pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0081191**
Facility Type	**Non-Municipal**	APS ID	**700259**
Major / Minor	**Minor**	Authorization ID	**1421798**

Applicant and Facility Information

Applicant Name	**MHC PA Dutch Country LP**	Facility Name	**PA Dutch Country Golf Course**
Applicant Address	185 Lehman Road	Facility Address	185 Lehman Road
	Manheim, PA 17545-8720		Manheim, PA 17545-8720
Applicant Contact	Greggory Kane	Facility Contact	Chris Dove
Applicant Phone	(312)279-1692	Facility Phone	(717) 665-4636
Client ID	275114	Site ID	452871
Ch 94 Load Status	Not Overloaded	Municipality	Manheim Borough
Connection Status		County	Lancaster
Date Application Received	December 14, 2022	EPA Waived?	Yes
Date Application Accepted	January 13, 2023	If No, Reason	

Purpose of Application: Renewal of NPDES permit for discharge of treated sewage

Summary of Review

1.0 General Discussion

This factsheet supports the renewal of an existing NPDES permit for discharge of treated domestic sewage from wastewater treatment plant that serves a campground. The facility is a package plant with design capacity of 0.025 mgd. Sewage flow by gravity into an aerated 8,300-gallon equalization tank via an interceptor tank where rags and debris are captured. Flow is lifted by a pair of submersible pumps from the equalization tank to the first of four aeration tanks (6,300 gallon each) via a flow diversion box. Effluent from the aeration tanks flow to two 4,000-gallon clarifier tanks for clarification. Sludge is wasted to a 6,300-gallon sludge tank and hauled out by a license hauler periodically. Effluent from the clarifiers flow through a sand filter, clear well tank, a chlorine tablet feeder for chlorination prior to a 600-gallon chlorine contact tank. The facility discharges final effluent to a wet weather swale which leads to the Chickies Creek which is classified as warm water fishes (WWF). The outfall begins at the head of the swale where an intermittent spring/seep has been observed to be flowing during periods of high groundwater. Normally, during the summer operating season of the campground, the swale is dry and the effluent eventually soaks into the ground. This swale is completely wooded and thus completely shaded. It is completely isolated with no dwellings or farms close by. The discharge is about 500 feet from the confluence of Chickies Creek. The campground closes during the winter season, however the treatment plant operates year-round with flow from the park manager's residence and re-seeded occasionally with holding tank waste. Past protection report document that Chickies Creek is five to eight feet wide and six inches to one foot deep with a rocky/sandy substrate, no measurement effort was carried out during this renewal. The area is not limestone but contains large boulders of sandstone as big as ten feet in diameter. The area can easily be described as a beautiful tumbling mountain stream. The point of first use was determined to be at the confluence of Chickies Creek. Discharge limits has been developed based on the intermittent swale technical guidance and water quality analysis will be done for

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	February 8, 2024
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	March 5, 2024
X		*Maria D. Bebenek* Maria D. Bebenek, P.E, / Program Manager	March 5, 2024

Summary of Review

aquatic considerations at the POFU on Chickies Creek which is classified for warm water fishes. The existing NPDES permit was issued on March 08, 2018 with an expiration date of March 31, 2023. The applicant submitted a complete NPDES 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):

Sludge is hold up in an aerobic digester and hauled out by a licensed hauler periodically

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

Annual E. Coli monitoring has been added.

1.3 Existing Limitation 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	0.5	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 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	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	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	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite

1.4 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.025
Latitude	40º 14' 9.97"	Longitude	-76º 26' 57.91"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	UNT of Chickies Creek	Stream Code	07919@ POFU
NHD Com ID	57461967	RMI	27.8@POFU
Drainage Area	1.2@POFU	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	0.19@POFU	Q_{7-10} Basis	
Elevation (ft)	580	Slope (ft/ft)	
Watershed No.	7-G	Chapter 93 Class.	WWF
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		Name	

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)	<40

Changes Since Last Permit Issuance: None

1.4.1 Water Supply Intake

The nearest water supply intake is 40 miles downstream at Columbia Borough, Lancaster County on the Susquehanna River by the Columbia Borough Water Company. No impact is expected from this discharge.

2.0 Treatment Facility Summary				
Treatment Facility Name: PA Dutch Country Campground				
WQM Permit No.	**Issuance Date**			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Tertiary	Activated sludge	Hypochlorite	0.025
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.025		Not Overloaded		

Changes Since Last Permit Issuance: None

2.1 Treatment Facility

The existing treatment plant consists of grease traps, one equalization tank, with two manholes to provide additional equalization if needed, four aeration tanks, two clarifiers, one sludge holding tank, two sand filters, mud well, clear well, tablet chlorinator with a chlorine contact tank.

