS (mg/L) Annual Average									23			
Oil and Grease (mg/L) Annual Average									< 5			
Fecal Coliform (CFU/100 ml) Annual Average									10900			
TKN (mg/L) Annual Average									< 0.50			
Total Phosphorus (mg/L) Annual Average									0.11			

Dissolved Iron (mg/L) Annual Average									0.03			

DMR Data for Outfall 006 (from September 1, 2019 to August 31, 2020)

Parameter	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19
pH (S.U.) Annual Average									5.5			
CBOD5 (mg/L) Annual Average									11.5			
COD (mg/L) Annual Average									46			
TSS (mg/L) Annual Average									61			
Oil and Grease (mg/L) Annual Average									< 5			
Fecal Coliform (CFU/100 ml) Annual Average									8800			
TKN (mg/L) Annual Average									5			
Total Phosphorus (mg/L) Annual Average									0.09			
Dissolved Iron (mg/L) Annual Average									0.05			

DMR Data for Outfall 007 (from September 1, 2019 to August 31, 2020)

Parameter	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19
pH (S.U.) Annual Average									5.7			
CBOD5 (mg/L) Annual Average									13.0			
COD (mg/L) Annual Average									42			
TSS (mg/L) Annual Average									11			
Oil and Grease (mg/L) Annual Average									< 5			

Fecal Coliform (CFU/100 ml) Annual Average									9090			
TKN (mg/L) Annual Average									0.50			
Total Phosphorus (mg/L) Annual Average									0.08			
Dissolved Iron (mg/L) Annual Average									0.04			

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 8.18
Latitude 40º 13' 51.63" **Longitude** -75º 6' 34.09"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Water Quality-Based Limitations

Design Conditions

The site-specific and downstream design conditions for use in computer models such as Toxic Management Spreadsheet and/or WQM include:

Node 1:Log College STP
Stream flow Q_{7-10} = 1.7-cfs (or equivalent low-flow yield = 0.057-cfsm)
The Fate Coefficient (e.g. decay rate) was set to 0.5, in recognition that effluent from facilities with greater than secondary treatment has slower decay rates.
Discharge flow Qd = 8.18-MGD
RMI (river mile index) = 6.3 miles
Stream Elevation = 190
Drainage Area = 29.4 mi^2 (USGS online drainage area tool)

Downstream Node 2
Stream flow Q_{7-10} = (or equivalent low-flow yield = 0.057-cfsm)
Discharge flow Qd = 8.18-MGD
RMI (river mile index) = 3.5 miles
Stream Elevation = 160 feet
Drainage Area = 32.3 mi^2 (USGS online drainage area tool)

WQM_PA0026166.pdf

CBOD$_5$, NH$_3$-N, and Dissolved Oxygen

Existing water quality-based limits for CBOD$_5$, NH$_3$-N, and Dissolved Oxygen were previously developed using the Department's WQM 7 computer model. The existing summer season monthly average limits were used in the model. The model confirmed that the existing effluent limits are protective of downstream surface water criteria for DO and NH3-N.

Nitrogen Limits (nitrite-nitrate as N, Total Kjeldahl Nitrogen (TKN), Total Nitrogen)

The facility has an existing nitrite-nitrate limit of 10.0 mg/l, effective July thru October. The existing nitrite-nitrate limit is based on protection of the PWS use of Neshaminy Creek during the critical period of July thru October. Most sewage facilities that discharge in the Neshaminy Creek basin historically had a combined effluent limit for ammonia and nitrite-nitrate equal to 11 mg/l effective during the critical period. The limits for Log College STP are:

NH3-N: 1.0 mg/l (5/1 – 10/31), 3.0 mg/l (11/1 – 4/30)
NO2-NO3: 10.0 mg/l (7/1 – 10/31), Report (11/1 – 6/30)

Total Nitrogen and TKN: Reporting for total nitrogen & TKN are continued in this renewal.

