pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Amendment, Major**	Application No.	**PA0053970 A-1**
Facility Type	**Non-Municipal**	APS ID	**1084743**
Major / Minor	**Minor**	Authorization ID	**1433125**

Applicant and Facility Information

Applicant Name	**Martins Community LLC**	Facility Name	**Martins Community STP**
Applicant Address	25 Randy Lane	Facility Address	542 St. Patty Drive
	Cochranville, PA 19330-1647		Nottingham, PA 19362
Applicant Contact	Diane Smith	Facility Contact	Diane Smith
Applicant Phone	(610) 368-7186	Facility Phone	(610) 368-7185
Client ID	247350	Site ID	239545
Ch 94 Load Status	Not Overloaded	Municipality	West Nottingham Township
Connection Status		County	Chester
Date Application Received	March 20, 2023	EPA Waived?	No
Date Application Accepted		If No, Reason	Expanding discharge implementing cap loads

Purpose of Application: Permit Amendment

Summary of Review

The permittee requests approval for amendment of an NPDES permit to discharge treated sewage from Martins Community STP.

Stoneyfield Estates is an age restricted community in West Nottingham Township and located adjacent to Martins Community. Both developments are owned and operated by Martins Community, LLC and sewage disposal from both developments is to an existing STP with a permitted capacity of 12,000 gpd. On January 17, 2023, DEP issued Act 537 planning approval to construct additional 42 units in Stoneyfield Estates and to construct a new STP with a capacity of 18,500 gpd as an annual average design flow. The new plant will serve both the Stoneyfield Estates and Martins community.

The proposed treatment plant will provide influent flow equalization, combined carbon oxidation, nitrification, denitrification and tertiary filtration followed by UV disinfection. Chlorination will be used as a backup disinfection. The plant effluent will be discharged through the outfall pipe currently in use to the existing outfall in the stream. The existing STP will be decommissioned as part of the project.

This facility discharges in the Chesapeake Bay Watershed, it met the Phase 5 requirements at the 2012 permit renewal. This facility submitted at least two years' worth of Total Nitrogen (TN) and Total Phosphorus (TP) data.
Per Chesapeake Bay Guidance this facility is considered as non-significant (> 0.002 mgd and < 0.2 mgd) and does not require any more nutrient monitoring. According to the guidance, if Phase 5 facilities choose to expand, the renewed or amended permit will contain Cap Loads based on the lesser of a) existing TN/TP concentrations at current design average annual flow or b) 7,306 lbs/yr TN and 974 lbs/yr TP.

The applicant submitted a Preliminary Treatment Requirement (PTR) request on February 2, 2021 and the average annual Total Phosphorus discharge from the plant is calculated as 28.5 lbs/year and Total Nitrogen is 482.03 lbs/year. Extrapolating

Approve	Deny	Signatures	Date
X		*Sara Abraham* Sara Reji Abraham, E.I.T. / Project Manager	August 2, 2023
X		*Pravin Patel* Pravin C. Patel, P.E. / Environmental Engineer Manager	08/04/2023

Summary of Review

using the existing discharge and current design flow (12,000 gpd), it was calculated that the existing plant would discharge 58.44 lbs/year Total Phosphorus and 990.48 lbs/year Total Nitrogen at the maximum permitted flow.
These TP and TN loading limits are included in the subsequent Preliminary Effluent Limits issued by DEP on April 19, 2021. The same Cap Loads for TN and TP are recommended for the draft permit for the expanded flow. See the below calculations:

Total P and Total N Load Calculations
Martins Community/Stoneyfield Estates

	EXISTING DISCHARGE							EXTRAPOLATED TO 12,000 GPD PERMIT LIMIT			
Month	Average Daily Flow* (MGD)	Average Total P* (mg/L)	Total P (lbs/day)	Total P (lbs/Mo)	Average Total N* (mg/L)	Total N (lbs/day)	Total N (lbs/Mo)	Total P at Permit Limit (lbs/day)	Total P at Permit Limit (lbs/Mo)	Total N at Permit Limit (lbs/day)	Total N at Permit Limit (lbs/Mo)
Jan-19	0.0077	1.27	0.08	2.53	35.13	2.26	69.94	*0.13*	*3.94*	*3.52*	*108.99*
Feb-19	0.0075	1.7	0.11	2.98	38.89	2.43	68.11	*0.17*	*4.76*	*3.89*	*108.98*
Mar-19	0.0087	1.57	0.11	3.53	32.29	2.34	72.63	*0.16*	*4.87*	*3.23*	*100.18*
Apr-19	0.0056	1.13	0.05	1.58	42.86	2.00	60.05	*0.11*	*3.39*	*4.29*	*128.68*
May-19	0.0067	2.35	0.13	4.07	35.41	1.98	61.34	*0.24*	*7.29*	*3.54*	*109.86*
Jun-19	0.0053	1.05	0.05	1.39	16.19	0.72	21.47	*0.11*	*3.15*	*1.62*	*48.61*
Jul-19	0.0048	2.29	0.09	2.84	25.16	1.01	31.22	*0.23*	*7.10*	*2.52*	*78.06*
Aug-19	0.0045	1.94	0.07	2.26	34.67	1.30	40.34	*0.19*	*6.02*	*3.47*	*107.56*
Sep-19	0.0049	1.35	0.06	1.66	29.67	1.21	36.37	*0.14*	*4.05*	*2.97*	*89.08*
Oct-19	0.0058	0.95	0.05	1.42	9.4	0.45	14.10	*0.10*	*2.95*	*0.94*	*29.16*
Nov-19	0.0055	3.99	0.18	5.49	17.59	0.81	24.21	*0.40*	*11.98*	*1.76*	*52.81*
Dec-19	0.0056	2.58	0.12	3.74	25.82	1.21	37.38	*0.26*	*8.00*	*2.58*	*80.11*
	2019 TOTALS (lbs/year):			**33.49**			**537.15**		***67.52***		***1,042.08***
Jan-20	0.0058	1.03	0.05	1.54	24.91	1.20	37.35	*0.10*	*3.20*	*2.49*	*77.28*
Feb-20	0.0052	0.92	0.04	1.16	21.05	0.91	26.47	*0.09*	*2.67*	*2.11*	*61.09*
Mar-20	0.0054	0.35	0.02	0.49	20.33	0.92	28.38	*0.04*	*1.09*	*2.03*	*63.07*
Apr-20	0.0062	0.75	0.04	1.16	25.73	1.33	39.91	*0.08*	*2.25*	*2.58*	*77.25*
May-20	0.0054	1.07	0.05	1.49	26.30	1.18	36.72	*0.11*	*3.32*	*2.63*	*81.60*
Jun-20	0.0043	1.26	0.05	1.36	10.94	0.39	11.77	*0.13*	*3.78*	*1.09*	*32.85*
Jul-20	0.0042	0.99	0.03	1.08	31.53	1.10	34.24	*0.10*	*3.07*	*3.16*	*97.82*
Aug-20	0.0056	1.37	0.06	1.98	21.46	1.00	31.07	*0.14*	*4.25*	*2.15*	*66.58*
Sep-20	0.0046	1.39	0.05	1.60	34.28	1.32	39.45	*0.14*	*4.17*	*3.43*	*102.92*
Oct-20	0.0047	2.05	0.08	2.49	32.64	1.28	39.66	*0.21*	*6.36*	*3.27*	*101.26*
Nov-20	0.0064	2.6	0.14	4.16	26.12	1.39	41.83	*0.26*	*7.81*	*2.61*	*78.42*
Dec-20	0.0073	2.38	0.14	4.49	31.82	1.94	60.06	*0.24*	*7.38*	*3.18*	*98.72*
	2020 TOTALS (lbs/year):			**23.01**			**426.92**		***49.35***		***938.87***
	2-Year Average (lbs/year):			**28.25**			**482.03**		**58.44**		**990.48**

*Taken from DMR reports

The draft permit is prepared in two tiers: first tier is from the issuance to completion of construction of the new plant and the second tier is from the start of operation of the new plant to the expiration.

