pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0085502**
Facility Type	**Non-Municipal**	APS ID	**1049447**
Major / Minor	**Minor**	Authorization ID	**1374912**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Deann MHP LLC**	Facility Name	**Deann MHP**
Applicant Address	1015 Dundee Road	Facility Address	Deanne Lane
	Dundee, FL 33838-3101		Grantville, PA 17028
Applicant Contact	David Branton	Facility Contact	Andrew Meloy
Applicant Phone	(410) 707-3274	Facility Phone	(814) 329-8811
Client ID	366061	Site ID	1066
Ch 94 Load Status	Not Overloaded	Municipality	East Hanover Township
Connection Status		County	Dauphin
Date Application Received	August 26, 2020	EPA Waived?	Yes
Date Application Accepted	September 10, 2020	If No, Reason	

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

Summary of Review

1.0 General Discussion

This fact sheet supports renewal of an existing NPDES permit for discharge of treated domestic sewage from an existing mobile home park known as the Deann MHP. The permittee submitted a timely permit renewal application, but the facility has been acquired by a new owner Deann MPH LLC. prior to permit renewal. The permit had expired and has been administratively extended and could not be transferred. The Department decided to re-issue the permit to the new owner. Ward Realty LLC. was the previous owner of the facility. The facility is a package plant with design capacity of 0.012 mgd, and discharge to an unnamed tributary of Manada Creek. A point of first use(POFU) survey was conducted by the Regional Aquatic Biologist in 1993 and concluded that the point of first use is located on the receiving stream approximately 120 ft. downstream from the discharge point, and thus the stream should be considered to be dry at the point of discharge. The existing NPDES permit was issued on March 23, 2016 with an effective date of April 1, 2016 expiration date of March 31, 2021. 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 (Walters Environmental) 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

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	November 8, 2021
X		Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	November 15, 2021

Summary of Review

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 semi-annually.
- Annual monitoring of E- Coli has been added.

1.4 Existing limits and monitoring requirements

Discharge Parameter	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
	Mass Units			Concentrations			Minimum Measurement Frequency	Required Sample Type
	Total Monthly (lbs/mo)	Daily Maximum (lbs/day)	Total Annual (lbs/year)	Monthly Average (mg/l)	Daily Maximum (mg/l)	Inst. Maximum (mg/l)		
Flow (mgd)	Monitor & Report Avg	Monitor & Report	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	XXX	From 6.0 to 9.0 inclusive			1/day	Grab
D.O.	XXX	XXX	XXX	Minimum of 5.0 mg/l at all times			1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.06	XXX	0.18	1/day	Grab
Total Suspended Solids	XXX	XXX	XXX	10	XXX	20	2/month	8-hour comp
$CBOD_5$ (5/1 to 10/31)	XXX	XXX	XXX	10	XXX	20	2/month	8-hour comp
$CBOD_5$ (11/1 to 4/30)	XXX	XXX	XXX	20	XXX	40	2/month	8-hour comp
NH3-N (5/1 to 10/31)	XXX	XXX	XXX	2.0	XXX	4.0	2/month	8-hour comp
NH3-N (11/1 to 4/30)	XXX	XXX	XXX	6.0	XXX	12.0	2/month	8-hour comp
Fecal Coliform (5/1 to 9/30)	XXX	XXX	XXX	200	XXX	1000	2/month	Grab
Fecal Coliform (10/1 to 4/30)	XXX	XXX	XXX	2000	XXX	10000	2/month	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-hour comp
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-hour comp
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-hour comp
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-hour comp

1.5 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.012
Latitude	40º 22' 8.03"	Longitude	-76º 42' 16.16"
Quad Name	Hershey	Quad Code	1624
Wastewater Description:	Sewage Effluent		

Receiving Waters	UNT Manada Creek	Stream Code	None
NHD Com ID	56398711	RMI	0.11
Drainage Area	0.05	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status			
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	PA American Water		
PWS Waters	Manada creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	>8.5

Changes Since Last Permit Issuance: None

1.5 Discharge, Receiving Waters and Water Supply Information

Outfall No.	POFU	Design Flow (MGD)	.012
Latitude	40º 22' 8.03"	Longitude	-76º 42' 16.16"
Quad Name	Hershey	Quad Code	1624
Wastewater Description:	Sewage Effluent		
Receiving Waters	UNT Manada Creek	Stream Code	09546)
NHD Com ID	56398711	RMI	8.42
Drainage Area	0.05	Yield (cfs/mi^2)	0.106
Q_{7-10} Flow (cfs)	0.0064	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status			
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	PA American Water		
PWS Waters	Manada creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	>8.5

1.5.1 Public Water Supply Intake:

The closest water supply intake located downstream from the discharge is the Pa American Water Co. on Manada Creek in South Hanover Twp. The distance downstream from the discharge to the intake is approximately 8.5 miles. There is no impact on the water intake.