Total Dissolved Solids (TDS); Chloride, Bromide, Sulfate

TDS, Chloride, Bromide and sulfate limits remain unchanged intis renewal. The TDS concentration was listed in the permit application as 500 mg/l (average) and 516 mg/l (maximum). There are several industrial users that discharge into this facility which have the potential to elevate the effluent TDS concentrations, and there is a public water supply intake for Aqua Pa located downstream on Neshaminy Creek. Therefore, numerical TDS limits are recommended. DRBC Regulation 3.10.4.D.2 includes TDS limit of 1,000 ppm. 25 Pa Code 93.7 includes TDS criteria that are applied at PWS intakes of 500 mg/l as a monthly average and 750 mg/l as a maximum. There is statewide osmotic pressure criteria of 50 mosm (approximately 1,500 mg/l TDS). The DRBC limit is recommended for the average monthly limit. To protect both the downstream PWS and the local receiving stream for osmotic pressure, an instantaneous maximum limit of 1,500 mg/l is recommended. The recommended TDS limits are:

TDS:	1,000 mg/l (average monthly), and 1,500 mg/l (instantaneous maximum)
Chloride:	Report
Bromide:	Report
Sulfate:	Report

Since the projected TDS concentration is greater than 20,000 lbs/day, a reporting requirement for chloride, bromide, and sulfate is included in the permit. This is as per EPA and EQB recommendations that monitoring data for these parameters be collected from facilities that discharge over 1,000 mg/l or 20,000 lbs/day TDS.

Phosphorous

Since there is no increase in permitted flow, the same effluent limits are included in the draft permit.

Water Quality-Based Limitations

A "Reasonable Potential Analysis" determined the following parameters were candidates for limitations: TDS, Chloride, Cadmium, Total Iron, Total Aluminum, Copper and Zinc

TMS PA0026166.pdf

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	51.2	57.9	750	849	849	µg/L	750	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Boron	Report	Report	Report	Report	Report	µg/L	1,812	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	0.95	1.47	13.9	21.5	21.5	µg/L	13.9	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Iron	116	181	1,699	2,650	4,247	µg/L	1,699	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	12.2	Report	179	179	µg/L	158	AFC	Discharge Conc > 10% WQBEL (no RP)

Zinc

Total Zinc: For a permitted flow of 8.18-MGD, the permit application includes four effluent Zinc analyses that reported a concentration of 41-ug/l. Since the discharge concentration is greater than 10% WQBEL, "Report only" has been added to the permit for this renewal. Since there is not enough data for this renewal, the data will be reviewed during the next permit renewal to determine if reporting should continue or a limit is needed.

Copper and Hardness

In order to take benefit of the site-specific criterion for copper, the permittee shall develop a site-specific water quality criterion (WQC) for copper using the Biotic Ligand Model (BLM) approved by EPA and/or PADEP. The study must be approved by the Department and US EPA according the compliance schedule detailed in the permit (See permit Part C. VI). If the permittee chooses not to proceed with developing updated site-specific study for copper criteria using BLM, the proposed copper limit will be based on statewide copper criteria and will be effective beginning of Month 37.

Iron (Fe) / Aluminum (Al)

Ferric chloride and alum are commonly used chemicals for phosphate removal. Effluent concentrations in the application and one-year DMR are reported as 2.15 mg/l for Aluminum and 0.97 mg/l for Iron. According to the Toxic model spreadsheet, WQBEL exceeded Most Stringent Criterion, therefore effluent limits are required. Therefore, limits have been established for total iron and total aluminum in this renewal.

Whole Effluent Toxicity (WET)

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

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

The dilution series used for the tests was: 100%, 94%, 88%, 44%, and 22%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 88%.

Summary of Four Most Recent Test Results

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
3/16/2017	Pass	Pass	Pass	Pass
9/11/2018	Pass	Pass	Pass	Pass
2/5/2019	Pass	Pass	Pass	Pass
2/10/2020	Pass	Pass	Pass	Pass

Dilution Series Calculation

IWCc = (D(discharge) / (D(discharge) + (D(stream) * PMF))) * 100
IWCc = (12.67 / (12.67 + (1.7 *1))) * 100 = 88%
Dilution series = 1/ (100/IWCc) = 1 / (100/88) = 0.88

Based on the Department's WETT SOP, the recommended dilution series for an 8.18-MGD facility is 100%, 94%, 88%, 44%, 22%.

Proposed Effluent Limitations and Monitoring Requirements

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

Outfall 001, Effective Period: Permit Effective Date through Completion of the 36th month.