The effluent limits from the current permit are recommended to carry over to the first tier of the draft permit.

Influent monitoring for CBOD5 and TSS are included in the draft permit (for both tiers) to check compliance with the 85% removal efficiency requirement.

On June 20, 2023, an aquatic biology investigation was conducted by DEP on the receiving stream, the UNT to North East Creek. Based on the survey it is determined that the proposed discharge from Martin's community STP is to a stream

Summary of Review

containing aquatic life that should be protected. Also it is concluded that the receiving stream is intermittent at upstream (at STA1) of Outfall 001.

Sludge use and disposal description and location(s): hauling away to other POTWs

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.

Act 14 Notifications:

West Nottingham Township - March 9, 2023
Chester County - March 9, 2023

Permit Conditions:

A. Chesapeake Bay Nutrient Requirements
B. No Stormwater
C. Acquire Necessary Property Rights
D. Proper Sludge Disposal
E. Abandon STP when Municipal Sewers Available
F. Chlorine Optimization
G. Small Stream Discharge
H. Operator Notification
I. TMDL/WLA Analysis
J. Notification of the Construction Completion
K. Solids Management

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	.0185 (after the construction completion)
Latitude	39º 43' 46.73"	Longitude	-76º 1' 7.51"
Quad Name	Rising Sun	Quad Code	2137
Wastewater Description:	Treated Sewage Effluent		
Receiving Waters	Unnamed Tributary to North East Creek (TSF, MF)	Stream Code	06848
NHD Com ID	112189310	RMI	1.14
Drainage Area	0.15 mi^2	Yield (cfs/mi^2)	0.2
Q_{7-10} Flow (cfs)	0.03	Q_{7-10} Basis	Previous fact sheet
Elevation (ft)	440		
Watershed No.	7-K	Chapter 93 Class.	TSF, MF
Assessment Status	Attaining Use(s)		

Treatment Facility Summary

Treatment Facility Name: Martins Community STP

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration with Solids Removal	Hypochlorite	0.012

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.012		Not Overloaded		

Compliance History

DMR Data for Outfall 001 (from April 1, 2022 to March 31, 2023)

Parameter	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22
Flow (MGD) Average Monthly	0.0086	0.0069	0.0055	0.0079	0.0056	0.0061	0.0061	0.0061	0.0077	0.0065	0.0059	0.0068
pH (S.U.) Instantaneous Minimum	6.11	6.74	7.42	6.61	6.15	6.19	6.39	6.10	6.14	6.11	6.44	6.32
pH (S.U.) Instantaneous Maximum	7.99	8.35	8.42	7.86	7.69	8.79	7.87	8.13	8.22	8.19	8.10	7.81
DO (mg/L) Instantaneous Minimum	7.79	10.14	10.5	9.64	8.40	8.60	6.34	5.35	7.65	8.1	8.6	8.9
TRC (mg/L) Average Monthly	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.004	0.01	0.01	0.01	0.01
TRC (mg/L) Instantaneous Maximum	0.04	0.04	0.04	0.06	0.11	0.05	0.04	0.03	0.05	0.05	0.04	0.06
CBOD5 (lbs/day) Average Monthly	0.99	0.29	0.39	< 0.25	< 0.16	0.16	< 0.19	0.23	0.31	0.27	0.35	< 0.27
CBOD5 (mg/L) Average Monthly	11.70	5.30	8.55	< 4.80	< 2.55	3.85	< 3.0	5.45	5.35	4.55	5.75	< 3.85
BOD5 (mg/L) Raw Sewage Influent Average Monthly	390	438	415	321	308.5	374	395	370	363	419	416	466.5
TSS (lbs/day) Average Monthly	0.68	< 0.25	0.32	< 0.31	0.39	< 0.22	< 0.32	< 0.21	< 0.23	< 0.32	< 0.36	< 0.42
TSS (mg/L) Average Monthly	8.0	< 5.0	7.3	< 5.90	6.4	< 5.2	< 5.0	< 5.0	< 4.0	< 5.0	< 5.50	< 5.50
TSS (mg/L) Raw Sewage Influent Average Monthly	227	294	318	296	216	192	281	218	176	122	175	171