2.0 Treatment Facility Summary				
Treatment Facility Name: Deann MHP				
WQM Permit No.	**Issuance Date**			
2294410	**October 13, 1994**			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.012
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.012		Not Overloaded	Aerobic Digestion	

Changes Since Last Permit Issuance: None

2.1 Treatment Facility Description

The treatment system is a package plant which consists of screening unit, flow equalization tank with pumps, aeration basin, clarification, filtration, aerobic digester, and chlorine contact tank. Effluent is disinfected with chlorine tablet and de-chlorinated with sodium bisulfite before discharging to an unnamed tributary of Manada creek which is considered dry at discharge point.

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from October 1, 2020 to September 30, 2021)

Parameter	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20
Flow (MGD) Average Monthly	0.0056	0.00588	0.00716	0.0054	0.00556	0.00558	0.00659	0.00782	0.00736	0.0071	0.00571	0.00658
Flow (MGD) Daily Maximum	0.01176	0.0074	0.02459	0.00763	0.00773	0.00755	0.00979	0.01053	0.01023	0.01379	0.00745	0.0114
pH (S.U.) Minimum	5.43	6.3	6.5	6.7	5.7	5.9	6.1	6.4	6.6	6.7	6.8	6.8
pH (S.U.) Maximum	7.2	7.3	7.5	7.9	7.3	7.7	6.7	6.8	7.7	7.4	7.3	7.2
DO (mg/L) Minimum	8.14	7.5	6.0	6.1	6.4	6.2	7.3	9.1	8.9	8.5	8.0	6.8
TRC (mg/L) Average Monthly	< 0.03	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
TRC (mg/L) Instantaneous Maximum	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.06
CBOD5 (mg/L) Average Monthly	3.0	< 3.0	3.0	< 3.0	< 3.0	< 3.0	3.0	3.0	< 2.0	2.0	< 2.0	< 2.0
TSS (mg/L) Average Monthly	5.0	6.0	< 5.0	7.0	10.0	< 5.0	< 7.0	< 6.0	< 6.0	< 7.0	7.0	< 5.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1.0	< 1.0	< 2.0	< 3.0	< 1.0	3.0	1.0	< 1.0	< 1.0	< 1.0	9.0	< 3.0
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	2.0	1.0	5.0	10.0	2.0	6.0	1.0	1.0	2.0	< 1.0	14.0	8.0
Nitrate-Nitrite (mg/L) Average Monthly	25.4	19.6	28.2	3.9	21.7	12.4	22.6	17.9	24.9	24.3	24.6	13.8
Total Nitrogen (mg/L) Average Monthly	< 26.6	21.3	< 29.3	< 4.9	22.9	< 13.5	23.6	< 18.9	< 26.4	25.3	< 25.6	< 14.8
Ammonia (mg/L) Average Monthly	< 0.1005	0.1135	0.1075	< 0.1	0.1625	0.1595	0.1485	< 0.1	0.132	< 0.1	< 0.1	0.155
TKN (mg/L) Average Monthly	< 1.2	1.7	< 1.1	< 1.0	1.2	< 1.1	< 1.1	< 1.0	< 1.5	< 1.0	< 1.0	< 1.0
Total Phosphorus (mg/L) Average Monthly	3.3	2.5	< 2.6	3.2	2.9	2.5	3.1	2.3	3.0	3.9	3.0	1.8

3.2 Effluent Violations for Outfall 001, from: November 1, 2020 To: September 30, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Ph	04/30/21	Min	5.9	S.U.	6.0	S.U.
pH	09/30/21	Min	5.43	S.U.	6.0	S.U.
pH	05/31/21	Min	5.7	S.U.	6.0	S.U.

3.3 Summary of Discharge Monitoring Reports (DMRs)**:**

DMRs review 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 most of the time. Three pH effluent violations noted on DMRs during the period reviewed and presented in section 3.2. The violations appear to be operation related.

