pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0080721**
Facility Type	**Non-Municipal**	APS ID	**968121**
Major / Minor	**Minor**	Authorization ID	**1229100**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**GSP Management Company**	Facility Name	**Cedar Manor MHP**
Applicant Address	PO Box 677	Facility Address	Hertzler Road
	Morgantown, PA 19543-0677		Elizabethtown, PA 17022
Applicant Contact	Frank Perano	Facility Contact	Frank Perano
Applicant Phone	(610) 286-0490	Facility Phone	(610) 286-0490
Client ID	33789	Site ID	458113
Ch 94 Load Status	Not Overloaded	Municipality	Londonderry Township
Connection Status		County	Dauphin
Date Application Received	April 26, 2018	EPA Waived?	Yes
Date Application Accepted	May 10, 2018	If No, Reason	

Purpose of Application: Permit renewal for discharge treated sewage

Summary of Review

1.0 General Discussion

This fact sheet supports the reissuance of an existing NPDES permit for a discharge of treated domestic sewage from an existing wastewater treatment plant serving a mobile home park known as Cedar Manor Mobile Home Park. GSP Management Company owns the wastewater treatment plant that provides sanitary services for the mobile home park. The plant has a design capacity of 0.072 mgd, and discharges to an unnamed tributary to Conewago which is classified for Trout Stocking (TSF) and Migratory Fishes (MF). A point of first use survey (POFU) was conducted on February 15, 1985 which determined the POFU was around RMI 0.42. The discharge location is at approximately RMI 0.62, and the creek is considered intermittent at the point of discharge. The existing NPDES permit was issued on November 26, 2013 with an effective date of December 1, 2013 and expiration date of November 30, 2018. The applicant submitted permit renewal application to the Department, and currently operating under the terms and conditions in the existing permit pending Department action on the renewal application. A topographic map showing the discharge location is presented in attachment A.

1.1 Enforcement Actions

This facility and other facilities owned by the applicant and related parties are subject to a Consent Decree No. 12 5553, entered on January 30, 2013 in the matter of United States of America and Commonwealth of Pennsylvania v. GSP Management Co. The Consent Decree requires the permittee and related parties to conduct comprehensive environmental audits, identify areas of noncompliance and take corrective necessary to ensure permit compliance. The Consent Decree requires the permittee to self-report permit violations and noncompliance with the Consent Decree and pay stipulated penalty for permit violations and noncompliance with the terms of the Consent Decree. The permittee is in compliance with the Consent Decree and continue paying stipulated penalties for any permit violations and noncompliance that occur at the site.

Approve	Deny	Signatures	Date
X		J. Pascal Kwedza, P.E. / Environmental Engineer	October 21, 2019
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E./ Program Manager	

Summary of Review

1.2 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.

1.3 Changes to the existing Permit

- Semi-annual monitoring of Total Nitrogen, TKN and nitrate-Nitrite have been added

1.4 Existing Permit Limits and Monitoring Requirements

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	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.036	XXX	0.116	1/day	Grab
CBOD5	XXX	XXX	XXX	10	XXX	20	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	10	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
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	4.8	XXX	9.6	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	1.6	XXX	3.2	2/month	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs)	XXX	438 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

1.5 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.072
Latitude	40º 10' 24.1"	Longitude	-76º 38' 49.1"
Quad Name	Middletown	Quad Code	1732
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Conewago Creek (TSF, MF)	Stream Code	09243
NHD Com ID	56404785	RMI	0.62@ disch & 0.42 @ POFU
Drainage Area	0.1 @ disc. & 0.22 @ POFU	Yield (cfs/mi^2)	0.0307
Q_{7-10} Flow (cfs)	0.0068 POFU	Q_{7-10} Basis	USGS 01573700 Conewago Ck @ Bellaire
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-G	Chapter 93 Class.	TSF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Suspended Solids, Organic enrichment/ low D.O.		
Source(s) of Impairment	Municipal Point Sources		
TMDL Status	Final	Name	Conewago Creek Watershed

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

Nearest Downstream Public Water Supply Intake		Columbia Borough Water Company	
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	25

Changes Since Last Permit Issuance:

Other Comments:

1.5.1 Water Supply Intake

The nearest downstream water supply intake is approximately 25 miles downstream by Columbia Borough Water Company on Susquehanna River in Columbia Borough, Lancaster County. No impact is expected from this discharge on the intake.

