pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0027952**
Facility Type	**Non-Municipal**	APS ID	**613648**
Major / Minor	**Minor**	Authorization ID	**1308052**

Applicant and Facility Information

Applicant Name	**HMS Host Corp**	Facility Name	**Lawn Service Plaza**
Applicant Address	PO Box 8	Facility Address	Pa Turnpike Route 76 West Mile Marker 258 8
	Middletown, PA 17057-0008		Lawn, PA 17041
Applicant Contact	Shawn Leslie	Facility Contact	Grace Marlowe
Applicant Phone	443-206-6899	Facility Phone	610-389-4198
Client ID	250889	Site ID	3030
Ch 94 Load Status	Not Overloaded	Municipality	South Londonderry Township
Connection Status	No Limitations	County	Lebanon
Date Application Received	March 2, 2020	EPA Waived?	Yes
Date Application Accepted	March 16, 2020	If No, Reason	

Purpose of Application: Permit renewal for discharge of treated sewage

Summary of Review

1.0 General discussion

This factsheet supports the renewal of an existing NPDES permit for a discharge of treated domestic sewage from the Pa. Turnpike Lawn Service Plaza. A design flow of 0.05 MGD has been permitted to be discharged to an unnamed tributary of Conewago Creek since 1952. The plant was replaced in 1984 (WQM Permit No. 3884404) with an extended aeration package plant with equalization, tertiary sand filters, and chlorine disinfection. This facility has also rust badly and was replaced with another metal extended aeration plant in 2010 under WQM Part II Permit No. 3808403. The STP discharges to a dry stream. A field investigation was conducted in 1983 and determined that the stream supported some minnows at a culvert where the stream crosses the road (T38066) about 2,200 feet downstream of the discharge. The stream then travels another 1,700 feet to another tributary. The stream in this area is completely wooded with very little slope (<0.008 ft/ft). This road culvert has been accepted as the point of first use since the 1984 NPDES. Tertiary Dry Stream limits were issued in the 1984 NPDES and also have been continued since then. The current extended aeration plant with filters were designed to meet the existing tertiary limits and has had consistent compliance. The existing NPDES permit was issued on August 18, 2015 with an effective date of September 1, 2015 and expiration date of August 31, 2020. The applicant submitted permit renewal application to the Department and is 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 Sludge use and disposal description and location(s):

Digested sludge is hauled out periodically by a license hauler.

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	October 1, 2021
X		*Maria D. Bebenek, for* Daniel W. Martin, P.E. / Environmental Engineer Manager	October 7, 2021
X		*Maria D. Bebenek* Maria D. Bebenek, P.E./ Program Manager	October 7, 2021

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

- Monitoring frequency for Total Nitrogen, TKN and nitrate-Nitrite have been reduced to monthly.
- Annual monitoring of E- Coli has been added.

1.4 Existing limits and monitoring requirements

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Instantaneous Maximum		
Flow (mgd)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/Day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/Day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/Day	Grab
TSS	XXX	XXX	XXX	10	XXX	20	2/month	8-hr comp
$CBOD_5$	XXX	XXX	XXX	10	XXX	20	2/month	8-hr comp
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	3	XXX	6.0	2/month	8-hr comp
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	9	XXX	18.0	2/month	8-hr comp
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	8-hr comp
Fecal Coliform (5/1 to 9/30)[(5)]	XXX	XXX	XXX	200	XXX	XXX	2/month	Grab
Fecal Coliform (10/1 to 4/30)	XXX	XXX	XXX	2,000	XXX	XXX	2/month	Grab
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus	Report Monthly Total	XXX	XXX	XXX	XXX	XXX	2/month	Calculate
Total Phosphorus	304 Annual Total	XXX	XXX	XXX	XXX	XXX	1/year	Calculate