3.4 Summary of Inspections:

The facility has been inspected a couple times during last permit cycle. No effluent violations noted during plant inspections. Some maintenance recommendations such as consider installing tighter bar screen at the EQ tank and replacing or recoating rusted gratings on treatment tanks to improve operations. Calcium Hypochlorite tablet was recommended for disinfection. Three years records of daily logs, lab results, bench sheets, calibration logs are recommended to be maintained on site

3.0 Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	.012
Latitude	40º 22' 8.03"	**Longitude**	-76º 42' 12.16"
Wastewater Description:	Sewage Effluent		

3.1 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.

3.2 Technology-Based Limitations

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 to meet BOD5 =10mg/l (avg) /20 mg/l (max), TSS =10mg/l (avg) /20 mg/l (max), a summer ammonia limit of 3 mg/l, a minimum D.O. of 5 mg/l, and bacteria limits of 200 & 2000/100 ml. This Guidance was revised on April 12, 2008 applicable to new and expanding facilities. 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.

3.4 Water Quality-Based Limitations

3.4.1 Receiving Stream

The receiving stream is UNT Manada Creek. According to 25 PA § 93.9o, this stream is protected for Cold Water Fishes (CWF). It is located in Drainage List O and State Watershed 7-D. No stream code has been assigned to the UNT. The secondary receiving stream is Manada Creek which is also protected for CWF. According to the Department's 2014 *Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, this stream is attaining this stream is attaining its designated uses and supporting aquatic life.

3.4.2 Streamflows @ POFU

Streamflows for the water quality analysis were taken from the nearby USGS gauging station No 01573500 on Manada Creek. The drainage area of the gage is 14.2 sq.mi. The yield at the gage are :

- $Q_{7\text{-}10}$ =(1.51)/(14.2) = 0.106 cfs/sq.mi.
- $Q_{30\text{-}10}$ / $Q_{7\text{-}10}$ = 1.23
- $Q_{1\text{-}10}$ / $Q_{7\text{-}10}$ = 0.89

The drainage area at the proposed discharge point was found from streamstats calculation to be 0.05 sq.mi. The drainage area at the POFU is approximately 0.06sqmi. The design streamflow ($Q_{7\text{-}10}$) at the POFU is calculated as:

$Q_{7\text{-}10}$=(0.106)(0.06) = 0.0064cfs

3.4.3 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 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 = 6.5 (DMR median July – Sept.)
- STP Temperature = 25 º C (default)
- Stream pH = 7.0 (default)

- Stream Temperature = 20 ° C (WWF)
- Background NH_3-N = 0.0 (default)

3.4.4 $CBOD_5$

A water quality analysis during the last permit renewal resulted in 2mg/l summer limits for ammonia. A new analysis will be done using WQM 7.0 to determine if 2.mg/l limit for ammonia in the existing permit was still adequate to protect the POFU from toxicity effects. The secondary receiving water Manada Creek(09546) with RMI 8.42mi was used to run the model since the unnamed tributary that receives the discharge has no stream code. The attached model result of the WQM 7.0 stream model (attachment B) indicates that a limit of 25mg/l CBOD5 is required to protect water quality of the stream. This is less stringent than the existing limitation of 10mg/l for summer months and 20mg/l for winter months. Therefore the existing limits will remain in the permit.

3.4.5 NH_3-N

The attached model result of the WQM 7.0 stream model (attachment B) indicates also that a summer limit of 2 mg/l NH_3-N as a monthly average is necessary to protect the aquatic life from toxicity effects at the POFU. This limit is consistent with the existing permit. DMR indicate facility is meeting this limit. The winter limit is 3 times the winter limit.

3.4.6 Dissolved Oxygen

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

3.4.7 Total Suspended Solids:

There are no water quality criteria for TSS. A limit of 30 mg/l is the required minimum level of effluent quality attainable by secondary treatment as defined in EPA's 40 CFR Chapter 1, Part 133, Section 133.102(b) is less stringent than the existing limit of 10 mg/l based on dry stream guidance. Therefore, the existing limit based on dry stream guidance document will remain in the permit.

3.4.8Total Residual Chlorine (TRC):

The attached results of TRC result utilizes the equations and calculations as presented in the Department's 2003 Implementation Guidance for Residual Chlorine (ID # 391-2000-015) for developing chlorine limitations. The attached result indicates that an average monthly water quality limit of 0.06mg/l and 0.18mg/l maximum daily would be needed to prevent toxicity concerns at the POFU. This is consistent with the existing permit and the facility is meeting the limit.