2.0 Treatment Facility Summary

Treatment Facility Name: Cedar Manor MHP

WQM Permit No.	Issuance Date
2285419	June 30, 1986

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Oxidation Ditch With Solids Removal	Hypochlorite	0.072

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.072		Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Permit Issuance: February 22, 2001 – 2285419 00-1 for Rapid sand filter addition
June 19, 1995 – 2285419 95-1 Aerated equalization tank & flow splitter, and November 25, 2013 – 2285419 A-3 De-chlorination

Other Comments: Replacement of the collection system in the older section of the MHP has been completed.

2.1 Treatment Facility

Comminutor & bar screens
Lift station with 3 pumps to pump to EQ tank
300,000 gallon EQ tank with 2 pumps to pump to the oxidation ditch(air diffusers in the EQ tank are not used)
1-oxidation ditch
Chemical mixing tank
2-clarifiers
Filter pump pit with bypass to chlorine contact tank
2-20 sf rapid sand filters, backwashable
2-chlorine contact tanks in series
De-chlorination tank
Metering pit(possibility of false reading due to backflow coming to the pit on high flow days)
2 Sludge storage tanks

2.2 Chemicals

- Sodium Hypochlorite for disinfection
- Poly Aluminum Chloride for phosphorus removal
- Sodium Bisulfite for de-chlorination

Compliance History

DMR Data for Outfall 001 (from September 1, 2018 to August 31, 2019)

Parameter	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18	SEP-18
Flow (MGD) Average Monthly	0.043	0.056	0.0477	0.0656	0.049	0.0786	0.0665	0.0747	0.0674	0.0815	0.0455	0.0641
Flow (MGD) Daily Maximum	0.0665	0.1291	0.0797	0.1704	0.1175	0.2906	0.1726	0.1634	0.1689	0.1784	0.0618	0.3332
pH (S.U.) Minimum	6.82	7.18	7.29	7.23	7.11	6.95	6.72	7.05	6.55	7.34	7.3	6.2
pH (S.U.) Maximum	7.67	8.68	7.8	7.78	8.04	7.82	7.71	7.63	7.86	7.93	7.81	7.76
DO (mg/L) Minimum	5.15	5.09	5.12	5.17	6.41	6.93	7.65	7.75	5.81	5.91	6.41	5.29
TRC (mg/L) Average Monthly	< 0.030	< 0.030	< 0.030	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.030	< 0.010	< 0.020
TRC (mg/L) Instant. Maximum	0.110	0.090	0.070	0.080	0.060	0.100	0.050	0.080	0.070	0.070	0.050	0.050
CBOD5 (mg/L) Average Monthly	< 2	< 2.7	< 2.8	< 3.8	< 2.1	< 6.6	12.4	< 5.2	< 4.5	9	< 2	< 7.3
TSS (mg/L) Average Monthly	2.1	< 3.6	< 1.5	< 7.8	3	< 8	8.9	< 4.4	< 3.7	< 10.4	1.6	< 5.5
Fecal Coliform (CFU/100 ml) Geometric Mean	< 4	5	4	19	< 7	< 13	< 21	< 4	< 7	< 9	9	31
Fecal Coliform (CFU/100 ml) Instant. Maximum	10	18	32	128	124	1000	735	696	84	253	31	370
Ammonia (mg/L) Average Monthly	< 0.1	< 0.57	< 0.1	< 0.6	< 0.12	< 1.42	< 2.92	< 0.95	< 0.72	< 6.1	< 0.1	< 1.09
Total Phosphorus (lbs/day) Ave. Monthly	0.3	0.3	0.5	0.9	0.4	0.5	0.7	0.4	0.5	0.7	0.3	0.5
Total Phosphorus (mg/L)Ave. Monthly	1.12	1.32	1.19	1.27	0.97	0.68	1.09	0.75	0.88	1.1	0.83	0.68
Total Phosphorus (lbs) Total Monthly	8	10	14	27	11	15	21	12	17	22	9	16
Total Phosphorus (lbs) Effluent Total Annual									184			