1.5 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.05
Latitude	40° 12' 34.00"	Longitude	76° 34' 31.00"
Quad Name	Elizabethtown	Quad Code	1733
Wastewater Description:	Sewage		
Receiving Waters	Unnamed Tributary of Conewago Creek	Stream Code	09282
NHD Com ID	56403189	RMI	0.7
Drainage Area	0.22	Yield (cfs/mi^2)	USGS Gage Station
Q_{7-10} Flow (cfs)	0.0293	Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-G	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	Final, 04/09/2001	Name	Conewago Creek Watershed

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

Nearest Downstream Public Water Supply Intake	Columbia Water Company		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	31

Changes Since Last Permit Issuance: None

1.5.1 Public Water Supply Intake

The nearest water supply intake is 31 miles downstream at Columbia Borough on the Susquehanna River by the Columbia Water Company. No impact is expected from this discharge.

2.0 Treatment Facility Summary

Treatment Facility Name: Sunoco Inc. - Lawn Service Plaza Turnpike

WQM Permit No.	Issuance Date
3808403	3/25/2009

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration With Solids Removal	Chlorine With De-chlorination	0.05

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.05	100	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: None

2.1 Treatment System

The treatment system consists of comminutor, influent screening unit, equalization tank (25,000 gallons) followed by a dual train of extended aeration, clarifier and aerated sludge tank, a two-cell 35 ft^2 tertiary sand filter and chlorine disinfection with de-chlorination and post aeration.

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from August 1, 2020 to July 31, 2021)

Parameter	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20
Flow (MGD) Average Monthly	0.0097	0.008	0.0079	0.006	0.0058	0.0051	0.0052	0.0046	0.0046	0.0048	0.0049	0.0072
Flow (MGD) Daily Maximum	0.0187	0.0196	0.0143	0.01	0.0171	0.009	0.011	0.0095	0.0074	0.0099	0.0098	0.0111
pH (S.U.) Minimum	6.51	7.05	7.12	7.13	6.9	7.2	6.8	7.3	7.4	7.0	6.9	7.2
pH (S.U.) Instantaneous Maximum	8.18	8.23	8.31	8.08	7.9	8.9	8.0	8.2	8.3	8.1	8.2	8.2
DO (mg/L) Minimum	7.06	7.42	8.16	9.46	8.1	9.0	7.6	9.6	8.6	8.1	7.1	6.6
TRC (mg/L) Average Monthly	0.1	< 0.1	< 0.1	0.1	0.1	0.2	0.1	< 0.1	< 0.2	< 0.1	0.2	0.1
TRC (mg/L) Instantaneous Maximum	0.19	0.4	0.6	0.24	0.3	0.8	0.8	1.2	0.8	1.1	1.1	0.6
CBOD5 (mg/L) Average Monthly	< 2	< 2	< 2	< 2	5	5	2	3	5	< 2	< 2	< 2
TSS (mg/L) Average Monthly	< 4	< 7	< 4	< 4	7	6	4	< 5	< 4	6	< 4	< 4
Fecal Coliform (CFU/100 ml) Average Monthly	135	< 7	< 8	14	24	< 19	< 2	299	< 14	50	18	153
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	152	48	72	105	31	358	5	1300	196	60	48	2600
Nitrate-Nitrite (mg/L) Average Monthly	< 129.6	< 134.2	< 140.6	< 116.8	< 79.3	< 88.5	< 81.2	< 109.3	86.75	< 124.5	< 55.3	< 46.9
Nitrate-Nitrite (lbs) Total Monthly	< 204	< 304	< 519	< 247	< 165	< 114	< 3	< 124	91	< 134	< 54	< 93
Total Nitrogen (mg/L) Average Monthly	< 130.41	< 134.8	< 141.1	< 116.8	< 81.15	< 89.7	< 82.4	< 110.41	93.9	< 125.84	< 56.93	< 47.42
Total Nitrogen (lbs) Total Monthly	< 206	< 306	< 520	< 248	< 169	< 116	< 103	< 126	100	< 136	< 56	< 94
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.4	< 0.1	< 0.1	4.5	< 0.1	< 0.1	< 0.1