4.4.9 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. Monitoring of E. Coli annually is required in the permit following DEP recommendation of 1/year monitoring of E. Coli at a minimum for this type of facility.

4.3.10 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay Foundation requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers 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. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) are required to monitor and report TN and TP during permit renewal and any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. EPA published Chesapeake Bay TMDL in December of 2010. In order to address the TMDL, Pennsylvania developed Chesapeake Watershed Implementation Plan (WIP) Phase 1, Phase 2 and currently Phase 3 WIP and a supplement to the WIPs to be implemented with the original Chesapeake Bay Strategy.

As outlined in the current Phase 3 WIP and the current supplement to the WIP, re-issuing permits for significant dischargers would follow the same phased approach formulated in the original Bay strategy whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewal. This facility is classified as a phase 5, and has been monitoring Total Phosphorus, Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen, and will continue to monitor them during this permit cycle, but at a reduced monitoring frequency of semi-annually. 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.

3.4.12 Toxics

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

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 Streams

The discharge is not located on a 303d listed stream segment.

5.7 Special Permit Conditions

The permit will contain the following special conditions:

1. Stormwater Prohibition. 2. Approval Contingencies, 3.Proper Waste/solids Management, 4. High flow management. 5 Chlorine minimization 6. Notification of the designation of responsible operator. 7. Dry stream discharge reminder.

5.8 Basis for Effluent and Surface Water Monitoring

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

5.9 Effluent Monitoring 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	1/day	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	0.06	XXX	0.18	1/day	Grab
CBOD5 Nov 1 - Apr 30	XXX	XXX	XXX	20	XXX	40	2/month	8-Hr Composite
CBOD5 May 1 - Oct 31	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	Report	XXX	XXX	1/6/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/6/month	Calculation
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	6.0	XXX	12	2/month	8-Hr Composite

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

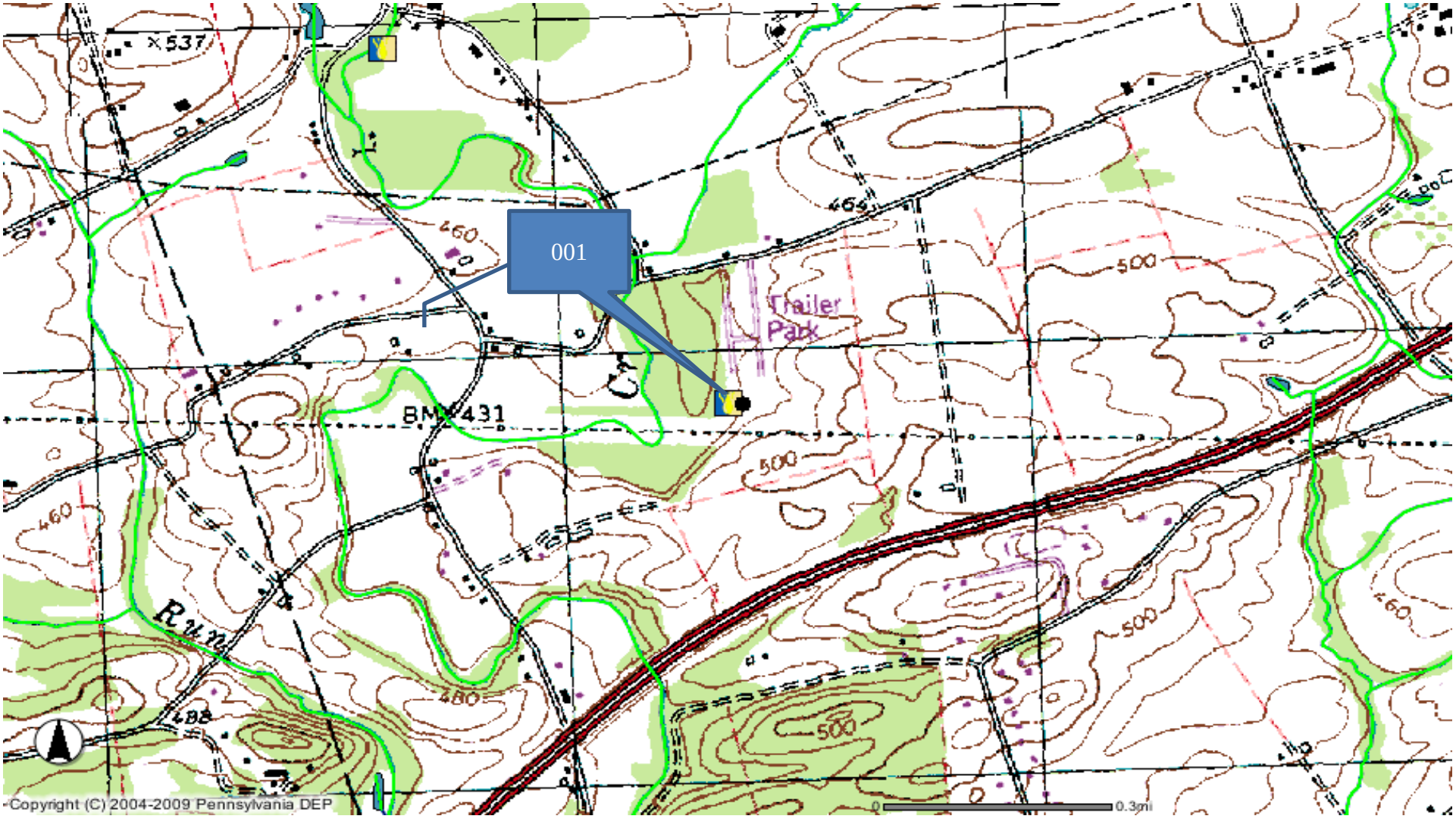
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.0	XXX	4	2/month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

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 limitation for individual sewage permit
☐	Other:

7. Attachment

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07D	9546	MANADA 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)
8.420	Deann MHP	PA0085502	0.012	CBOD5	25		
				NH3-N	2.38	4.76	
				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
07D	9546	MANADA CREEK	**8.420**	449.00	0.06	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	0.108	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
Deann MHP	PA0085502	0.0120	0.0120	0.0120	0.000	25.00	6.50

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
07D	9546	MANADA CREEK	6.500	442.00	0.08	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	0.106	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

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07D	9546	MANADA 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
8.420	Deann MHP	16.01	20.89	16.01	20.89	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
8.420	Deann MHP	1.67	2.38	1.67	2.38	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)		
8.42	Deann MHP	25	25	2.38	2.38	5	5	0	0

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9546	MANADA CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
8.420	0.012	23.724	6.583
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.724	0.345	4.992	0.042
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
19.13	0.679	1.77	0.932
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.828	20.225	Owens	5
Reach Travel Time (days)			
2.802			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.280	15.26	1.36	7.31
0.560	12.18	1.05	7.57
0.841	9.72	0.81	7.71
1.121	7.75	0.62	7.71
1.401	6.19	0.48	7.71
1.681	4.94	0.37	7.71
1.961	3.94	0.28	7.71
2.242	3.14	0.22	7.71
2.522	2.51	0.17	7.71
2.802	2.00	0.13	7.71

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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	0.89	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.23	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
07D	9546	MANADA 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												
8.420	0.01	0.00	0.01	.0186	0.00069	.345	1.72	4.99	0.04	2.802	23.72	6.58
Q1-10 Flow												
8.420	0.01	0.00	0.01	.0186	0.00069	NA	NA	NA	0.04	2.847	23.83	6.58
Q30-10 Flow												
8.420	0.01	0.00	0.01	.0186	0.00069	NA	NA	NA	0.04	2.714	23.52	6.60

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C. TRC Calculations

1A	B	C	D	E	F	G
2	**TRC EVALUATION**			**Enter Facility Name in E3**		
3	Input appropriate values in B4:B8 and E4:E7					
4	0.006	= Q stream (cfs)		0.5	= CV Daily	
5	0.012	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Dischar		15	= AFC_Criteria Compliance Time (min)	
9	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 =	0.122	1.3.2.iii	WLA cfc =	0.112
#	PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
#	PENTOXSD TRG	5.1b	LTA_afc=	0.045	5.1d	LTA_cfc =	0.065
#							

#	Source	Effluent Limit Calculations		
#	PENTOXSD TRG	5.1f	AML MULT =	1.231	
#	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.056	AFC
#			INST MAX LIMIT (mg/l) =	0.183	

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)