3.0 Compliance History

3.1 Effluent Violations for Outfall 001, from: October 1, 2018 To: August 31, 2019

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
CBOD5	02/28/19	Avg Mo	12.4	mg/L	10	mg/L
TSS	11/30/18	Avg Mo	< 10.4	mg/L	10	mg/L
Ammonia	11/30/18	Avg Mo	< 6.1	mg/L	4.8	mg/L

3.2 Compliance History	
Summary of DMRs:	Discharge Monitoring Reports (DMRs) review for the facility for the last 12 months of operation presented on the table above indicate permit limits have been met most of the time. Effluent violations for CBOD, TSS and Ammonia occurred during the past 12 months. These violations appear to be operation related and the permittee paid penalty for the violations.
Summary of Inspections:	The facility was inspected 10 times during the past permit cycle. Inspection reports review for the facility during the period indicate permit limits have been met consistently. The reports identified a series of repairs needed and made recommendations to improve operation and maintenance of the facility. The report indicated that a sanitary sewer overflow occurred at a pump station within the collection. The permittee has been conducting routine maintenance to address maintenance concerns of the Department. The permittee is required under the Consent Decree to pay and has been paying stipulated penalties for violations of the permit terms and conditions.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .072
Latitude 40º 10' 24.09" **Longitude** -76º 38' 49.08"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

In general, the Clean Water Act (AWA) 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.

4.1.1 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)

Comments: Weekly averages are not applicable to this discharge

4.2 Water Quality-Based Limitations

4.2.1 Receiving Stream

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No 01573700 on Conewago Creek at Bellair. The Q_{7-10} and drainage area at the gage is 0.6376ft3/s and 20.8 mi^2 respectively Q_{30-10}, will be calculated by 1.36 x Q_{7-10}. and Q_{1-10} will be calculated using 0.64 x Q_{7-10}, which were derived the Department in the NH_3 Implementation Guidance. The resulting yields are as follows:

- Q_{7-10} = (0.6376ft^3/s)/20 mi^2 = 0.0307ft^3/s/ mi^2
- Q_{30-10} / Q_{7-10} = 1.36
- Q_{1-10} / Q_{7-10} = 0.64

The drainage area at the POFU calculated by Streamstats 0.22 mi^2.
The design streamflow (Q_{7-10}) at the POFU is calculated as: Q_{7-10} =0.0307 x 0.22 = 0.0068cfs

4.2.2 NH_3N Calculations

NH_3N calculations will be based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH_3N criteria used in the attached computer model of the stream:

- STP pH 7.2 (DMR data July-September)
- STP temperature 20°C (default)
- Stream pH 7.8 (from WQN station from surrounding streams)
- Stream temperature 20°C (from WQN station form surrounding streams & TSF classification)
- Background NH_3-N 0 (assumed)

4.2.3 $CBOD_5$ & NH_3-N

The previous factsheet indicates the Department's Guidance for Evaluating Wastewater Discharges to Drainage Swales and Ditches was followed to develop the existing effluent limits. The minimum treatment requirements include CBOD5 and TSS limits of 10mg/l monthly average and 20 mg/ instantaneous maximum(IMAX), an ammonia limit of 1.6 mg/l, a minimum D.O. of 5 mg/l, and Fecal Coliform limits of 200 & 2000/100 ml. The existing ammonia limitation was based on water quality analysis for protection of POFU from toxicity effects.