Ammonia (lbs) Total Monthly	< 0.2	< 0.2	< 0.3	< 0.2	< 0.2	< 0.5	< 0.1	< 0.1	7	< 0.1	< 0.1	< 0.2
TKN (mg/L) Average Monthly	0.86	< 0.65	0.75	< 0.5	1.9	1.25	1.2	1.11	7.15	1.34	1.63	< 0.57
TKN (lbs) Total Monthly	2	< 2	2	< 1	4	2	2	1	10	1	2	< 1
Total Phosphorus (mg/L) Average Monthly	1.8	1.1	1.3	0.7	1.3	0.7	0.8	1.1	1.7	1.5	0.9	1.2
Total Phosphorus (lbs) Total Monthly	3	3	4	1	3	0.9	1	1	2	2	0.9	2
Total Phosphorus (lbs) Total Annual											14	

3.2 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 consistently. No effluent violation occurred during the past 12 months

3.3 Summary of Inspections:

The facility has been inspected a couple of times during the past permit cycle. Inspection reports review for the facility during the period indicate permit limits have been met most of the time. The reports indicate lack access to the facility and records. The permittee should endeavor to address these issues. It is recommended to improve operation and maintenance of the facility.

4.0 Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	.05
Latitude	40º 12' 34.00"	**Longitude**	-76º 34' 31.00"
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.

4.2 Technology-Based Limitations

4.2.1 $CBOD_5$/TSS/NH_3:

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:
The Department's Guidance for Evaluating Wastewater Discharges to Drainage Swales and Ditches (ID #391-2000-014) has been used to establish the current and past permit limits that requires tertiary treatment with the use of sand filters.($CBOD_5$/TSS =10mg/l, Summer **NH_3-N =3mg/l**) This Guidance was revised on April 12, 2008 applicable to new and expanding discharges. The definition of tertiary treatment has been revised in the new guideline to include 5 mg/l TN and 0.5 mg/l TP. Since this facility is not new and is not expanding, the revised dry stream limits are not applicable at this time.

4.3 Water Quality-Based Limitations

4.3.1 Receiving Stream

The receiving stream is an unnamed tributary of Conewago Creek which is dry at the point of discharge. According to 25 PA § 93.9o, this stream is protected for Trout Stocking (TSF) and Migratory Fishes (MF). It is located in Drainage List O and State Watershed 7-G It has been assigned stream code 09282. According to the Department's *Integrated Water Quality Monitoring and Assessment Report*, this segment of the stream is attaining its designated uses. A TMDL was developed for Conewago Watershed for Total phosphorus and was approved by EPA in 2001. See further discussion under Total Phosphorus section for waste load allocation to this discharge.

4.3.2 Stream flows

Streamflows flows were determined by correlating with the yield of USGS gage station No. 01571500 on Susquehanna River at Harrisburg. The Q_{7-10} and drainage area at the gage is 3200ft^3/s and 24100mi^2 respectively. The resulting yields are as follows:

- Q_{7-10} = (3200ft^3/s)/24100 mi^2 = 0.133 $ft^3/s/ mi^2$
- Q_{30-10} / Q_{7-10} = 1.15
- Q_{1-10} / Q_{7-10} = 0.94

The drainage area taken from the previous permit= 0.22mi^2

The Q_{7-10} at discharge = 0.22 mi^2 x 0.133 $ft^3/s/mi^2$ = 0.0293 ft^3/s.

4.3.3 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 Median Jul – Sept.)

