Pennsylvania Department of Environmental Protection

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0081841**
Facility Type	**Non-Municipal**	APS ID	**799894**
Major / Minor	**Minor**	Authorization ID	**1505288**

Applicant and Facility Information

Applicant Name	**MHC TT INC.**	Facility Name	**Hershey Preserve**
Applicant Address	2 North Riverside Plaza Suite 800	Facility Address	493 S Mount Pleasant Road
	Chicago, IL 60606-2682		Lebanon, PA 17042-4870
Applicant Contact	Jonathon Golberg	Facility Contact	Jodee Thomas
Applicant Phone	(312) 279-1692	Facility Phone	(717) 867-3967
Client ID	92267	Site ID	454753
Ch 94 Load Status	Not Overloaded	Municipality	South Annville Township
Connection Status		County	Lebanon
Date Application Received	October 31, 2024	EPA Waived?	Yes
Date Application Accepted	November 15, 2024	If No, Reason	

Purpose of Application: NPDES permit renewal

Summary of Review

1.0 General Discussion

This fact sheet supports the renewal of an existing NPDES permit for discharge of treated domestic wastewater from a wastewater treatment plant that serves an existing seasonal campground known as Hershey Preserve, (formerly Thousand Trails). MHC TT Inc. owns and operates the campground located in South Annville Township, Lebanon County. The treatment plant receives flow from the RV campground and from RV dump station. Effluent from the 0.04 mgd extended aeration package treatment plant is discharged to an unnamed tributary of Gingrich Run classified for trout stocking fishes. Previous protection reports document that aquatic life was found in the receiving stream just downstream of the discharge point, and the Point of First Use (POFU) was set at just below the discharge point. The existing NPDES permit was issued on April 16, 2020 with an effective date of May 1, 2020 and expiration date of April 30, 2025. The applicant submitted a timely permit renewal application to the Department and is currently operating under the terms and conditions in the existing permit under administrative extension provisions 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):

Sludge is hold up in sludge holding tank and hauled out by a licensed hauler periodically.

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	September 23, 2025
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	October 17, 2025
X		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Program Manager	October 17, 2025

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 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.04
Latitude	40º 16' 15.11"	Longitude	-76º 31' 28.42"
Quad Name	Palmyra	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Gingrich Run (TSF)	Stream Code	09713
NHD Com ID	56400717	RMI	0.25
Drainage Area		Yield (cfs/mi^2)	0.1
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	USGS Gage Station
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Flow Alterations, Siltation, Pathogens		
Source(s) of Impairment	Agriculture, Source Unknown		
TMDL Status	Final, 04/09/2001	Name	Quittapahilla Creek Watershed

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

Nearest Downstream Public Water Supply Intake	PA American Water		
PWS Waters	Swatara Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	18

Changes Since Last Permit Issuance: None

1.3.1 Water Supply Intake

The nearest water supply intake is 18 miles downstream at South Hanover Township, Dauphin County on the Susquehanna River by PA American Water. No impact is expected from this discharge.

2.0 Treatment Facility Summary				
Treatment Facility Name: Hershey Preserve				
WQM Permit No.	**Issuance Date**			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Ammonia Reduction	Extended Aeration	Hypochlorite	0.04
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.04		Not Overloaded		

Changes Since Last Permit Issuance: None

2.1 Treatment Facility

Treatment units are:

- 3 aerated EQ tanks with pumps, to pump flow to aeration tank
- 1 aeration
- 1 clarifier
- 2 mixed media filters with clear/mud well
- Chlorine Contact Tank with liquid chlorination
- De-chlorination
- 1 Sludge holding tank

2.2 Chemicals

- Soda ash for pH adjustments
- Sodium Hypochlorite for disinfection
- Sodium bisulfate for de-chlorination
- Aluminum Sulfate added for phosphorus removal

3.0 Proposed Effluent Limitations 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	0.12	XXX	0.38	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
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 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
TKN	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite

3.1 Compliance History

3.1.1 DMR Data for Outfall 001 (from August 1, 2024 to July 31, 2025)

Parameter	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24
Flow (MGD) Average Monthly	0.0099	0.0091	0.0088	0.0031	0.0002	0.0004	00	0.0003	0.0004	0.0044	0.0053	0.0051
Flow (MGD) Daily Maximum	0.0179	0.0145	0.0127	0.0074	0.0018	0.0029	0.0002	0.0034	0.002	0.0068	0.0085	0.0072
pH (S.U.) Instantaneous Minimum	7.6	7.6	7.6	7.8	7.8	7.6	8.0	7.8	7.8	7.6	7.8	7.8
pH (S.U.) Instantaneous Maximum	8.0	8.0	8.0	8.2	8.0	8.0	8.0	8.0	8.0	8.0	8.1	8.1
DO (mg/L) Daily Minimum	7.8	7.8	8.3	9.0	11.7	12.4	12.6	11.8	10.1	8.8	8.2	7.2
TRC (mg/L) Average Monthly	< 0.05	0.05	< 0.06	< 0.06	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01	< 0.03	< 0.04	< 0.04
TRC (mg/L) Instantaneous Maximum	0.12	0.13	0.21	0.22	0.05	0.08	< 0.01	0.06	0.05	0.09	0.11	0.09
CBOD5 (mg/L) Average Monthly	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4
TSS (mg/L) Average Monthly	2.5	2	3	3	3.5	8.5	6	3.5	2.5	2	1.5	2.5
Fecal Coliform (No./100 ml) Geometric Mean	< 2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Fecal Coliform (No./100 ml) Instant. Maximum	3	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Nitrate-Nitrite (mg/L) Daily Maximum		< 58.4						< 110.4				
Total Nitrogen (mg/L) Daily Maximum		< 58.9						< 110.9				
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.3	< 0.1
TKN (mg/L) Daily Maximum		< 0.5						< 0.5				
Total Phosphorus (mg/L) Average Monthly	1.2	0.8	0.6	0.2	< 0.1	< 0.1	0.5	0.9	0.8	0.8	1.1	1.0

3.1.2 Summary of DMRs:

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.1.1 indicates permit limits have been met consistently. No effluent violation was noted during the period reviewed.

3.1.3 Summary of Inspections:

The facility has been inspected a couple of times during the previous permit cycle. No effluent violations were found during plant inspections. The facility is operated and maintained well.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .04
Latitude 40º 16' 15.07" **Longitude** -76º 31' 27.65"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

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

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: The Technology-based limits for TSS and $CBOD_5$ recommended on the above table are not applicable to this discharge. Effluent limits in the permit are based on the August 18, 1997 Implementation Guidance for Evaluating Wastewater Discharges to Drainage Ditches and Swales (ID # 391-2000-014). The guidance requires a minimum treatment of 10 mg/l $CBOD_5$ and Suspended Solids and the use of filters for treatment.

4.2 Water Quality-Based Limitations

4.2.1 WQM 7.0 Stream Model

WQM 7.0 is a water quality model DEP utilizes to establish appropriate effluent limits for $CBOD_5$, NH_3-N and DO in permits. The model simulates mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits.

4.2.2 Streamflows:

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No 01573000 on Swatara Creek. The Q_{7-10} and drainage area at the gage is 20.2ft3/s and 309 mi^2 respectively. The resulting streamflows are as follows:

- Q_{7-10} = (20.2ft^3/s)/ 309 mi^2 = 0.1ft^3/s/ mi^2

- Q_{30-10} / Q_{7-10} = 1.41
- Q_{1-10} / Q_{7-10} = 0.81

The drainage area at POFU= 0.45 mi^2

The Q_{7-10} at POFU = 0.45 mi^2 x .10 $ft^3/s/mi^2$ = 0.045 ft^3/s.

4.2.3 NH_3N Calculations

The NH_3-N calculations will be based on Chapter 93 regulations and the Division of Water Management's November 1997 NH_3-N Implementation Guideline The following data is necessary to determine the instream NH_3N criteria used in modelling of the stream

- Discharge pH = 7.8 (DMR median July- Sept)
- Discharge Temperature = 25 ^{o} C (default)
- Stream pH = 7.0 (default)
- Stream Temperature = 20 ^{o} C (default)
- Background NH_3-N = 0.0 (default)
- Annual Average Flow = 0.04MGD

4.2.4 $CBOD_5$ & NH_3-N

The existing limits in the permit were based on the Department's dry stream guidance. The previous factsheet document that dry stream effluent limits were recommended due to a "losing" stream condition downstream. The attached result of WQM 7.0 stream model (attachment B) indicates that a limit of 25 mg/l is adequate to protect water quality of the stream, however, due to anti-backsliding restrictions the existing limit of 10mg/l will be continued in the permit. The attached result of the WQM 7.0 stream model also indicates that a limit of 2.5 mg/l NH_3 (rounded) as a monthly average is necessary to protect the aquatic life from toxicity effects at the point of first used during summer months. Winter months limits are 3 times the summer months limit. These limits are slightly more stringent than the existing limits but the facility can meet the limit based on their DMR data.

4.2.5 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.

4.2.6 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 received 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) are required to monitor and report TN series 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, classified as a phase 5, and has been monitoring Nitrate-Nitrite as N, Total Kjeldahl Nitrogen, Total Nitrogen annually and will be required to continue monitoring Nitrate-Nitrite as N, Total Kjeldahl Nitrogen, Total Nitrogen semi-annually during this permit cycle collect adequate data. There is limit on Total Phosphorus in the permit, no monitoring is required.