A new evaluation is performed using WQM 7.0 to determine if 10 mg/l CBOD5 and 1.6 mg/l NH_3-N were still adequate to protect the POFU located about 1,200 feet downstream from the discharge. The attached results of the WQM 7.0 stream model presented in attachment B indicates that 25mg/l CBOD5 and a summer limit of 1.82 mg/l NH_3-N as a monthly average are adequate to protect the aquatic life at the POFU. These limits are slightly less than the existing limits. Due to anti-backsliding restrictions, the existing average monthly limit of10mg/l CBOD5 and the existing average monthly summer limit of 1.6mg/l and a winter limit of 4.8mg/l NH_3-N will remain in the permit.

4.2.4 Ammonia Nitrogen TMDL

An NH_3-N TMDL was established in 1998 resulting in a WLA of 1.46 lbs/day for NH_3-N from the single point source impacting the segment to protect the unnamed tributary to Conewago Creek. The design flow of Cedar Manor is 0.072 MGD resulting in a concentration of 2.5 mg/l at 1.46 lbs/day. The limit of 1.6 mg/l complies with the TMDL. The TMDL stated there was no need to develop the TMDL for seasons during which high flows occur.

4.2.5 Total Suspended Solids (TSS)

There is no water quality criterion for TSS, the existing 10mg/l monthly average limit and IMAX of 20mg/l based the Department's Guidance for Evaluating Wastewater Discharges to Drainage Swales and Ditches will remain in the permit.

4.2.6 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement per DEP guidance.

4.2.7 Toxics

No parameter of concern is associated with this discharge.

4.2.8 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay Foundation requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) will be required to monitor and report TN and TP during permit renewal at a monitoring frequency following Table 6-3 of DEP's Technical Guidance for Development and Specification of effluent Limitations (No. 362-0400-001). Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away.

EPA published the Chesapeake Bay Total Maximum Daily Load (TMDL) in December of 2010. Despite extensive restoration efforts during the past 25 years, the TMDL was prompted by insufficient progress and continued poor water quality in the Chesapeake Bay and its tidal tributaries.

In order to address the TMDL, Pennsylvania developed in addition to the Bay Strategy, a Chesapeake Watershed Implementation Plan (WIP) Phase 1 in January 2011 and Phase 2 in March 2012. In accordance with the Phase 2 WIP and its supplement, re-issuing permits for significant dischargers follow the same phased approach formulated in the original Bay strategy, whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewal. This facility is, classified as a phase 5, had monitored TN in the past but will be required to resume monitoring of Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen semi-annually throughout the next permit cycle collect adequate data. Total Phosphorus monitoring is not required due to limitation on Total Phosphorus in the permit.

4.2. 9 Total Phosphorus & TMDL

The existing permit limit of 2mg/l based on the Department's Implementation Guidance for Phosphorus Discharges to Free-Flowing Streams (ID #391-2000-018) will remain in the permit due anti-backsliding restrictions. A TMDL was developed for Conewago Creek Basin dated March 2, 2001 and revised on June 27, 2006.The TMDL set phosphorus limitations for Cedar Manor based on 2.0 mg/l and design flow resulting in an total load of 438 lbs/yr. Cedar Manor has been complying with the annual load limit. See details on the TMDL in 303d listed stream section 5.7 of the report.

4.2.10 Total Residual Chlorine

The attached TRC calculation results utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The results presented in attachment C indicates that a water quality limit of 0.018 mg/l monthly average and IMAX of 0.058 mg/l would be needed to prevent toxicity concerns at the POFU. TRC will decay from the discharge point to the POFU due to volatilization, but decay rate is not determined. The previous permit assumed decay rate of 50% from discharge point to POFU, which will be continued in the current permit. This results in a TRC limit at discharge point of 0.036 mg/l as a monthly average and 0.116 mg/l as IMAX. This limit is consistent with the existing limit. The permittee installed a dichlorination system during the previous permit cycle and has been complying with the limit.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 Stormwater:

No storm water outfall is associated with this facility

5.3 Special Permit Conditions

The permit will contain the following special conditions:

Stormwater Prohibition, Approval Contingencies, Proper Waste/solids Management, Chlorine minimization and dry stream discharge condition.

5.4 Biosolids Management

Digested sludge is hauled out periodically by a license hauler.

