pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0033928**
Facility Type	**Non-Municipal**	APS ID	**1041530**
Major / Minor	**Minor**	Authorization ID	**1358943**

Applicant and Facility Information

Applicant Name	**PA 2018 Town & Country, LLC**	Facility Name	**PA 2018 Town & Country, LLC**
Applicant Address	1400 Belleville Street	Facility Address	60 Town and Country Lane
	Richmond, VA 23230-4629		Troy, PA 16947-8855
Applicant Contact	Matt Foster	Facility Contact	Patrick Crowley
Applicant Phone	(804) 747-7207	Facility Phone	(570) 429-0731
Client ID	346776	Site ID	237138
Ch 94 Load Status	Not Overloaded	Municipality	Troy Township
Connection Status	**N/A**	County	Bradford
Date Application Received	June 17, 2021	EPA Waived?	Yes
Date Application Accepted	July 1, 2021	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit

Summary of Review

The subject facility is a sewage treatment plant serving a mobile home park is Troy Township, Bradford County.

Sludge use and disposal description and location(s): The facility's sludge is disposed by landfill. Per the application, 0.5 tons of sludge were disposed in the previous year.

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.

Approve	Deny	Signatures	Date
X		*Keith C. Allison* Keith C. Allison / Project Manager	November 22, 2021
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	November 23, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.024
Latitude	41º 47' 59.25"	Longitude	-76º 48' 58.90"
Quad Name	Troy, PA	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to West Branch Sugar Creek (TSF)	Stream Code	30781 (UNT) 30779 (POFU)
NHD Com ID	66401549	RMI	0.83 (UNT) 1.02 (POFU)
Drainage Area	0.23 (UNT) 3.79 (POFU)	Yield (cfs/mi^2)	0.0082
Q_{7-10} Flow (cfs)	0.0019 (UNT) 0.031 (POFU)	Q_{7-10} Basis	USGS Gage #01516500, Corey Ck near Mainsburg
Elevation (ft)	1312 (UNT) 1219 (POFU)	Slope (ft/ft)	0.212 (UNT)
Watershed No.	4-C	Chapter 93 Class.	TSF
Existing Use	None	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		
Nearest Downstream Public Water Supply Intake	Danville Municipal Water Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1,120
PWS RMI	138.06	Distance from Outfall (mi)	>100

Changes Since Last Permit Issuance: The above stream and drainage characteristics were mostly determined for the previous review and remain adequate.

Other Comments:

Discharge is to an intermittent stream. A point of first use (POFU) determination was performed by the Department in 2016 for the previous review. This survey found the POFU to be at the confluence of the UNT to West Branch Sugar Creek (30781) with West Branch Sugar Creek (30779) affirming a previous Department determination in 1990.

No downstream water supply is expected to be affected by the discharge with the limitations and monitoring proposed.

Treatment Facility Summary

Treatment Facility Name: Town & Country Estates

WQM Permit No.	Issuance Date
0872403	Original – 3/16/72
	T-1 – 3/28/02 T-2 – 3/22/19

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia Reduction	Activated Sludge	Hypochlorite	0.024

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.024	67.7	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: WQM and NPDES permits were transferred in 2019.

Other Comments: The treatment, as permitted by WQM Permit No. 0872403 T-2, consists of comminutor, bypass bar screen, aeration tank, settling tank, two intermittent sand filters, hypochlorite disinfection, chlorine contact tank, and aerated sludge holding tank.

Compliance History

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	0.014	0.017	0.013	0.014	0.013	0.015	0.016	0.019	0.018	0.017	0.0145	0.014
pH (S.U.) Instantaneous Minimum	7.1	7.0	7.2	7.2	7.1	7.0	6.8	7.0	7.2	7.1	7.2	7.2
pH (S.U.) Instantaneous Maximum	7.8	7.6	7.8	7.6	7.6	7.8	7.8	7.8	7.8	7.9	7.8	7.9
DO (mg/L) Instantaneous Minimum	6.2	6.0	6.0	6.1	6.0	6.5	7.4	8.3	7.7	8.5	5.9	6.7
TRC (mg/L) Average Monthly	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3
TRC (mg/L) Instantaneous Maximum	0.6	0.6	0.5	0.6	0.5	0.5	0.5	0.6	0.5	0.6	0.6	0.5
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 4.0	< 3.0	< 3.0	< 3.0	< 3.0
CBOD5 (mg/L) Instantaneous Maximum	< 3.0	< 3.0	< 3.0	< 3.0	3.0	< 3.0	< 3.0	4.5	< 3.0	< 3.0	< 3.0	< 3.0
TSS (mg/L) Average Monthly	< 2.0	< 3.0	< 2.0	< 5.0	8.0	< 5.0	4.0	< 2.0	< 2.0	< 1.6	< 4.0	3.0
TSS (mg/L) Instantaneous Maximum	2.0	< 3.0	2.8	8.4	8.4	8.8	7.0	1.6	< 2.0	< 1.6	5.6	3.6
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 98	< 1	182	27	176	7	< 10	1	< 8	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	2	< 1	> 2420	1	205	116	387	14	49	1	64	1
Ammonia (mg/L) Average Quarterly	< 0.25			< 0.69			< 0.10			0.29		

Compliance History, Cont'd

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

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
DO	11/30/20	Inst Min	5.9	mg/L	6.0	mg/L
Fecal Coliform	07/31/21	IMAX	> 2420	No./100 ml	1000	No./100 ml

Compliance History, Cont'd

Summary of Inspections:	The facility has been inspected approximately annually by the Department over the past permit term. The most recent inspection on June 10, 2020 noted eDMR effluent violations.
Other Comments:	A query in WMS found no open violations in eFACTS for PA 2018 Town & Country, LLC.

Existing 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	XXX	XXX	XXX	XXX	XXX	1/week	Weir
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5 Nov 1 - Apr 30	XXX	XXX	XXX	20.0	XXX	40.0	2/month	Grab
CBOD5 May 1 - Oct 31	XXX	XXX	XXX	10.0	XXX	20.0	2/month	Grab
TSS	XXX	XXX	XXX	10.0	XXX	20.0	2/month	Grab
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
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Ammonia	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.024
Latitude 41º 47' 59.00" **Longitude** -76º 48' 59.00"
Wastewater Description: Sewage Effluent

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 above limitations are applicable and included in the existing permit except for more stringent existing limits for TSS and $CBOD_5$ as discussed below. Due to the addition of e. coli bacteria criteria to Chapter 93 of the Department's regulations and consistent with current Department policy, monitoring for e. coli will now be included in the permit.

Water Quality-Based Limitations

Discharge to Dry or Intermittent Stream

The existing limitations for $CBOD_5$, TSS, and DO were based on a prior version of the Department's *Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales and Storm Sewers* guidance document (391-2000-014). The current version of the guidance prescribes additional and more stringent limitations for new or expanded discharges that include a TN limit of 5 mg/L and TP limit of 0.5 mg/L. These additional limitations will not be required at this time for this existing discharge.

CBOD5, NH3-N & DO

The WQM7.0 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia-nitrogen (NH_3-N) into free-flowing streams and rivers. To accomplish this, the model simulates two basic processes: the mixing and degradation of NH_3-N in the stream and the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and NH_3-N. WQM7.0 modeling was performed (see Attachment B) for the discharge to the unnamed tributary and West Branch Sugar Creek and indicated that the existing limits should be adequate to protect the receiving stream. Due to the discharge scenario the modeling was performed in two reaches. The first reach modelled the DO in the intermittent Unnamed Tributary. The second reach used the output from the first reach as a discharge at the POFU to West Branch Sugar Creek and found the existing limitations to be adequate.

A discharge ammonia-nitrogen concentration of 1.0 mg/L was input into the model due to the consistent NH3-N levels seen in the discharge. A review of the NH3-N levels for the past permit term found a maximum reported concentration of <0.97 mg/L.

Total Residual Chlorine

The Department typically uses a modeling spreadsheet to analyze the toxicity of a discharge's Total Residual Chlorine (TRC) in a receiving stream accounting for available dilution. However, no modeling was performed at this time due to the

significant distance from the point of discharge to the POFU (0.83 Miles) which would provide chlorine removal and the discharge will typically infiltrate before reaching the POFU during low-flow conditions anyways.

Toxics Management
No further "Reasonable Potential Analysis" was conducted for this minor sewage treatment facility with no industrial wastes to determine additional parameters as candidates for limitations or monitoring.

Chesapeake Bay/Nutrient Requirements
According to the Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, this facility is considered a Phase 5 Chesapeake Bay sewage discharger, and as such requires no nutrient loading limits. Per a review of the facility eDMR data for the past four years the Total Nitrogen has averaged 15.4 mg/L and the Total Phosphorus has averaged 2.06 mg/L. Due to the intermittent stream discharge, the existing annual monitoring will remain.

Best Professional Judgment (BPJ) Limitations

Comments: No additional BPJ limits are necessary at this time beyond the water quality and technology-based limits noted above.

Anti-Backsliding

Consistent with the anti-backsliding provisions of the Clean Water Act and 40 CFR 122.44(l), no proposed limits have been made less stringent in the attached draft permit.

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	XXX	XXX	XXX	XXX	XXX	1/week	Weir
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5 Nov 1 - Apr 30	XXX	XXX	XXX	20.0	XXX	40.0	2/month	Grab
CBOD5 May 1 - Oct 31	XXX	XXX	XXX	10.0	XXX	20.0	2/month	Grab
TSS	XXX	XXX	XXX	10.0	XXX	20.0	2/month	Grab
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
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Ammonia	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
e. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

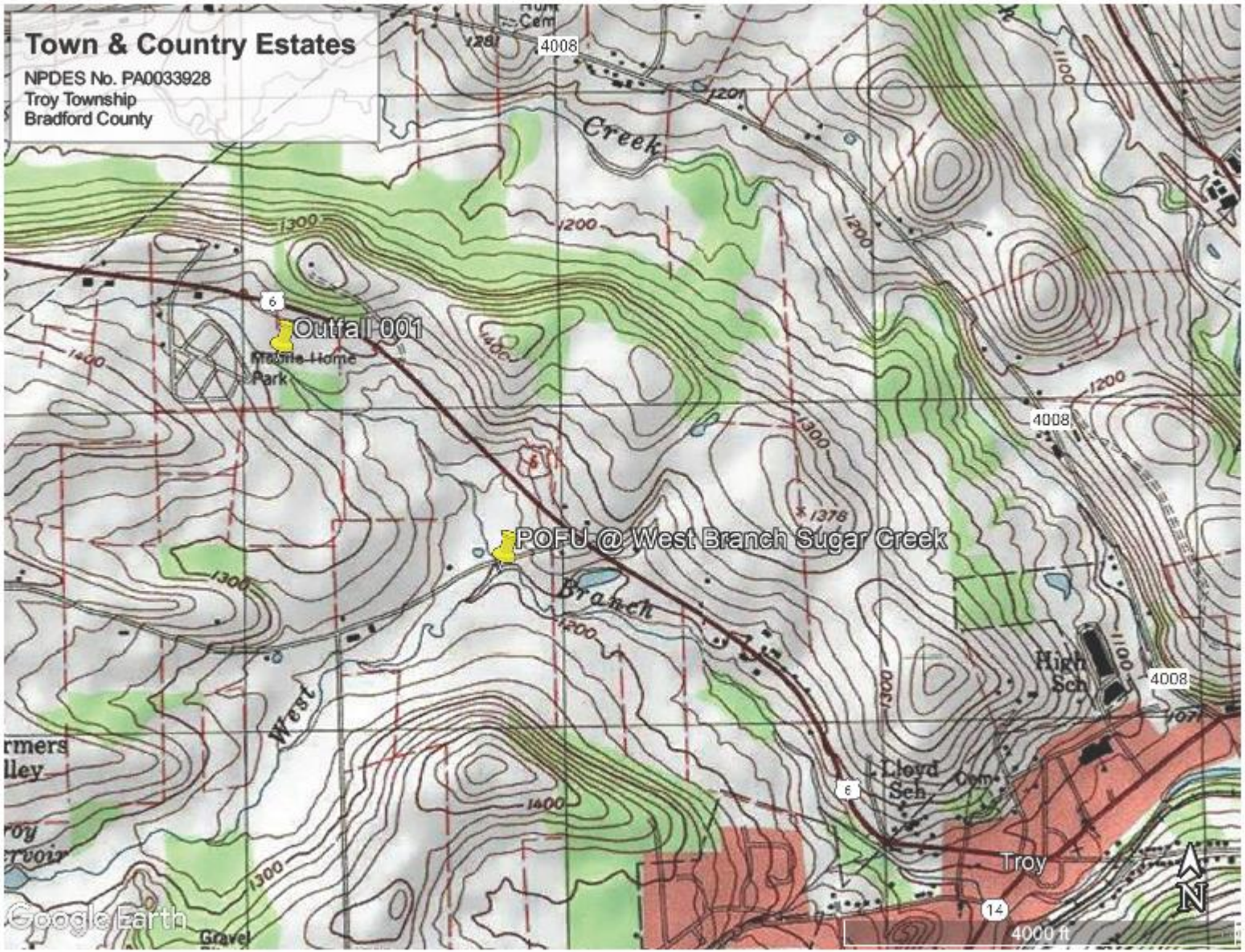
Compliance Sampling Location: Outfall 001

Other Comments: The monitoring above is unchanged from the existing permit except for the inclusion of e. Coli monitoring as noted above. While not consistent with the Department's typical requirements of twice per months for WWTP discharges of this size the existing quarterly monitoring for NH3-N will remain due to the consistent low ammonia levels seen in the discharge.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☒	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☒	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☒	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing Effluent Limitations for Individual Sewage Permits, rev. 3/24/21
☐	Other:

Attachments:

A. Discharge Location Map
B. WQM7.0 Model – Run 1 @UNT and Run 2 @West Branch Sugar Creek


Town & Country Estates
NPDES No. PA0033928
Troy Township
Bradford County
Outfall 001
Mobile Home Park
POFU @ West Branch Sugar Creek
Creek
Branch
West
High Sch
Lloyd Sch
Troy
4008
6
14
1300
1200
1400
1100
Google Earth
4000 ft
N

Run #1 – Discharge into Unnamed Tributary

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
04C	30781	Trib 30781 to W Br S Br Sugar Cr	**0.083**	1312.00	0.23	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	0.008	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
Town&Country	PA0033928	0.0240	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	10.00	2.00	0.00	1.50
Dissolved Oxygen	6.00	8.24	0.00	0.00
NH3-N	1.00	0.00	0.00	0.70

Permit No. PA0033928

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
04C	30781	Trib 30781 to W Br S Br Sugar Cr	0.000	1219.00	0.50	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	0.008	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	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Modeling Specifications

Parameters	D.O.	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	Simulation	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

Permit No. PA0033928

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
04C	30781	Trib 30781 to W Br S Br Sugar Cr

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												
0.083	0.00	0.00	0.00	NA	0.21247	.414	1.46	3.53	0.06	0.079	24.76	7.00
Q1-10 Flow												
0.083	0.00	0.00	0.00	NA	0.21247	NA	NA	NA	0.00	0.000	0.00	0.00
Q30-10 Flow												
0.083	0.00	0.00	0.00	NA	0.21247	NA	NA	NA	0.00	0.000	0.00	0.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
04C	30781	Trib 30781 to W Br S Br Sugar Cr

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.083	0.024	24.758	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
1.463	0.414	3.534	0.064
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
9.61	1.484	0.95	1.010
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.108	19.779	Owens	5
Reach Travel Time (days)			
0.079			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.008	9.47	0.94	6.22
0.016	9.34	0.94	6.31
0.024	9.20	0.93	6.39
0.031	9.07	0.92	6.47
0.039	8.94	0.91	6.54
0.047	8.81	0.91	6.60
0.055	8.68	0.90	6.65
0.063	8.56	0.89	6.70
0.071	8.44	0.89	6.75
0.079	8.31	0.88	6.79

Subreach results above from Run #1 inputted as discharge into West Branch Sugar Creek for Run #2

Permit No. PA0033928

Run #2 – Discharge into West Branch Sugar Creek

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
04C	30779	WEST BRANCH SOUTH BRANCH S	**1.020**	1219.00	3.79	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	0.008	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
Town&Country 2	PA0033928-2	0.0240	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	8.31	2.00	0.00	1.50
Dissolved Oxygen	6.79	8.24	0.00	0.00
NH3-N	0.88	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
04C	30779	WEST BRANCH SOUTH BRANCH S	**0.100**	1092.00	28.90	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	0.008	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	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
04C	30779	WEST BRANCH SOUTH BRANCH SUGAR CR.

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												
1.020	0.03	0.00	0.03	.0371	0.02614	.342	4.98	14.55	0.04	1.407	22.72	7.00
Q1-10 Flow												
1.020	0.02	0.00	0.02	.0371	0.02614	NA	NA	NA	0.04	1.555	23.26	7.00
Q30-10 Flow												
1.020	0.04	0.00	0.04	.0371	0.02614	NA	NA	NA	0.04	1.292	22.34	7.00

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WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
04C	30779	WEST BRANCH SOUTH BRANCH SUGAR CR.

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
1.020	Town&Country 2	12.8	1.76	12.8	1.76	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
1.020	Town&Country 2	1.62	.88	1.62	.88	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)		
1.02	Town&Country 2	8.31	8.31	.88	.88	6.79	6.79	0	0

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
04C	30779	WEST BRANCH SOUTH BRANCH SUGAR CR.

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.020	0.024	22.722	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
4.984	0.342	14.553	0.040
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.43	0.627	0.48	0.863
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.452	19.437	Owens	6
Reach Travel Time (days)			
1.407			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.141	4.92	0.42	7.84
0.281	4.45	0.38	7.84
0.422	4.03	0.33	7.84
0.563	3.64	0.29	7.84
0.703	3.30	0.26	7.84
0.844	2.98	0.23	7.84
0.985	2.70	0.20	7.84
1.125	2.44	0.18	7.84
1.266	2.21	0.16	7.84
1.407	2.00	0.14	7.84

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
04C	30779	WEST BRANCH SOUTH BRANCH SUGAR CR.

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)
1.020	Town&Country 2	PA0033928-2	0.024	CBOD5	8.31		
				NH3-N	0.88	1.76	
				Dissolved Oxygen			6.79