Fecal Coliform (No./100 ml) Geometric Mean	< 6	< 1	123	< 3	< 1	< 1	< 2	< 5	5	12	< 1	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	42.2	< 1	575	8.6	< 1	< 1	4	27	6.3	23	< 1	< 1
E. Coli (No./100 ml) Instantaneous Maximum				61.3								
Total Nitrogen (mg/L) Average Monthly	< 36.07	< 39.54	63.11	35.16	< 47.36	46.99	< 31.37	< 32.87	< 33.65	31.72	37.41	37.43
Ammonia (lbs/day) Average Monthly	0.11	0.03	0.59	0.034	0.03	0.02	0.04	0.03	0.05	0.05	0.10	0.06
Ammonia (mg/L) Average Monthly	1.24	0.54	12.13	0.67	0.44	0.43	0.48	0.62	0.80	0.77	1.54	0.80
Total Phosphorus (mg/L) Average Monthly	0.83	1.29	0.91	0.74	0.71	0.78	0.55	0.36	0.76	0.59	0.52	0.65

Compliance History

Effluent Violations for Outfall 001, from: May 1, 2022 To: March 31, 2023

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Ammonia	01/31/23	Avg Mo	12.13	mg/L	6.0	mg/L

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .0185
Latitude 39º 43' 42.00" **Longitude** -76º 1' 5.00"
Wastewater Description: Treated 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)

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

Parameter	Limit (mg/l)	SBC	Model
CBOD5	10	Average Monthly	WQM 7.0
Dissolved Oxygen	5	Minimum	WQM 7.0
NH3-N	2	Average Monthly	WQM 7.0

The following limitations are recommended for the draft permit:

Parameter	Limit (mg/l)	SBC	Basis
CBOD5(05/01 to 10/31)	10	Average Monthly	WQM 7.0/ existing
CBOD5(11/01 to 4/30)	20	Average Monthly	Seasonal limit
TSS	10	Average Monthly	existing
Dissolved Oxygen	5	Inst. Minimum	WQM 7.0/ existing
NH3-N (5/1 to 10/31)	2.0	Average Monthly	WQM 7.0/existing
NH3-N (11/1 to 4/31)	6.0	Average Monthly	Seasonal limit
pH	6.0 to 9.0 STD at all times		Chapter 95/93
Fecal Coliform (5/1 to 9/30)	# 200/1000	Geo. Mean / IMax.	Chapter 92a.47
Fecal Coliform (10/1 to 4/30)	# 2000/10,000	Geo. Mean / IMax	Chapter 92a.47
TRC*	0.011/0.026	Average Monthly/I Max	Spreadsheet
UV intensity	Report	Daily Minimum	SOP
Total N	Report	Average Monthly	Existing
Total Phosphorus	Report	Average Monthly	Existing
E-Coli	Report	Inst. Maximum	SOP

Net TN (lbs./ yr)	990.48 lbs. /year	Chesapeake Bay TMDL/Calculation
Net TP (lbs./yr)	58.44 lbs./year	Chesapeake Bay TMDL/Calculation

*Chlorination is used as a backup to UV disinfection. Monitoring is required only during the use of chlorine