5.5 Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

5.6 Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

5.7 303d Listed Streams:

The discharge is located on a 303d listed stream segment as impaired for aquatic life due to TSS, organic enrichment and low D.O from Municipal sources and the downstream secondary receiving stream Conewago Creek is listed for nutrients and siltation from agricultural sources. A TMDL was completed for the Conewago Watershed (Watershed B) on March 2, 2001. This document allocates a Total Phosphorus load of 426 lbs/year based on an effluent concentration of 2.0 mg/l and an incorrect design flow of 0.07 MGD (the design flow should have been listed as 0.072 MGD). The TMDL was revised in 2006 to incorporate the correct design flow of 0.072 MGD which then increased the phosphorus allocation to 438 lbs/year. The 2006 TMDL revision also incorporated other point dischargers that had been totally omitted in 2001. The stream's total loading did not increase. The revision allocated additional loading to the point sources by partially transferring loads from the Margin of Safety and other nonpoint sources. The facility is currently in compliance with the loading requirement.

5.8 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

5.9 Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.036	XXX	0.116	1/day	Grab
CBOD5	XXX	XXX	XXX	10	XXX	20	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	10	XXX	20	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	4.8	XXX	9.6	2/month	8-Hr Composite
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	Calculation
Ammonia May 1 - Oct 31	XXX	XXX	XXX	1.6	XXX	3.2	2/month	8-Hr Composite
TKN	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	8-Hr Composite

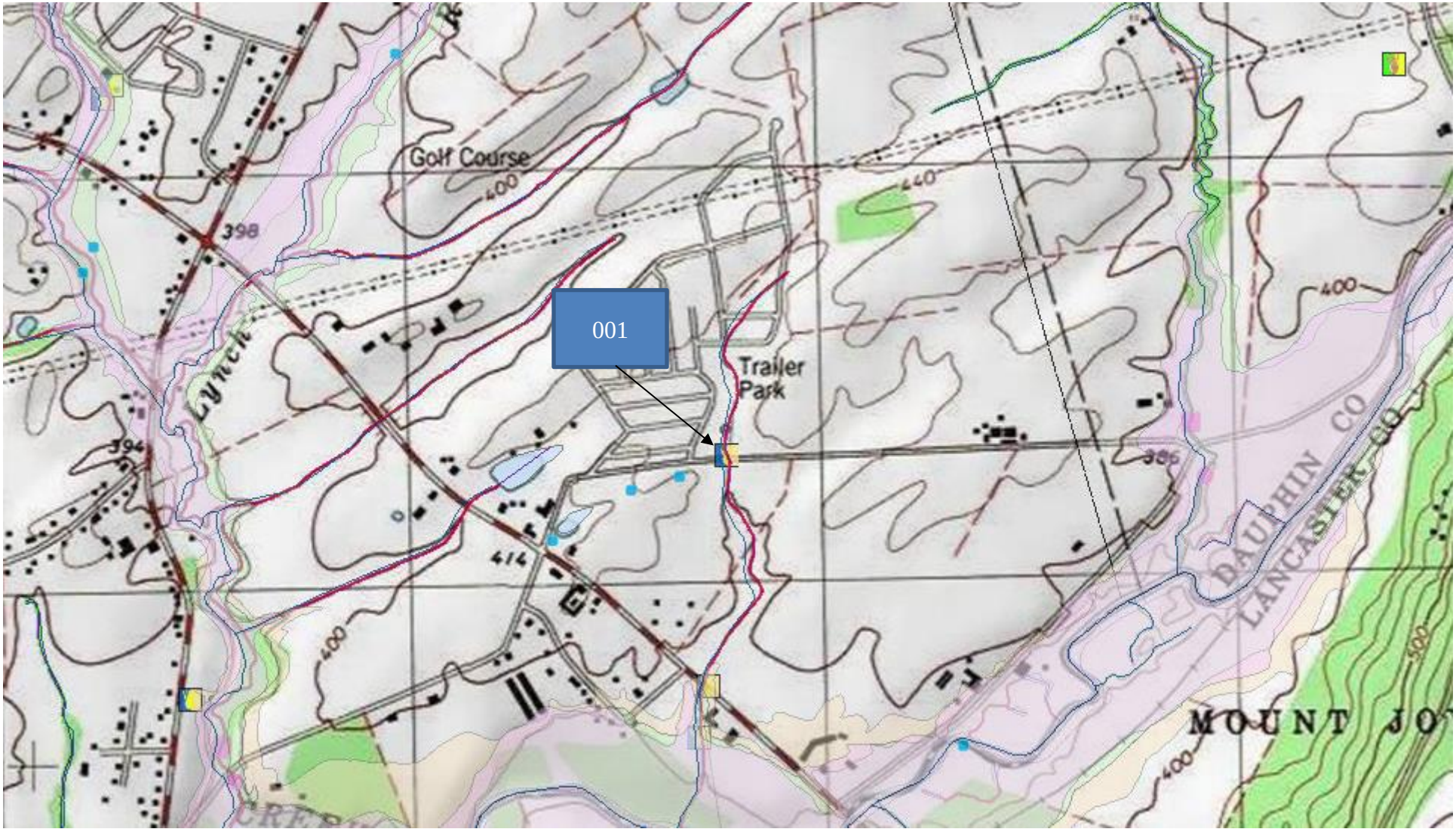
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Phosphorus	Report	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs)	XXX	438 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: At Outfall 001