STP Temp	=	25°C (Default)
Stream pH	=	8.2 (Taken from WQN station at Harrisburg)
Stream Temp	=	23.5°C (Taken from WQN station at Harrisburg)
Background NH_3N	=	0 mg/l (Assumed)

4.3.4 $CBOD_5$

For water quality analysis at the POFU, WQM7.0 which is a steady state model that simplifies many natural processes into a reach-by-reach simulation was used. The attached result of the WQM 7.0 stream model (attachment B) indicates 25mg/l $CBOD_5$ is adequate to protect the water quality of the stream. The recommended limit is less stringent than the existing limit of 10mg/l based on dry stream guidance, therefore the existing limit will remain in the permit. Past DMRs and inspection reports show the STP can meet the limitation.

4.3.5 NH_3-N

The attached results of the WQM 7.0 stream model also indicates that a summer limitation of 2mg/l NH_3-N as a monthly average is necessary to protect the aquatic life from toxicity effects at the POFU. This is more stringent than the existing limit of 3mg/l established at the discharge point however, the 2,000 feet of dry stream will reduce the point of discharge limit of 3 mg/l to 2 mg/l or less at the POFU. Therefore, existing limit will remain

4.3.6 Dissolved Oxygen

The existing permit contains a limit of 6 mg/l for Dissolved Oxygen (DO) based on the TSF designation of the stream. 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. Therefore, the existing minimum D.O. of 6.0 mg/l, limit will be continued in the renewed permit with a daily monitoring requirement per DEP guidance.

4.3.7 Phosphorus:

The limit of 2 mg/l established in the existing permit was for the protection of the Lower Susquehanna River basin has been superseded by the Chesapeake Bay Strategy but will remain in the permit due to anti-backsliding. This STP was designed to remove phosphorus and contains phosphorus limits in all previous permits. Past DMRs and inspection reports show that the STP is in compliance with effluent levels.

4.3.8 Total Maximum Daily Load (TMDL)

A TMDL for the Conewago Creek basin was completed and approved on March 2, 2001 and revised on November 15, 2006. The TMDL allocates a Phosphorus annual load of 304 lbs/yr (Subbasin A) based on the design flow of 0.05 MGD and a concentration of 2 mg/l. This allocation will be incorporated into the NPDES permit requirements.

4.3.9 Total Residual Chlorine

The attached TRC results utilize 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 Guidance references Chapter 92a, Section 92a.48 (b) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The attached results presented in attachment C indicates that a water quality limit of 0.054 mg/l would be needed to prevent toxicity concerns at POFU. Past DMRs document that the STP has been capable of achieving about 0.25mg/l on an average at discharge point. Given the volatilization that will occur in the 2,000-foot long dry stream channel, it can be concluded that the standard technology limit of 0.5 mg/l at discharge point should be adequate to protect the water quality at the POFU. This conclusion follows the recommendation of previous NPDES permits. The existing limit of 0.5 mg/l will be applied for another permit cycle. De-chlorination is being used (sodium bisulfite tablets) to keep TRC values low.

4.3.10 Toxics

The facility treats mainly domestic sewage, there are no parameters of concern associated with this discharge.

4.3.11 Chesapeake Bay Strategy

The Department formulated a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). Sewage discharges have been prioritized based on their delivered TN and TP 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. These limits may be achieved through a combination of treatment technology, credits, or offsets if approved by DEP. 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. Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. This facility is 0.05mgd plant, classified as a phase 5, and has been monitoring Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen and will continue to monitor them throughout next permit cycle. Total Phosphorus monitoring is not required since a Total phosphorus limitation in the permit. A reduced monitoring frequency of once per month is required for Total Nitrogen, Nitrate-Nitrite as N, and Total Kjeldahl Nitrogen for this current renewal. The previous permit required 2/month that produced enough data for Total Nitrogen, Nitrate-Nitrite as N, and Total Kjeldahl Nitrogen to support a reduced monitoring frequency.

4.3.12 Fecal Coliform and E. coli

The existing Fecal Coliform limit is consistent with the technology limit recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. Annual monitoring of E,Coli is required in the permit following DEP recommendation of 1/year monitoring of E.coli at a minimum for this type of facility.