4.2.7 Phosphorus:

The average monthly limit of 2mg/l phosphorus in the existing permit was based on the requirement to control phosphorus loading to Lower Susquehanna River Basin. That requirement has been superseded by the development of Chesapeake Bay TMDL in 2010, however due to anti-backsliding restrictions the limit will remain in the permit.

4.2.8 Total Suspended Solids (TSS):

There is no water quality criterion for TSS. The existing average monthly limit of 10mg/l for TSS based on dry stream guidance will remain in the permit due to the stream being intermittent and become a "losing" stream downstream at times.

4.2.9 Total Residual Chlorine:

The attached TRC results presented in attachment C utilizes the equations and calculations presented in the Department's 2003 Implementation Guidance for Residual Chlorine (TRC) (ID # 391-2000-015) for developing chlorine limitations. The result indicates that a water quality limit rounded to 2 decimal places of 0.12 mg/l monthly average and 0.38 mg/l IMAX would be needed to prevent toxicity concerns. This is consistent with the existing permit, and the facility has been meeting this limit.

4.2.10 Toxics

A reasonable potential (RP) analysis was done for pollutants in the discharge. The discharge consists entirely of domestic wastewater with no pollutants of concern that need further analysis.

4.2.11 Coliform and E. Coli

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. In March of 2021, EPA approved DEP's Triennial Review of Water Quality Standards, which included a new swimming season criterion for E. coli. As a result, DEP is including monitoring requirements for E. Coli in new and renewed sewage permits above 2000gpd. Monitoring frequency is based on annual average flow as follows: 1/month for design flows >= 1 MGD, 1/quarter for design flows >= 0.05 and < 1 MGD and 1/year for design flows of 0.002 and < 0.05 MGD. Your discharge of 0.04 MGD requires 1/year monitoring as included in the permit.

4.2.12 Special Permit Conditions

The permit will contain the following special conditions:

1. Stormwater Prohibition. 2. Approval Contingencies, 3. Management of collected screenings, slurries, sludges and other solids 4. Requirement to connect if a public sewer becomes available in the area. 5. Dry stream discharge condition, 6. Chlorine minimization

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 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.

5.4 Class A Wild Trout Fisheries

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

5.5 303d Listed Streams:

The discharge is located on stream segment listed as impaired for recreational use due to pathogens source unknown, and for aquatic life due to siltation and flow alteration from agricultural activities. The discharge is
located on stream segment within the Quittapahilla Creek Watershed with a TMDL finalized in 2001. This discharge does not contribute significantly to the impairment to warrant any further action at this time.

5.6 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).

5.7 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.

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" (386-0400-001), 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	0.12	XXX	0.38	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
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
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