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (See Attachment **B**)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (See Attachment **C)**
☐	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.
☒	Other: SOP – Establishing Effluent Limitations for Individual Sewage Permits
☒	Other: TMDL Conewago Creek Basin

Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07G	9243	Trib 09243 to Conewago 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)
0.420	cedar Manor	PA0080721	0.072	CBOD5	25		
				NH3-N	1.82	3.64	
				Dissolved Oxygen			5

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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
07G	9243	Trib 09243 to Conewago Creek	**0.420**	393.20	0.22	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	0.031	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.80	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
cedar Manor	PA0080721	0.0720	0.0720	0.0720	0.000	20.00	7.20

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

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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
07G	9243	Trib 09243 to Conewago Creek	**0.001**	373.00	0.27	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	0.031	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.80	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	0.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0080721

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07G	9243	Trib 09243 to Conewago 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												
0.420	0.01	0.00	0.01	.1114	0.00913	.378	3.35	8.86	0.09	0.275	20.00	7.22
Q1-10 Flow												
0.420	0.00	0.00	0.00	.1114	0.00913	NA	NA	NA	0.09	0.278	20.00	7.21
Q30-10 Flow												
0.420	0.01	0.00	0.01	.1114	0.00913	NA	NA	NA	0.09	0.272	20.00	7.23

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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	5		

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07G	9243	Trib 09243 to Conewago 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
0.420	cedar Manor	8.14	8.46	8.14	8.46	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
0.420	cedar Manor	1.68	1.82	1.68	1.82	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)		
0.42	cedar Manor	25	25	1.82	1.82	5	5	0	0

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07G	9243	Trib 09243 to Conewago Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.420	0.072	20.000	7.219
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
3.351	0.378	8.856	0.093
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
23.67	1.491	1.71	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.187	26.714	Owens	5
Reach Travel Time (days)			
0.275			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.027	22.72	1.68	6.14
0.055	21.81	1.65	6.64
0.082	20.94	1.62	6.92
0.110	20.10	1.59	7.09
0.137	19.29	1.56	7.21
0.165	18.52	1.53	7.31
0.192	17.77	1.50	7.39
0.220	17.06	1.47	7.46
0.247	16.37	1.44	7.53
0.275	15.72	1.41	7.59

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C. TRC Calculations

Copy of TRC_CALC1

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0068	= Q stream (cfs)	0.5	= CV Daily
0.072	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.038	1.3.2.iii	WLA cfc =	0.030
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.014	5.1d	LTA_cfc =	0.017

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.018	AFC
		INST MAX LIMIT (mg/l) =	0.058	

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)**