pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0035653**
Facility Type	**Non-Municipal**	APS ID	**763592**
Major / Minor	**Minor**	Authorization ID	**1207439**

Applicant and Facility Information

Applicant Name	**PA DOT**	Facility Name	**PA DOT I70 Site 3 Rest Area**
Applicant Address	400 North Street, 6th Floor	Facility Address	Interstate I70 Eb Brush Creek Twp
	Harrisburg, PA 17120		Fulton Co, PA 17563
Applicant Contact	Nicholaus Sahd	Facility Contact	Dennis Clark
Applicant Phone	(717) 763-7211	Facility Phone	(717) 485-3816
Client ID	134834	Site ID	456184
Ch 94 Load Status	Not Overloaded	Municipality	Brush Creek Township
Connection Status		County	Fulton
Date Application Received	November 1, 2017	EPA Waived?	Yes
Date Application Accepted	November 21, 2017	If No, Reason	

Purpose of Application: NPDES renewal permit.

Summary of Review

PA Department of Transportation Rest Area Site 3 wastewater treatment plant has applied to the Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit No. PA0035653. The permit was issued on April 19, 2013 and became effective on May 1, 2013. The Department received the NPDES renewal permit application on November 1, 2017. The permit authorized discharge of treated sewage from the existing wastewater treatment plant (WWTP) located in Brush Creek Township, Fulton County to Unnamed Tributary to Brush Creek. The existing permit expiration date was April 30, 2018, and the permit has been administratively extended since that time.

Changes from the previous permit: Unit of Fecal Coliform changed from CFU/100 ml to No./100 ml.

Based on the review outline in this fact sheet, it is recommended that the permit be drafted and published in the Pennsylvania Bulletin for public comments for 30 days.

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		Hilary H. Le / Environmental Engineering Specialist	August 28, 2019
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E. / Clean Water Program Manager	

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.0065
Latitude	39º 55' 7.42"	Longitude	-78º 14' 8.75"
Quad Name	Breezewood	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Brush Creek (HQ-CWF)	Stream Code	14178
NHD Com ID	65849449	RMI	0.34 mile
Drainage Area	0.14 mi.^{2}	Yield (cfs/mi^2)	See comments below
Q_{7-10} Flow (cfs)	See comments below	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1240	Slope (ft/ft)	
Watershed No.	11-C	Chapter 93 Class.	HQ-CWF
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	
Nearest Downstream Public Water Supply Intake	Saxton Borough Municipal Authority, Bedford County		
PWS Waters	Raystown Branch Juniata River	Flow at Intake (cfs)	
PWS RMI	42.5 miles	Distance from Outfall (mi)	Approximate 52 miles

Changes Since Last Permit Issuance: none

Drainage Area
The discharge is to Unnamed Tributary 14178 to Brush Creek at RMI 0.34 mile. A drainage area upstream of the discharge is estimated to be 0.14 mi.^{2}, according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
There are no nearby stream gages with low flow data that have extensive or recent periods of record. Since USGS PA StreamStats estimated the drainage area that is below the minimum value allowed by USGS's regression equations, the USGS gage station No. 74937 on Juniata River watershed located in Mifflin Borough will be used to calculate the Q_{7-10} at the point of discharge using a low flow yield method. The Q_{7-10} here is 321 cfs and the drainage area is 2,840 mi.^{2} which results in a Q_{7-10} low flow yield of 0.11 cfs/mi.^{2}. This information is used to obtain a chronic or 30-day (Q_{30-10}), and an acute or 1-day (Q_{1-10}) exposure stream flow for the discharge point as follows (Guidance No. 391-2000-023):

$$\text{Low Flow Yield} = Q_{7-10gage} / \text{Drainage Area}_{gage} = 321 \text{ cfs} / 2840 \text{ mi.}^2 = 0.11 \text{ cfs/mi.}^2$$
$$Q_{7-10discharge} = 0.11 \text{ cfs/mi.}^2 * \text{Drainage Area}_{discharge} = 0.11 \text{ cfs/mi.}^2 * 0.14 \text{ mi.}^2 = 0.015 \text{ cfs}$$
$$Q_{30-10} = 1.36 * Q_{7-10discharge} = 1.36 * 0.015 \text{ cfs} = 0.02 \text{ cfs}$$
$$Q_{1-10} = 0.64 * Q_{7-10discharge} = 0.64 * 0.015 \text{ cfs} = 0.01 \text{ cfs}$$

Unnamed Tributary 14178 to Brush Creek
Under 25 Pa Code § 93.9n, the unnamed tributary to Brush Creek is designated as High Quality-Cold Water Fishes (HQ-CWF). However, the discharge has existed since 1970 and does not require compliance in HQ requirements until an expansion or upgrade would be requested.

Potable Water Supply Intake
The nearest downstream public water supply intake is the Saxton Borough Municipal Authority intake on the Raystown Branch Juniata River, Bedford County approximately 52 miles from the point of discharge. Given the nature and dilution, the discharge is not expected to significantly impact the water supply.

Treatment Facility Summary				
Treatment Facility Name: PA DOT - Rest Area 3 - I-70				
WQM Permit No.	**Issuance Date**			
2991402	2/26/1992			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.0065		Not Overloaded	Aerobic Digestion	Combination of methods

Changes Since Last Permit Issuance: none

The WWTP train is as follows:

The treatment process is as follows: Comminutor (1) - Bar Screen (1) – Equalization Tank (1) – Splitter Box (1) - Aeration Tanks (2) – Clarifiers (2) - Dosing Tank (1) – Sand Filters (4) - Chlorine Contact Tank (1) – Post Aeration Tank (1) – Sludge Holding Tank (1) – Blowers (3) - Discharge (Outfall to Unnamed Tributary to Brush Creek).

Magnesium hydroxide is used for alkalinity supplementation and sodium hypochlorite is used for disinfection. A sludge holding tank is used for solids storage.

Compliance History	
Summary of DMRs:	See DMR reported from July 1, 2018 to June 30, 2019 Table below. (Page 4)
Summary of Inspections:	1/7/2016, Mr. Clark, DEP Water Quality Specialist, conducted a compliance evaluation inspection. The outfall area was clear. The field tested within permit limits. The recommendations were calibrating instrument, test high level alarms, and record composite sample times in log book. There were no identified violations during inspection. 1/4/2017, Mr. Clark, DEP Water Quality Specialist, conducted a compliance evaluation inspection. The outfall area was clear. The field tested within permit limits. The recommendations were obtaining new pH buffer and chlorine reagents. There were none identified violations during inspection. 1/4/2018, Mr. Clark, DEP Water Quality Specialist, conducted a compliance evaluation inspection. The outfall area was clear. The field tested within permit limits. There were none identified violations during inspection.
Other Comments:	There are currently no open violations associated with the permittee or the facility.

Compliance History

DMR Data for Outfall 001 (from July 1, 2018 to June 30, 2019)

Parameter	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18	SEP-18	AUG-18	JUL-18
Flow (MGD) Average Monthly	0.001039	0.000882	0.000746			0.000995	0.001305	0.001372	0.001396	0.001800	0.002069	0.002945
Flow (MGD) Daily Maximum	0.002176	0.001959	0.001653			0.002981	0.002975	0.004522	0.002387	0.003861	0.003808	0.005800
pH (S.U.) Minimum	7.4	7.4	7.3			7.6	7.7	7.6	7.5	7.5	7.4	7.5
pH (S.U.) Maximum	7.9	7.9	7.9			8.0	8.2	8.2	8.0	7.9	7.9	7.9
DO (mg/L) Minimum	7.3	8.2	9.0			10.3	10.4	9.1	8.0	7.7	7.5	7.4
TRC (mg/L) Average Monthly	0.23	0.23	0.23			0.23	0.23	0.23	0.23	0.23	0.23	0.23
TRC (mg/L) Instantaneous Maximum	0.26	0.26	0.26			0.25	0.26	0.26	0.25	0.26	0.24	0.25
$CBOD_5$ (mg/L) Average Monthly	< 2.4	< 3.2	< 2.2			< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4
TSS (mg/L) Average Monthly	< 2.5	< 2.5	< 2.5			< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1	< 1	< 1			< 1	< 1	< 1	< 1	< 1	< 1	< 1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	< 1	< 1	< 1			< 1	< 1	< 1	< 1	< 1	< 1	< 1
Total Nitrogen (mg/L) Annual Average										< 0.2491		
Total Nitrogen (lbs) Total Annual										< 7.7251		
Ammonia (mg/L) Average Monthly	< 0.50	< 0.50	1.41			< 0.50	0.58	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phosphorus (mg/L) Annual Average										0.0277		
Total Phosphorus (lbs) Total Annual										0.8587		

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0065
Latitude 39º 55' 22.40" **Longitude** -78º 14' 8.34"
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)

Water Quality-Based Limitations

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$):
Only the minimum treatment requirements of secondary treatment will be necessary to protect water quality. The existing limits of 25 mg/L average monthly and 50 mg/L instantaneous maximum will remain in the renewal permit. Past DMRs and inspection reports show that the facility has been consistently achieving concentrations under these limits.

Ammonia (NH_3-N):
NH_3-N calculations were first 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 in-stream NH_3-N criteria used in the attached computer model of the stream:

- Discharge pH = 7 (Default)
- Discharge Temperature = 20^0C (Default)
- Stream pH = 7.0 (Default)
- Stream Temperature = 20^0C (Default)
- Background NH_3-N = 0 (Default)

The model input data and results are attached. The printout of the WQM 7.0 output indicates that at a discharge of 0.0065 MGD, limits (rounded according to the NPDES Technical Guidance 362-0400-001) of 7.0 mg/L NH_3-N as a monthly average and 14.0 mg/L NH_3-N instantaneous maximum are necessary to protect the aquatic life from toxicity effects. Winter limit is 3 times the summer limit. The limits in effect for the previous permit will remain in the proposed permit.

Total Suspended Solids (TSS):
The existing limits of 30 mg/L average monthly and 60 mg/L instantaneous maximum will remain in the renewal permit based on the minimum level of effluent quality attainable by secondary treatment based on 25 Pa. Code § 92a.47. Past DMRs and inspection reports show that the facility has been consistently achieving concentrations under these limits.

Dissolved Oxygen (D.O.):
A minimum D.O. of 5.0 mg/L is required per 25 Pa. Code § 93.7. This is consistent with the previous permit and current Department criteria.

pH:
The effluent discharge pH should remain above 6 and below 9 standard units according to 25 Pa. Code § 95.2(2).

Fecal Coliform:
The recent coliform guidance in 25 Pa. Code § 92a.47(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean (average monthly) and not greater than 1,000/100 ml (IMAX) and 25 Pa. Code § 92a.47(a)(5) requires a winter limit of 2,000/100 ml as a geometric mean (average monthly) and not greater than 10,000/100 ml (IMAX), respectively.

Total Residual Chlorine (TRC):
Based on the attached TRC Excel Spreadsheet calculator, which uses the equations and calculations from the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (ID No. 391-2000-015), the facility's discharge must meet a monthly average limit of 0.23 mg/L and an instantaneous maximum limit of 0.74 mg/L. Based on the DMRs from the past year, the facility has been consistently achieving this limit. Therefore, this limit will remain in the proposed permit.

Chesapeake Bay Strategy:
The Department formulated a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). Sewage discharges have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases I, II, and III) 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 IV (0.2 - 0.4 MGD) will be required to monitor and report TN and TP during permit renewal monthly and Phase V (below 0.2 MGD) will monitor during current permit renewal once a year. However, any facility in Phases IV and V that undergoes expansion is subjected to cap load right away. This plant is classified as a phase V, will be required to monitor and report TP and TN once a year.

Toxic
This is a minor sewage facility receiving domestic wastewater only and the current application does not require sampling of toxic pollutants (or heavy metals) for those facilities with design flows less than 0.1 MGD. Therefore, no reasonable potential analysis for toxic pollutants has been performed for this permit renewal.

Additional Consideration

Flow Monitoring
The requirement to monitor the volume of effluent will remain in the proposed permit per 40 CFR § 122.44(i)(1)(ii).

Monitoring Frequency and Sample Type
The facility currently is required to collect daily effluent grab samples for DO, TRC, and pH; bi-monthly effluent 8-hr composite samples of $CBOD_5$, TSS, and ammonia-nitrogen; bi-monthly effluent grab samples of fecal coliform, annually effluent 8-hr composite samples of TP; and annually effluent calculation samples of TN. Based on the best professional judgement of the author, the existing monitoring frequencies are sufficient and necessary. Therefore, the renewal permit monitoring frequencies will remain the same as those specified in the existing permit.

Antidegradation (93.4)
The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No Exceptional Value Waters are impacted by this discharge.

303d Listed Streams
This discharge is not located on a 303d listed stream segment.

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

Anti-Backsliding

Unless stated otherwise in this fact sheet, all permit requirements proposed in this fact sheet are at least as stringent as existing permit requirements in accordance with 40 CFR §122.44(l)(1).

Existing Effluent Limitations and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Total Annual	Minimum	Average Monthly		Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.23	XXX	0.74	1/day	Grab
$CBOD_5$	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	7.0	XXX	14.0	2/month	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	21	XXX	42	2/month	8-Hr Composite
Total Phosphorus	XXX	Report	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Total Nitrogen	XXX	Report	XXX	Report Annl Avg	XXX	XXX	1/year	Calculation

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	Total Annual	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	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.23	XXX	0.74	1/day	Grab
$CBOD_5$	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	21	XXX	42	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	7.0	XXX	14	2/month	8-Hr Composite
Total Phosphorus	XXX	Report	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Total Nitrogen	XXX	Report	XXX	Report Annl Avg	XXX	XXX	1/year	Calculation

Compliance Sampling Location:

Other Comments:

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Toxics Screening Analysis 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 permit.
☐	Other:

B	C	D	E	F	G
TRC EVALUATION			**Enter Facility Name in E3**		
Input appropriate values in B4:B8 and E4:E7					
0.015	= Q stream (cfs)		0.5	= CV Daily	
0.0065	= Q discharge (MGD)		0.5	= CV Hourly	
30	= no. samples		1	= AFC_Partial Mix Factor	
0.3	= Chlorine Demand of Strear		1	= CFC_Partial Mix Factor	
0	= Chlorine Demand of Discha		15	= AFC_Criteria Compliance Time (min)	
0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	= % Factor of Safety (FOS)			=Decay Coefficient (K)	

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.495	1.3.2.iii	WLA cfc = 0.475
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.184	5.1d	LTA_cfc = 0.276

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.227	AFC
		INST MAX LIMIT (mg/l) = 0.742	

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)

WQM 7.0 MODEL INPUT:

1. Outfall 001 on Unnamed Trib 14178 to Brush Creek
   a. Elevation: 1240 ft
   b. RMI: 0.34 mile
   c. Drainage Area: 0.14 mi.^{2}
   d. Low Flow Yield: 0.11 cfs/mi.^{2}
   e. Discharge Flow: 0.0065 MGD
2.
   a. Elevation: 1170 ft
   b. RMI: 0.10 mile
   c. Drainage Area: 0.15 mi.^{2}
   d. Low Flow Yield: 0.11 cfs/mi.^{2}
   e. Discharge Flow: 0.000 MGD.

Attachment is WQM7.0 data.

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