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

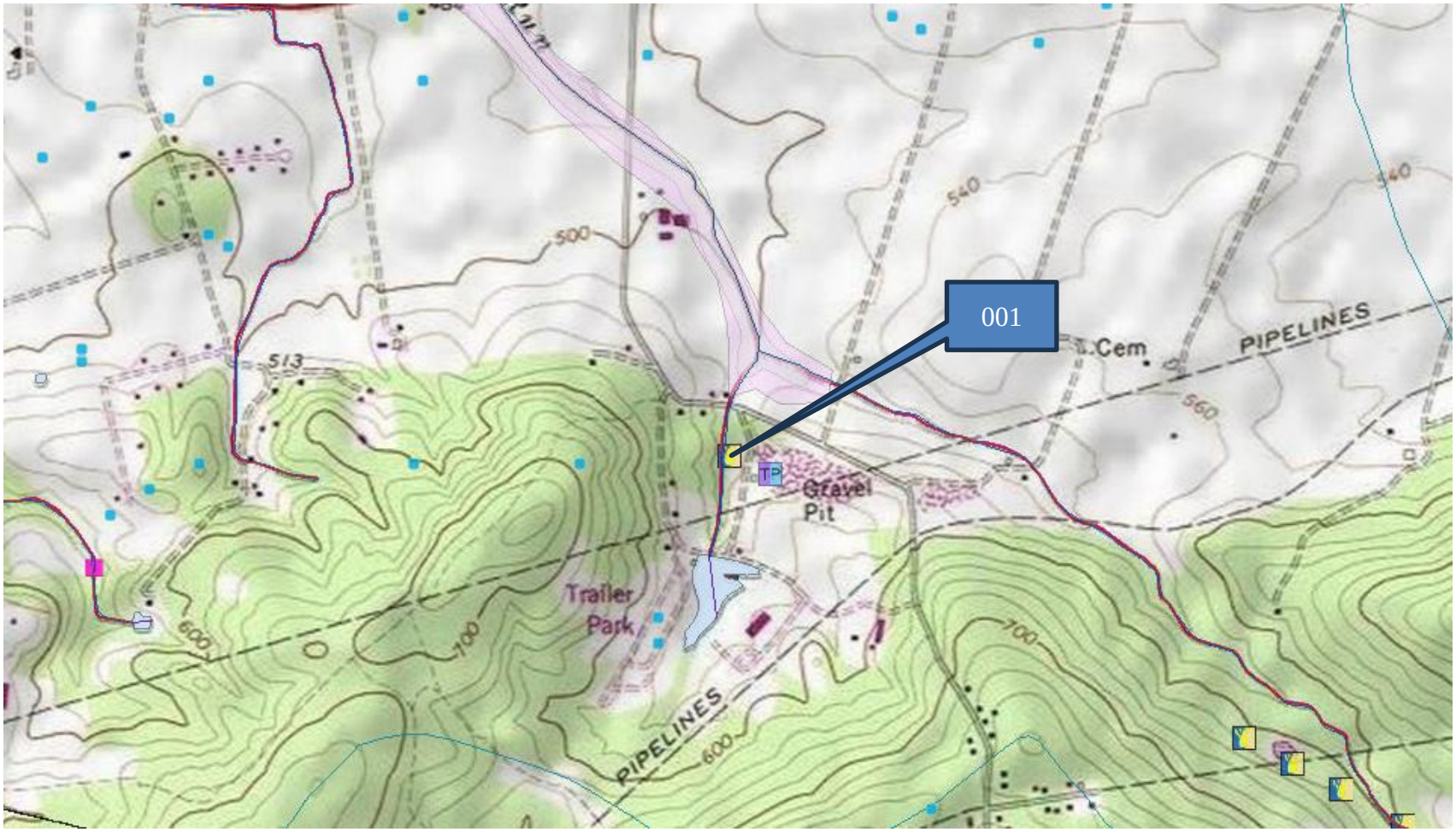
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	7.5	XXX	15	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.5	XXX	5	2/month	8-Hr Composite
TKN	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite

Compliance Sampling Location: At 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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☒	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing effluent limits for individual sewage permits.
☐	Other:

Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07D	9713	Trib 09713 to Gingrich Run

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)
0.250	Hershey Preserv	PA0081841	0.040	CBOD5	25		
				NH3-N	2.92	5.84	
				Dissolved Oxygen			5

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
07D	9713	Trib 09713 to Gingrich Run	**0.250**	523.40	0.45	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	0.100	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
Hershey Preserv	PA0081841	0.0400	0.0400	0.0400	0.000	25.00	7.80

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

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
07D	9713	Trib 09713 to Gingrich Run	**0.010**	515.20	0.90	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	0.100	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	5.00	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
07D	9713	Trib 09713 to Gingrich Run

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												
0.250	0.04	0.00	0.04	.0619	0.00647	.361	4.04	11.19	0.07	0.201	22.89	7.29
Q1-10 Flow												
0.250	0.04	0.00	0.04	.0619	0.00647	NA	NA	NA	0.07	0.210	23.15	7.33
Q30-10 Flow												
0.250	0.06	0.00	0.06	.0619	0.00647	NA	NA	NA	0.08	0.183	22.47	7.23

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	0.81	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.41	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07D	9713	Trib 09713 to Gingrich Run

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
0.250	Hershey Preserv	9.05	14.39	9.05	14.39	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
0.250	Hershey Preserv	1.44	2.92	1.44	2.92	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)		
0.25	Hershey Preserv	25	25	2.92	2.92	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9713	Trib 09713 to Gingrich Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.250	0.040	22.895	7.290
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
4.043	0.361	11.188	0.073
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
15.32	1.403	1.69	0.875
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.365	26.486	Owens	6
Reach Travel Time (days)			
0.201			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.020	14.83	1.66	6.66
0.040	14.36	1.63	6.85
0.060	13.91	1.60	6.98
0.080	13.47	1.57	7.07
0.100	13.04	1.55	7.15
0.120	12.63	1.52	7.21
0.140	12.23	1.49	7.26
0.160	11.85	1.47	7.31
0.180	11.47	1.44	7.35
0.201	11.11	1.42	7.39

C. TRC Calculations

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.045	= Q stream (cfs)	0.5	= CV Daily
0.04	= 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 = 0.251	1.3.2.iii	WLA cfc = 0.237
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.094	5.1d	LTA_cfc = 0.138

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.115	AFC
		INST MAX LIMIT (mg/l) = 0.376	

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)**