2.2 Chemical Used

Soda ash for pH adjustment, Aluminum Phosphate for Phosphorus reduction and Calcium Hypochlorite for disinfection.

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from December 1, 2022 to November 30, 2023)

Parameter	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22
Flow (MGD) Average Monthly	0.00028	0.00417	0.0039	0.00426	0.0044	0.00341	0.00261	0.00166	0.00023	0.00021	0.00021	0.0003
Flow (MGD) Daily Maximum	0.00308	0.00911	0.00667	0.00704	0.00704	0.00628	0.0059	0.00522	0.00081	0.00091	0.00135	0.00155
pH (S.U.) Instantaneous Minimum	7.8	7.8	7.7	7.8	7.8	7.9	7.8	7.9	7.8	8.0	7.9	7.8
pH (S.U.) Instantaneous Maximum	8.1	8.2	8.2	8.2	8.2	8.2	8.2	8.3	8.2	8.2	8.2	8.1
DO (mg/L) Instantaneous Minimum	8.1	7.5	8.0	7.7	7.6	8.1	9.4	9.3	9.5	10.1	9.1	7.7
TRC (mg/L) Average Monthly	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.5	0.4	0.4	0.4	0.3
TRC (mg/L) Instantaneous Maximum	0.83	0.72	0.76	0.82	0.8	0.76	0.88	1.23	1.39	0.88	1.24	0.69
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	1.5	1.5	2.5	2	1	3	2.5	4.5	2	3.5	8	4
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	1	< 1	1	< 1	< 1	2	< 1	< 1	< 1	< 1	2	< 1
Nitrate-Nitrite (mg/L) Average Quarterly			< 90.4			< 130.4			< 26.4			113
Total Nitrogen (mg/L) Average Quarterly			< 90.9			< 130.9			< 26.9			< 113.5
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.2	< 0.1	< 0.2	< 0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TKN (mg/L) Average Quarterly			< 0.5			< 0.5			< 0.5			< 0.5

Total Phosphorus (mg/L) Average Monthly	1.8	1.8	1.2	1.7	1.7	1.0	0.3	0.4	0.5	0.6	0.9	0.9

3.2 Summary of Discharge Monitoring Reports (DMRs):

DMRs reviewed for the facility for the last 12 months of operation, presented on the table above in section 3.1 indicate permit limits have been met consistently. No effluent violations were noted on DMRs for the period reviewed.

3.3 Summary of Inspections:

The facility has been inspected a couple times during last 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)** .025
Latitude 40º 14' 11.28" **Longitude** -76º 26' 52.25"
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.

4.2 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: See Dry stream limitations and water quality analysis sections of the report.

4.3 Dry Stream limitation TSS, $CBOD_5$ & NH_3-N

Existing effluent limits are based on the August 18, 1997 Implementation Guidance for Evaluating Wastewater Discharges to Drainage Ditches and Swales (ID # 391-2000-014). The guidance referenced was revised in 2008 but is only applicable to new and expanding facilities which this facility is not. Since the area is used as a public campground, the treated effluent is very accessible to campers and hikers. The guidance requires the minimum treatment of 10 mg/l $CBOD_5$ and Suspended Solids and the use of filters for treatment. This facility does have filters and past DMRs and inspection reports show good compliance with these limits. It is recommended that the limits continue for another permit cycle if water quality analysis yields less stringent limitation. A geologist's review is waived since the discharge is existing and no groundwater impacts have been reported.

4.4 Water Quality-Based Limitations

4.4.1 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.

4.4.2 Streamflows :

Streamflow will be correlated with past streamflow records taken from the nearby USGS gage station on the Conestoga River at Lancaster City. Q_{7-10}, Q_{30-10}, and winter Q_{7-10} will be calculated by 0.16 cfs/mi^2, 1.27 and 1.17 x Q_{7-10}. Q_{1-10} will be calculated using a factor of 0.64 x Q_{7-10}, which was derived by Central Office in their February 1987 NH_3 Implementation Guidance. The drainage area at the point of use is taken from the previous protection report = 1.2 mi^2. The resulting streamflows at the point of first at the confluence of chickies creek are as follows:

Q_{7-10}	=	1.2 mi^2 x 0.16 cfs/mi^2	=	0.19 cfs
Q_{30-10}	=	0.19 cfs x 1.27	=	0.24 cfs
Q_{7-10} (winter)	=	0.19 cfs x 1.17	=	0.22 cfs
Q_{1-10}	=	0.19 cfs x 0.64	=	0.12 cfs

4.4.3 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 #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	=	7.6	(Taken from past DMRs between July – September)
STP Temp	=	25°C	(Default)
Stream pH	=	7.85	(Taken from the Chickies Creek WQN station at the stream mouth)
Stream Temp	=	20°C	(Taken from the Chickies Creek WQN station at the stream mouth)
Background NH_3N	=	0.0	(Assumed)

4.4.4 $CBOD_5$ & NH_3-N

The attached results of the WQM 7.0 stream model presented in attachment B indicates that a limit of 25 mg/l $CBOD_5$ and 7.5 mg/l NH as a monthly average is necessary to protect the aquatic life from toxicity effects at the point of first use. However, the existing dry stream limit referenced above (10 CBOD5 mg/l and 3.0 mg/l NH_3-N) are more stringent and will remain for the current permit cycle. The facility is meeting the limitation based on DMR and inspection data.

4.4.5 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 as well, this limit will be continued in the renewed permit with a daily monitoring requirement.

4.4.6 Total Suspended Solids (TSS):

There are no water quality criteria for TSS. The existing dry stream limits of 10 mg/l will remain in the permit

4.4.7 Chesapeake Bay Strategy

The Department formulated a strategy to comply with the Chesapeake Bay nutrient TMDL requirements for PA. Sewage discharges have been prioritized 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. These limits may be achieved through a combination of treatment technology, credits, or offsets. 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 classified as a phase 5, monitored Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen in the past and will continue to monitor them quarterly for this permit cycle to collect data for Chesapeake Bay program implementation.

4.4.8 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.

4.4.9 Total Residual Chlorine:

The attached TRC result presented in attachment C utilizes the equations and calculations as presented in the Department's 2003 Implementation Guidance for Residual Chlorine (TRC) (ID # 391-2000-015) for developing chlorine limitations. The attached result indicates that an average monthly water quality limit of 0.5 mg/l and Imax of 1.6 mg/l would be needed to prevent toxicity concerns. This limit is consistent with the existing permit and the facility is complying with the limit.

4.4.10 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 needs further analysis.

4.3.11 Fecal 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 – 0.05 MGD. Your discharge of 0.025 MGD requires 1/year monitoring as included in the permit

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 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.

5.4 Class A Wild Trout Fisheries:

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

5.5 303d Listed Streams:

The discharge is not located on a 303d listed stream segment. The withdrawn 2001 Chickies Creek TMDL does not apply to this area of Chickies Creek.

5.6 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

5.7 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" (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	0.5	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 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	XXX	1/quarter	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	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)