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, Management of collected screenings, slurries, sludges and other solids, dry stream discharge condition and Chlorine minimization

5.4 Antidegradation (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.

5.5 Class A Wild Trout Fisheries:

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

5.6 303d listed stream

The discharge is not located on a 303d listed stream segment. However, the main stem of the Conewago Creek downstream was listed as impaired due to excessive nutrient and sediment loads from agriculture. A TMDL was approved on March 2, 2001 and revised November 15, 2006. The TMDL allocated 304 lbs/yr to this facility based on a design flow of 0.05 MGD and concentration of 2 mg/l. The facility is meeting the TMDL limitations consistently. See DMR summary section for details.

5.7 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).

5.8 Effluent Monitoring Frequency

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.

6.0 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	0.5	XXX	1.6	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	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	XXX	1000	2/month	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6	2/month	8-Hr Composite

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

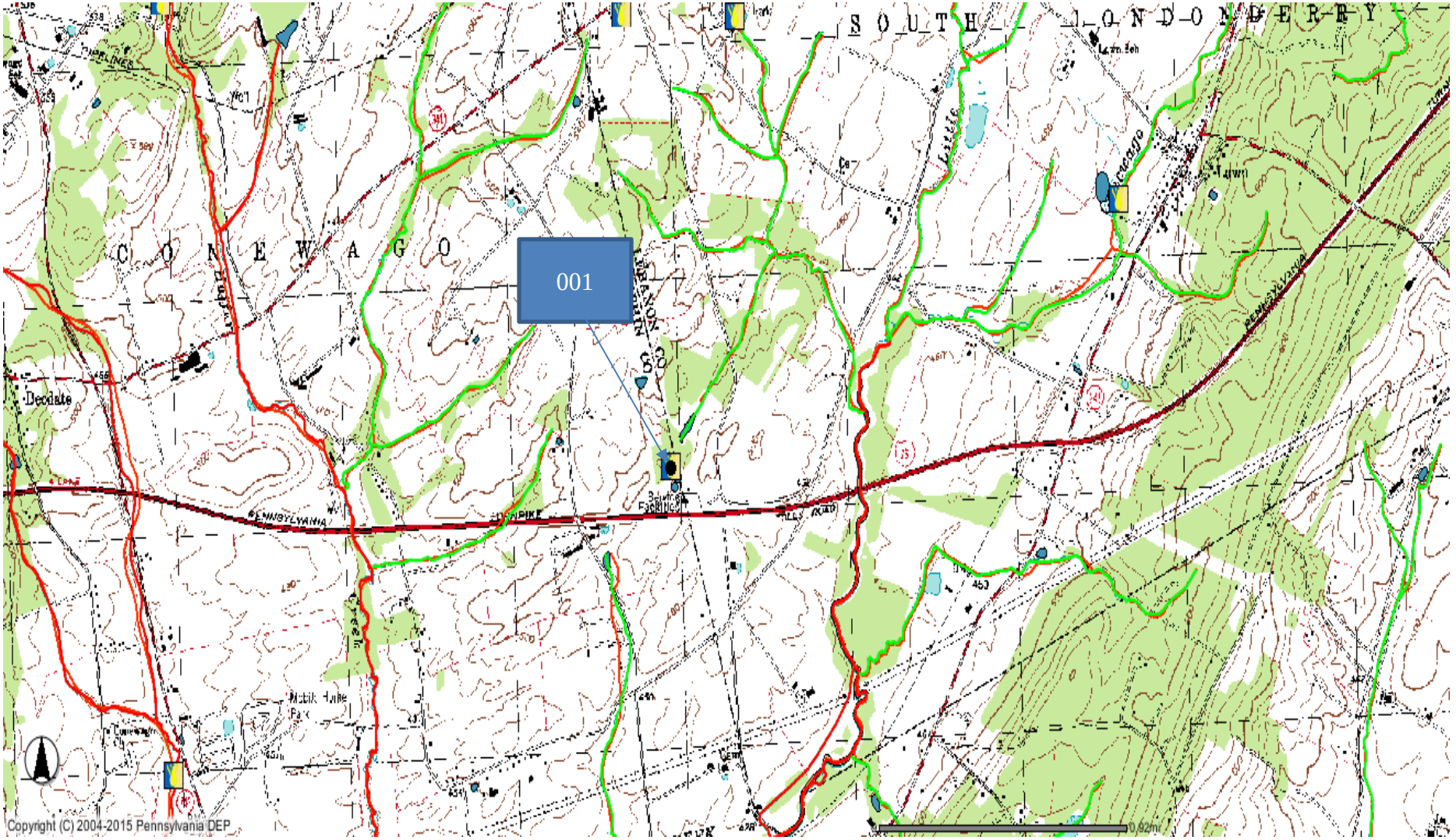
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
TKN	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite
Total Phosphorus (lbs)	XXX	304 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: Outfall 001