Anti-Backsliding

N/A

* see the below WQM report and TRC spreadsheet

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6848	Trib 06848 to Northeast Creek	**1.140**	440.00	0.15	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	0.200	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Martins Comm STP	PA0053970	0.0000	0.0185	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	10.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	2.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6848	Trib 06848 to Northeast Creek	**0.960**	350.00	0.96	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	0.200	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07K	6848	Trib 06848 to Northeast 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 (ºC)	Analysis pH
Q7-10 Flow												
1.140	0.03	0.00	0.03	.0286	0.09470	.373	1.89	5.06	0.08	0.132	22.44	7.00
Q1-10 Flow												
1.140	0.02	0.00	0.02	.0286	0.09470	NA	NA	NA	0.07	0.148	22.99	7.00
Q30-10 Flow												
1.140	0.04	0.00	0.04	.0286	0.09470	NA	NA	NA	0.09	0.120	22.06	7.00

WQM 7.0 Modeling Specifications

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

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07K	6848	Trib 06848 to Northeast Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.140	0.019	22.441	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.888	0.373	5.057	0.083
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.91	1.215	0.98	0.845
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.660	26.875	Owens	6
Reach Travel Time (days)			
0.132			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.013	5.80	0.97	7.11
0.026	5.70	0.95	7.43
0.040	5.60	0.94	7.66
0.053	5.50	0.93	7.82
0.066	5.40	0.92	7.88
0.079	5.30	0.91	7.88
0.093	5.21	0.90	7.88
0.106	5.11	0.89	7.88
0.119	5.02	0.88	7.88
0.132	4.93	0.87	7.88

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07K	6848	Trib 06848 to Northeast 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)
1.140	Martins MHV STP	PA0053970	0.000	CBOD5	10		
				NH3-N	2	4	
				Dissolved Oxygen			5

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9 — Martins Community STP

0.03	= Q stream (cfs)	0.5	= CV Daily
0.0185	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples		= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream		= CFC_Partial Mix Factor
	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.019	1.3.2.iii	WLA cfc = 0.011
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.007	5.1d	LTA_cfc = 0.006

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.011	CFC
		INST MAX LIMIT (mg/l) = 0.026	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...** **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**

Proposed Effluent Limitations and Monitoring Requirements

Outfall 001, Effective Period: Permit Effective Date through Startup of the new Plant .

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		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/week	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.34	XXX	0.8	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	2.0	XXX	XXX	20.0	XXX	40	2/month	8-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	1.0	XXX	XXX	10.0	XXX	20	2/month	8-Hr Composite
Total Suspended Solids	1.0	XXX	XXX	10.0	XXX	20	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/month	Calculation
Ammonia-Nitrogen Nov 1 - Apr 30	0.6	XXX	XXX	6.0	XXX	12	2/month	8-Hr Composite

Outfall 001, Continued (from Permit Effective Date through Startup of the new Plant)

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		
Ammonia-Nitrogen May 1 - Oct 31	0.2	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Proposed Effluent Limitations and Monitoring Requirements

Outfall 001, Effective Period: Startup of the new Plant through Permit Expiration Date.

Outfall 001, Continued (from Startup of the new Plant 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	Daily Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/week	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.011	XXX	0.026	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	3.1	XXX	XXX	20.0	XXX	40	2/month	8-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	1.5	XXX	XXX	10.0	XXX	20	2/month	8-Hr Composite
Total Suspended Solids	1.5	XXX	XXX	10.0	XXX	20	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Ultraviolet light intensity (µw/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/Month	Calculation

Outfall 001, Continued (from Startup of the new Plant 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	Daily Minimum	Average Monthly	Maximum	Instant. Maximum		
Ammonia-Nitrogen Nov 1 - Apr 30	0.93	XXX	XXX	6.0	XXX	12	2/month	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	0.31	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Proposed Effluent Limitations and Monitoring Requirements

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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Carbonaceous Biochemical Oxygen Demand (CBOD5) Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

Outfall 001, Effective Period: Startup of the new Plant through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report		XXX	Report	XXX	XXX	2/month	8-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	2/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Net Total Nitrogen	XXX	990.48	XXX	XXX	XXX	XXX	1/year	Calculation
Net Total Phosphorus	XXX	58.44	XXX	XXX	XXX	XXX	1/year	Calculation