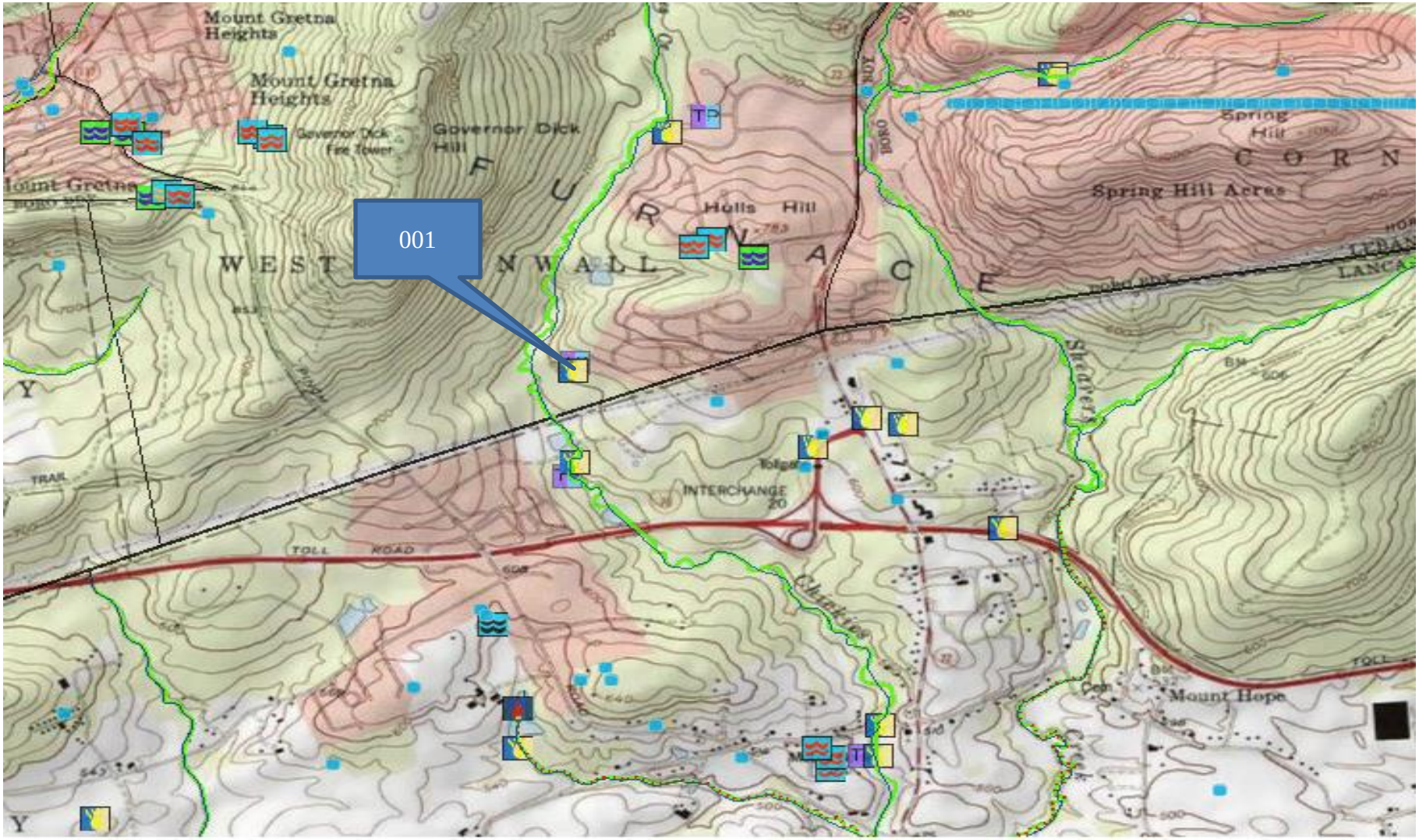
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
TKN	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	8-Hr Composite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

Compliance Sampling Location: At Outfall 001

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 limitation for individual sewage permit
☐	Other:

Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07G	7919	CHICKIES 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)
27.800	PA Dutch Countr	PA0081191	0.025	CBOD5	25		
				NH3-N	7.05	14.1	
				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
07G	7919	CHICKIES CREEK	**27.800**	580.00	1.20	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	0.160	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.85	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
PA Dutch Countr	PA0081191	0.0250	0.0250	0.0250	0.000	25.00	7.60

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
07G	7919	CHICKIES CREEK	**27.610**	494.00	3.40	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	0.160	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.85	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	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07G	7919	CHICKIES 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												
27.800	0.19	0.00	0.19	.0387	0.08573	.473	4.34	9.19	0.11	0.103	20.84	7.80
Q1-10 Flow												
27.800	0.12	0.00	0.12	.0387	0.08573	NA	NA	NA	0.09	0.126	21.20	7.78
Q30-10 Flow												
27.800	0.24	0.00	0.24	.0387	0.08573	NA	NA	NA	0.13	0.092	20.68	7.81

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	1.27	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07G	7919	CHICKIES 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
27.800	PA Dutch Countr	5.33	22.25	5.33	22.25	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
27.800	PA Dutch Countr	.97	7.05	.97	7.05	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)		
27.80	PA Dutch Countr	25	25	7.05	7.05	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07G	7919	CHICKIES CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
27.800	0.025	20.838	7.797
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
4.343	0.473	9.190	0.112
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.86	1.048	1.18	0.747
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.699	20.476	Owens	5
Reach Travel Time (days)			
0.103			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.010	5.79	1.17	7.82
0.021	5.73	1.16	7.93
0.031	5.66	1.15	8.01
0.041	5.60	1.15	8.08
0.052	5.54	1.14	8.12
0.062	5.47	1.13	8.12
0.072	5.41	1.12	8.12
0.083	5.35	1.11	8.12
0.093	5.29	1.10	8.12
0.103	5.23	1.09	8.12

C. TRC Calculations

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.19	= Q stream (cfs)	0.5	= CV Daily
0.025	= 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 = 1.586	1.3.2.iii	WLA cfc = 1.539
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.591	5.1d	LTA_cfc = 0.895

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

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)**