7.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (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.
☒	SOP: Establishing effluent limitations for individual NPDES sewage permit
☐	Other:

8. Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07G	9282	Trib 09282 of 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)
0.320	HMS Host	PA002795	0.050	CBOD5	25		
				NH3-N	2.05	4.1	
				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	9282	Trib 09282 of Conewago Creek	**0.320**	440.00	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	0.133	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
HMS Host	PA002795	0.0500	0.0500	0.0500	0.000	25.00	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	9282	Trib 09282 of Conewago Creek	**0.010**	435.00	0.24	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	0.133	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	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

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07G	9282	Trib 09282 of 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
0.320	HMS Host	10.81	14.65	10.81	14.65	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
0.320	HMS Host	1.43	2.05	1.43	2.05	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)		
0.32	HMS Host	25	25	2.05	2.05	5	5	0	0

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07G	9282	Trib 09282 of Conewago Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.320	0.050	23.628	7.135
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
3.464	0.383	9.041	0.080
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
18.69	1.446	1.48	0.925
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.890	25.758	Owens	5
Reach Travel Time (days)			
0.236			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.024	17.95	1.45	6.18
0.047	17.24	1.42	6.37
0.071	16.56	1.39	6.50
0.094	15.91	1.36	6.61
0.118	15.28	1.33	6.70
0.141	14.68	1.30	6.78
0.165	14.10	1.27	6.85
0.189	13.54	1.25	6.92
0.212	13.01	1.22	6.98
0.236	12.49	1.19	7.04

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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	0.94	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.15	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

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WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07G	9282	Trib 09282 of 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												
0.320	0.03	0.00	0.03	.0773	0.00305	.383	3.46	9.04	0.08	0.236	23.63	7.14
Q1-10 Flow												
0.320	0.03	0.00	0.03	.0773	0.00305	NA	NA	NA	0.08	0.238	23.69	7.14
Q30-10 Flow												
0.320	0.03	0.00	0.03	.0773	0.00305	NA	NA	NA	0.08	0.231	23.48	7.13

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C. TRC Calculations Results

TRC EVALUATION			**Enter Facility Name in E3**		
Input appropriate values in B4:B8 and E4:E7					
0.0242	= Q stream (cfs)		0.5	= CV Daily	
0.05	= 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 Dischar		15	= AFC_Criteria Compliance Time (min)	
0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	= % Factor of Safety (FOS)			=Decay Coefficient (K)	

#	Source	Reference	AFC Calculations		Reference	CFC Calculations	
#	TRC	1.3.2.iii	WLA afc =	0.119	1.3.2.iii	WLA cfc =	0.108
#	PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
#	PENTOXSD TRG	5.1b	LTA_afc=	0.044	5.1d	LTA_cfc =	0.063
#							

#	Source		Effluent Limit Calculations		
#	PENTOXSD TRG	5.1f	AML MULT =	1.231	
#	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.054	AFC
#			INST MAX LIMIT (mg/l) =	0.178	

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)