2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Copper, Total	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at Outfall 001

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

Outfall 001, Effective Period: Beginning of the 37th month through **Permit Expiration Date**.

2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Copper, Total	0.95	1.47	XXX	0.014	0.022 Daily Max	0.022	1/month	24-Hr Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at Outfall 001

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	1703	2726	XXX	25	40	50	1/day	24-Hr Composite
CBOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
CBOD5 May 1 - Oct 31	1022	1567	XXX	15	23	30	1/day	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
TSS	2044	3066	XXX	30	45	60	1/day	24-Hr Composite
Total Dissolved Solids	68221	XXX	XXX	1000.0	XXX	1500	1/week	24-Hr Composite
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Nitrate-Nitrite Nov 1 - Jun 30	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Nitrate-Nitrite Jul 1 - Oct 31	681	XXX	XXX	10.0	XXX	20	1/day	24-Hr Composite
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Ammonia Nov 1 - Apr 30	204	XXX	XXX	3.0	XXX	6	1/day	24-Hr Composite
Ammonia May 1 - Oct 31	68	XXX	XXX	1.0	XXX	2	1/day	24-Hr Composite
TKN	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Phosphorus Nov 1 - Mar 31	136	XXX	XXX	2.0	XXX	4	1/day	24-Hr Composite
Total Phosphorus Apr 1 - Oct 31	88	XXX	XXX	1.3	XXX	2.6	1/day	24-Hr Composite
Total Aluminum	51.2	57.9	XXX	0.75	0.85 Daily Max	0.85	1/month	24-Hr Composite
Dissolved Iron	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Iron	116	181	XXX	1.67	2.65 Daily Max	2.65	1/month	24-Hr Composite
Sulfate	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
Total Zinc	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Hardness	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Chronic WET - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	1.14 Daily Max	XXX	XXX	See Permit	See Permit
Chronic WET - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	1.14 Daily Max	XXX	XXX	See Permit	See Permit
Chronic WET - Pimephales Survival (TUc)	XXX	XXX	XXX	1.14 Daily Max	XXX	XXX	See Permit	See Permit

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Chronic WET - Pimephales Growth (TUc)	XXX	XXX	XXX	1.14 Daily Max	XXX	XXX	See Permit	See Permit

Proposed Effluent Limitations and Monitoring Requirements

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

Outfall 001, Effective Period: Permit Effective Date through **Completion of the 36th month**.

2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Copper, Total	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at Outfall 001

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

Outfall 002, Effective Period: Permit Effective Date Beginning of the 37th month through **Permit Expiration Date**.

2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Copper, Total	0.95	1.47	XXX	0.014	0.022 Daily Max	0.022	1/month	24-Hr Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at Outfall 001

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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
DO	XXX	XXX	6.0	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	156	250	XXX	25	40	50	1/day	24-Hr Composite
CBOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
CBOD5 May 1 - Oct 31	94	144	XXX	15	23	30	1/day	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
TSS	188	281	XXX	30	45	60	1/day	24-Hr Composite
Total Dissolved Solids	6255	XXX	XXX	1000	XXX	1500	1/week	24-Hr Composite
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Nitrate-Nitrite Nov 1 - Jun 30	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Nitrate-Nitrite Jul 1 - Oct 31	63	XXX	XXX	10.0	XXX	20	1/day	24-Hr Composite

Outfall 002, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Ammonia Nov 1 - Apr 30	19	XXX	XXX	3.0	XXX	6	1/day	24-Hr Composite
Ammonia May 1 - Oct 31	6	XXX	XXX	1.0	XXX	2	1/day	24-Hr Composite
TKN	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Phosphorus Nov 1 - Mar 31	13	XXX	XXX	2.0	XXX	4	1/day	24-Hr Composite
Total Phosphorus Apr 1 - Oct 31	8	XXX	XXX	1.3	XXX	2.6	1/day	24-Hr Composite
Total Aluminum	51.2	57.9	XXX	0.75	0.85 Daily Max	0.85	1/month	24-Hr Composite
Dissolved Iron	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Iron	116	181	XXX	1.67	2.65 Daily Max	2.65	1/month	24-Hr Composite
Sulfate	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
Total Hardness	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Zinc	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

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 003-007, 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
CBOD5	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
COD	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
TSS	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
TKN	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Dissolved Iron	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab