pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0115363**
Facility Type	**Municipal**	APS ID	**1084048**
Major / Minor	**Minor**	Authorization ID	**1431990**

Applicant and Facility Information

Applicant Name	**Buffalo Township Municipal Sewer Authority**	Facility Name	**Mazeppa Village Sewer System STP**
Applicant Address	2188 Johnson Mill Road Lewisburg, PA 17837-7704	Facility Address	2188 Johnson Mill Road Lewisburg, PA 17837-7704
Applicant Contact	Daryl Beiler, Chairman	Facility Contact	Daryl Beiler, Chairman
Applicant Phone	(570) 966-4004	Facility Phone	(570) 966-4004
Client ID	41099	Site ID	245384
Ch 94 Load Status	Not Overloaded	Municipality	Buffalo Township
Connection Status	No Limitations	County	Union
Date Application Received	March 20, 2023	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

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

Summary of Review

The subject facility is a municipal wastewater treatment plant serving the area of the village of Mazeppa in Buffalo Township, Union County. A map of the discharge location is attached.

Sludge use and disposal description and location(s): The facility's sludge is sent to other wastewater treatment facilities for further processing. Per the application 4.789 tons 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
✓		Keith C. Allison Keith C. Allison / Project Manager	September 26, 2023
✓		N. W. H. Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	September 26, 2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.08
Latitude	40º 58' 29.55"	Longitude	-76º 58' 40.73"
Quad Name	Lewisburg, PA	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Buffalo Creek	Stream Code	18920
NHD Com ID	66920507	RMI	8.21
Drainage Area	78.5 mi^2	Yield (cfs/mi^2)	0.125
Q_{7-10} Flow (cfs)	9.81	Q_{7-10} Basis	USGS gage No. 01555000, Penns Creek at Penns Creek, PA. (1931-2008)
Elevation (ft)	482.1	Slope (ft/ft)	0.00184
Watershed No.	10-C	Chapter 93 Class.	TSF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	PATHOGENS		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Sunbury Municipal Authority		
PWS Waters	Susquehanna River	Distance from Outfall (mi)	Approx. 13

Changes Since Last Permit Issuance: None

Other Comments:

Because there is no Final TMDL for the impairment to Buffalo Creek, no changes to the permit limits or monitoring will be made at this time. Per a review of the facility DMRs, the Mazeppa Village STP generally meets its Fecal Coliform limits. This permit will also include periodic e. coli sampling.

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

Treatment Facility Summary

Treatment Facility Name: Village Of Mazeppa STP

WQM Permit No.	Issuance Date	Permit Covered:
6097401	7/18/1997	Construction of additional 40,000 gpd treatment train and additional collection system serving Vicksburg and Buffalo Crossroads
6093401	3/29/1993	Construction of initial 40,000 GPD extended aeration plant and sewers for Village of Mazeppa

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.08

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.2	140	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: The treatment facility as permitted by WQM Permit Nos. 6093401 and 6097401 consists of bar screen, two equalization tanks, two aeration tanks, two clarifiers, two chlorinators with chlorine contact tanks and two sludge holding tanks in two parallel trains. The first train was permitted by the 1993 WQM permit and the second was added with the 1997 permit.

Compliance History

DMR Data for Outfall 001 (from August 1, 2022 to July 31, 2023)

Parameter	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22
Flow (MGD) Average Monthly	0.043	0.041	0.046	0.047	0.054	0.066	0.08	0.063	0.042	0.038	0.038	0.034
Flow (MGD) Daily Maximum	0.054	0.044	0.056	0.082	0.055	0.080	0.083	0.172	0.062	0.043	0.045	0.038
pH (S.U.) Instantaneous Minimum	7.2	7.1	7.2	7.2	7.2	7.1	7.3	7.2	7.2	7.2	7.2	7.2
pH (S.U.) Instantaneous Maximum	7.8	7.6	7.5	7.5	7.5	7.8	7.9	7.9	7.5	7.5	7.4	7.5
DO (mg/L) Instantaneous Minimum	2.3	2.3	2.1	2.0	1.8	2.4	2.1	2.0	2.4	3.1	2.7	2.6
TRC (mg/L) Average Monthly	0.22	0.25	0.28	0.28	0.17	0.26	0.19	0.11	0.17	0.24	0.21	0.25
TRC (mg/L) Instantaneous Maximum	0.75	0.67	0.75	0.87	0.65	0.60	0.65	0.39	0.52	0.32	0.52	0.71
CBOD5 (lbs/day) Average Monthly	2	2	3	3.0	5	4	2	4	3	2	2	1
CBOD5 (lbs/day) Weekly Average	2	2	4	3.0	6	4	2	4	4	2	3	2
CBOD5 (mg/L) Average Monthly	4.9	4.9	7.2	6.4	10.1	5.9	3.7	9.3	8.7	5.1	7.2	4.7
CBOD5 (mg/L) Weekly Average	5.5	5.4	8.1	7.0	13.9	6.1	4	9.3	10.8	6.2	7.2	6.4
BOD5 (mg/L) Raw Sewage Influent Average Monthly	195	177	170	187	201	222	64	230	214	33	166	146
TSS (lbs/day) Average Monthly	2	4	4	3.0	5	6	4	5	5	4	2	1
TSS (lbs/day) Weekly Average	3	5	5	5.0	8	6	5	5	7	4	2	1
TSS (mg/L) Average Monthly	7	10	11	8.0	11	9	6	13	13	13	6	4

TSS (mg/L) Raw Sewage Influent Average Monthly	239	317	248	291	229	132	125	249	206	275	238	302
TSS (mg/L) Weekly Average	8	15	14	11.0	18	10	8	14	19	13	6	4
Fecal Coliform (No./100 ml) Geometric Mean	34	4	37	5	> 420	176	117	940	38	42	11	4
Fecal Coliform (No./100 ml) Instantaneous Maximum	49	4	108	5	> 2420	214	186	> 2420	40	70	20	6
Ammonia (mg/L) Average Monthly	3.1	0.8	6.2	0.10	0.10	0.1	0.10	0.1	0.19	0.1	0.6	1.88
Ammonia (mg/L) Instantaneous Maximum	4.8	1.5	12.2	0.10	0.10	0.1	0.10	0.1	0.27	0.1	1.1	2.8

Compliance History

Effluent Violations for Outfall 001, from: August 1, 2022 to: July 31, 2023

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	03/31/23	Geo Mean	> 420	No./100 ml	2000	No./100 ml
Fecal Coliform	03/31/23	IMAX	> 2420	No./100 ml	10000	No./100 ml
Fecal Coliform	12/31/22	IMAX	> 2420	No./100 ml	10000	No./100 ml

Compliance History	
Summary of Inspections:	The facility has been inspected periodically by the Department over the past permit term. The most recent inspection on December 22, 2022 noted an eDMR effluent violation but no other operational violations at the time of inspection.
Other Comments:	There are no open violations in eFACTS for Buffalo Township Municipal Sewer Authority.

Existing 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	Weekly Average	Minimum	Average Monthly	Weekly Average	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	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	17	27	XXX	25	40	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab
TSS Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab
TSS	20	30	XXX	30	45	60	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
Total Nitrogen	Report Annl Avg	Report Daily Max	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite
Ammonia	XXX	XXX	XXX	Report	XXX	Report	2/month	8-Hr Composite
Total Phosphorus	Report Annl Avg	Report Daily Max	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.08
Latitude 40º 58' 29.63" **Longitude** -76º 58' 40.10"
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)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
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.

Water Quality-Based Limitations

DO, CBOD5 and NH3-N

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 for the discharge to Buffalo Creek for the previous review and showed that no limitations are necessary beyond the technology-based secondary treatment limits listed above (see Attachment B).

Total Residual Chlorine

The Department uses a modeling spreadsheet to analyze the toxicity of a discharge's TRC in a receiving stream, accounting for available dilution. The attached results of the TRC spreadsheet from the previous review (see Attachment C) show that the existing Technology-based limit of 0.5 mg/l is adequate to protect the receiving stream.

Toxics Management

No further "Reasonable Potential Analysis" was performed to determine additional parameters as candidates for limitations or monitoring for this minor POTW with no industrial influent.

Chesapeake Bay/Nutrient Requirements

According to the Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, this facility is an existing Phase 5 Chesapeake Bay sewage discharger that is not expanding, and as such requires no nutrient loading limits. Annual nutrient monitoring was included in current permit. The average Total Nitrogen concentration over the past permit term was 44.5 mg/L and the Average Phosphorus concentration was 5.0 mg/L. Because the nutrient load has been adequately characterized no additional nutrient monitoring will be required at this time consistent with the Phase III WIP Wastewater Supplement.

Best Professional Judgment (BPJ) Limitations

Comments: None needed beyond the Technology and Water Quality-Based limits noted above.

e. Coli

Quarterly e. coli monitoring will be required at this time due to recent changes to Chapter 93 of the Departments regulations and Department policy.

Anti-Backsliding

No proposed limitations are less stringent than the existing consistent with anti-backsliding provisions of the Clean Water Act and 40 CFR 122.44(I).

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	Weekly Average	Minimum	Average Monthly	Weekly Average	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	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	17	27	XXX	25	40	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab
TSS Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab
TSS	20	30	XXX	30	45	60	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
Ammonia	XXX	XXX	XXX	Report	XXX	Report	2/month	8-Hr Composite
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab

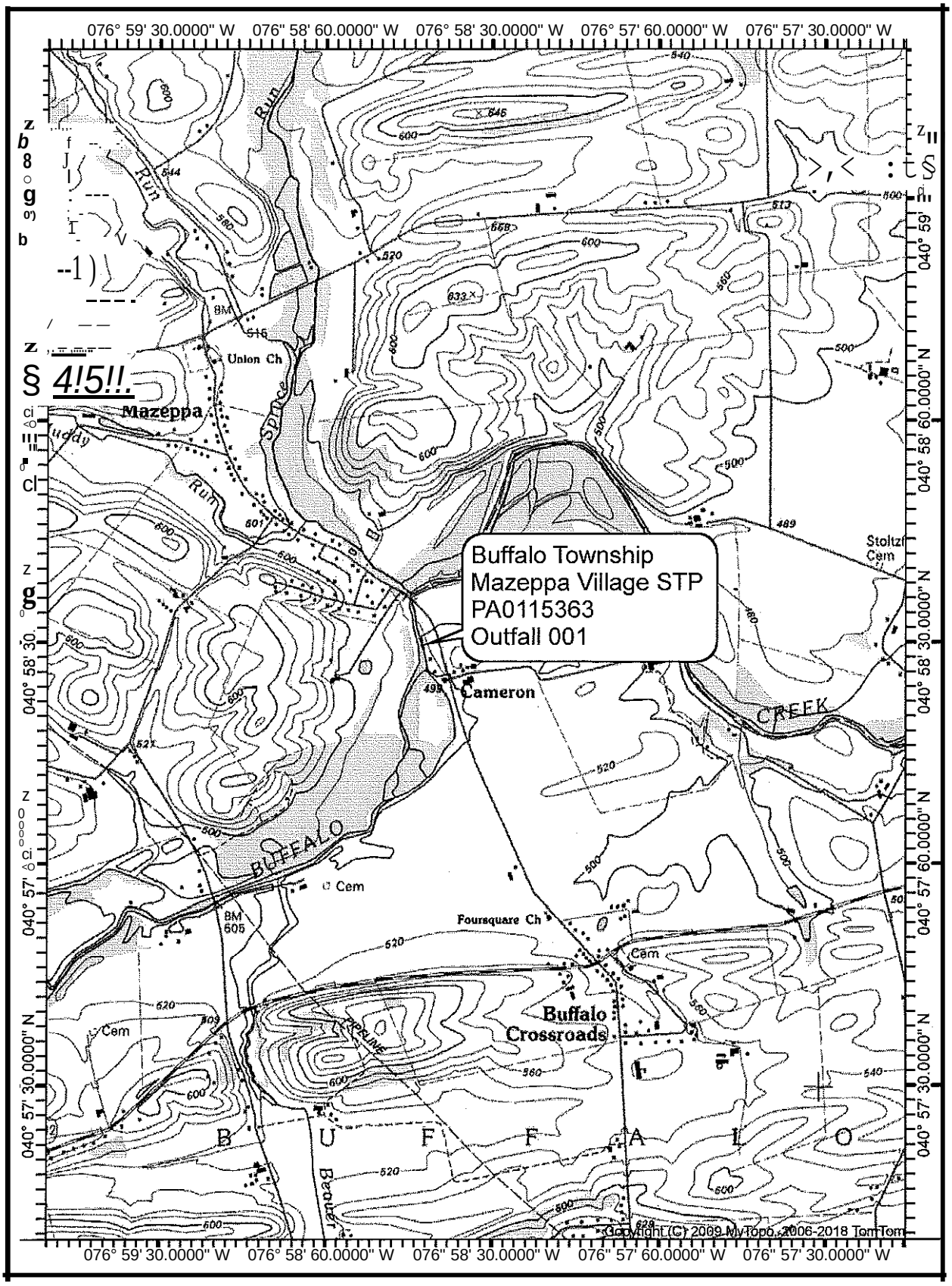
Compliance Sampling Location: Outfall 001

Other Comments: TN and TP monitoring has been removed as mentioned above. E. Coli monitoring is new as mentioned above.

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 Limitations for Individual Sewage Permits, rev. 03/24/2021
☐	Other:

Attachments:

A. Discharge Location Map
B. WQM7.0 Model
C. TRC Model



SCALE 1:24000

0 1000 2000 3000 4000 5000 6000

Feet

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
10C	18920	BUFFALO CREEK	**8.210**	482,10	78,50	0,00000	0,00	

Stream Data

Design Cond.	LFY (efsm)	Trib Flow (cfs)	Stream Flow (efs)	Reh Trav Time (days)	Reh Velocity (fps)	WD Ratio	Reh Width (ft}	Reh Depth (ft)	Tributary Temp ('C)	Tributary pH	Stream Temp ('C)	Stream pH
07-10	0.125	0.00	0.00	0,000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
01-10		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
Buffalo Twp-Maz	PA0115363	0.0800	0.0000	0.0000	0.000	25.00	7.50

Parameter Data

Parameter Name	Disc Cone (mg/L)	Trib Cone (mg/L)	Stream Cone (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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (!Vft)	PWS Withdrawal (m9d)	Apply FC
10C	18920	BUFFALO CREEK	**6.400**	460.00	90.00	0.00000	0.00	i>'J

Stream Data

Design Cond.	LFY (efsm)	Trib Flow (cfs)	Stream Flow (efs)	Reh Trav Time (days)	Reh Velocity (fps)	WD Ratio	Reh Width (ft)	Reh Depth (ft)	Tributary Temp ('C)	Tributary pH	Stream Temp ('C)	Stream pH
Q7-10	0.125	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 (m9d)	Permitted Disc Flow (m9d)	Design Disc Flow (m9d)	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 (m9/L)			
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 Hl£drodl£namic Out uts

SWP Basin	Stream Code	Stream Name
10C	**18920**	**BUFFALO CREEK**

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (fl/ft)	Depth (ft)	Width (fl)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp ('C)	Analysis pH
Q7-10 Flow												
8.210	9.81	0.00	9.81	.1238	0.00231	.762	47.78	62.72	0.27	0.405	20.06	7.00
Q1-10 Flow												
8.210	6.28	0.00	6.28	.1238	0.00231	NA	NA	NA	0.21	0.518	20.10	7.01
Q30-10 Flow												
8.210	13.35	0.00	13.35	.1238	0.00231	NA	NA	NA	0.32	0.342	20.05	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted 01-10 and 030-10 Flows	
WLA Method	EMPR	**Use Inputted W/D Ratio**	☐
01-10/07-10 Ratio	0.64	**Use Inputted Reach Travel Times**	☐
030-10/07-10 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
10C	18920	BUFFALO 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
8.210	Buffalo Twp-Maz	9.57	50	9.57	50	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
8.210	**Buffalo Twp-Maz**	1.91	25	1.91	25	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)		
8.21	**Buffalo Twp-Maz**	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
10C	18920	BUFFALO CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
8.210	0.080	20.062	7.004
Reach Width (ft)	Reach Depth (ft)	**Reach WDRatio**	**Reach Velocity (fps)**
47.777	0.762	62.721	0.273
Reach CBOD5 (mg/L)	Reach Kc (1/days)	Reach NH3-N (mg/L)	**Reach Kn (1/days)**
2.29	0.158	0.31	0.703
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	Reach DO Goal (mg/L)
8.178	6.008	**Tsivoglou**	6
Reach Travel Time (days)			
0.405			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.041	2.27	0.30	8.23
0.081	2.26	0.29	8.23
0.122	2.24	0.29	8.23
0.162	2.23	0.28	8.23
0.203	2.21	0.27	8.23
0.243	2.20	0.26	8.23
0.284	2.19	0.26	8.23
0.324	2.17	0.25	8.23
0.365	2.16	0.24	8.23
0.405	2.14	0.23	8.23

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
10C	**18920**	**BUFFALO 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)
8.210	Buffalo Twp-Maz	PA0115363	0.080	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

TRC EVALUATION

Client		Date	
9.81	= **Q stream (cfsl**	**0.5**	= **CVDailv**
0.08	= **Q discharge (MGD)**	**0.5**	= **CV Hourlv**
30	= **no. samples**	**0.972**	= **AFC Partial.Mix Factor**
0.3	= **Chlorine Demand of Stream**	**1**	= **CFC Partial Mix Factor**
0	= **Chlorine Demand of Discharae**	**15**	= **AFC Criteria Compliance Time /mini**
0.5	= **BAT/BPJ Value**	**720**	= **CFC Criteria Comoliance Time (min)**
	= % **Factor of Safety (FOS)**	**0**	**=Decay Coefficient (K)**

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	**1.3.2.iii**	WLAafc=	24.597	**1.3.2.iii**	WLAcfc=	24.663
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA afc=	9.165	**5.1d**	LTA cfc=	14.338
		WQBEL afc=	**11.282**		WQBEL cfc=	17.648

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	

WLAafc	**(.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)**