pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0252531**
Facility Type	**Municipal**	APS ID	**1010428**
Major / Minor	**Minor**	Authorization ID	**1303762**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Independence Cross Creek Joint Sewer Authority**	Facility Name	**Independence Cross Creek Joint Sewer Authority STP**
Applicant Address	PO Box 156 34 Campbell Street	Facility Address	859 Meadowcroft Road
	Avella, PA 15312		Avella, PA 15312
Applicant Contact	Matthew Leeper, Chairman	Facility Contact	Matthew Leeper, Chairman
Applicant Phone	(724) 507-6464	Facility Phone	(724) 507-6464
Client ID	212551	Site ID	620941
Ch 94 Load Status	Not Overloaded	Municipality	Cross Creek Township
Connection Status	No Limitations	County	Washington
Date Application Received	January 31, 2020	EPA Waived?	Yes
Date Application Accepted	January 31, 2020	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit for a POTW.

Summary of Review

The subject facility is a Publicly Owned Treatment Works serving Independence Township and Cross Creek Township in Washington County.

A map of the discharge location is attached.

Sludge use and disposal description and location(s): The facility's dried sludge is disposed at landfill. Per the application 6.64 dry 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, E.I.T. / Project Manager	February 16, 2021
✓		*Christopher Kriley* Christopher Kriley, P.E. / Environmental Engineer Manager	February 17, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.354
Latitude	40º 17' 2.38"	Longitude	-80º 28' 8.97"
Quad Name	Avella, PA	Quad Code	1602
Wastewater Description:	Sewage Effluent		

Receiving Waters	Cross Creek (WWF)	Stream Code	33001
NHD Com ID	99693184	RMI	12.58
Drainage Area	47 mi^2	Yield (cfs/mi^2)	0.020
Q_{7-10} Flow (cfs)	0.941	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	872	Slope (ft/ft)	0.00528
Watershed No.	20-D	Chapter 93 Class.	WWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		

Nearest Downstream Public Water Supply Intake	West Virginia/Pennsylvania State Line		
PWS Waters	Cross Creek	Distance from Outfall (mi)	5.3

Changes Since Last Permit Issuance: The USGS StreamStats web application was used to determine stream flow.

Other Comments:

The Department considers the PA/WV state line to be the nearest water supply due to no closer water intake occurring in the receiving stream. No downstream water supply is expected to be affected by this discharge at this time with the limitations and monitoring proposed.

Treatment Facility Summary

Treatment Facility Name: Independence Cross Creek Joint Sewer Authority STP

WQM Permit No.	Issuance Date
6308403	Original – 06/04/09
	A-1 – 04/10/12

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia Reduction	Extended Aeration	Ultraviolet	0.354

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.354	650	Not Overloaded	Drying	Combination of methods

Changes Since Last Permit Issuance: WQM Permit No. 6315403 was issued on December 18, 2015 for a sewer extension serving Independence Village and Cross Creek Village.

Other Comments: The treatment facility, as permitted under WQM Permit No. 6308403 Amendment No. 1 consists of an extended aeration plant including flow equalization, aeration, clarification, UV disinfection, aerobic sludge digestion, and sludge drying beds.

Hauled in Waste

Per the application, the permittee has not received any hauled-in wastes over the past three years and does not anticipate receiving any over the next permit term.

Compliance History

DMR Data for Outfall 001 (from January 1, 2020 to December 31, 2020)

Parameter	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20
Flow (MGD) Average Monthly	0.10868	0.08623	0.08724	0.08255	0.07531	0.07437	0.07723	0.09219	0.11427	0.12684	0.11917	0.11023
Flow (MGD) Daily Maximum	0.17900	0.13500	0.11900	0.10050	0.10050	0.14100	0.12800	0.13400	0.22900	0.37600	0.21300	0.22700
pH (S.U.) Minimum	6.7	6.0	6.0	6.5	6.0	6.3	5.9	6.6	6.5	6.5	6.4	6.4
pH (S.U.) Maximum	7.4	7.0	6.6	7.0	6.6	6.9	6.7	6.7	6.8	6.9	6.7	6.7
DO (mg/L) Minimum	4.5	4.3	4.5	5.0	7.5	5.2	5.3	5.0	4.2	4.7	5.1	4.6
CBOD5 (lbs/day) Average Monthly	2.4	1.9	1.7	6.9	2.3	1.3	1.2	2.1	2.0	3.7	2.0	1.5
CBOD5 (lbs/day) Weekly Average	3.4	4.4	2.0	27.6	3.9	1.5	1.5	2.8	2.6	5.8	2.1	1.7
CBOD5 (mg/L) Average Monthly	2.6	2.8	2.4	9.3	3.5	2.0	2.1	3.0	2.1	3.9	2.4	2.0
CBOD5 (mg/L) Weekly Average	3.8	5.1	3.0	37.6	4.9	2.0	2.5	5.3	2.6	5.6	2.9	2.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	69.3	82.6	74.2	57.5	46.9	61.6	39.1	81.7	54.3	63.8	53.1	39.0
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	144.7	135.6	169.8	101.4	50.3	106.6	56.3	135.3	74.1	90.2	80.2	62.2
BOD5 (mg/L) Raw Sewage Influent Average Monthly	72.4	130.7	95.1	74.7	75.2	92.3	69.0	108.2	57.3	71.2	59.6	53.0
TSS (lbs/day) Average Monthly	4.7	3.8	3.7	3.8	3.2	3.3	2.8	3.8	5.7	4.6	4.4	3.6
TSS (lbs/day) Raw Sewage Influent Average Monthly	223.1	86.3	208.3	155.9	131.5	156.6	102.8	190.2	166.2	158.4	179.5	143.8
TSS (lbs/day) Raw Sewage Influent Daily Maximum	304.9	149.2	290.0	163.1	185.1	257.0	156.1	284.8	227.5	176.5	252.3	206.0
TSS (lbs/day) Weekly Average	5.8	6.9	4.3	3.9	4.0	3.8	3.8	5.0	9.8	5.3	5.1	4.3

TSS (mg/L) Average Monthly	5.0	5.8	5.0	5.0	5.0	5.0	5.0	5.0	6.0	5.0	5.0	5.0
TSS (mg/L) Raw Sewage Influent Average Monthly	236.0	126.5	273.0	203.2	213.0	229.5	182.4	251.0	176.0	183.0	204.0	201.6
TSS (mg/L) Weekly Average	5.0	8.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0	5.0	5.0
Fecal Coliform (CFU/100 ml) Geometric Mean	1	7	1	2	7	2	4	1	1	2	2	1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	2	192	1	8	62	13	187	1	2	3	9	7
UV Transmittance (%) Minimum	1.1	1.2	1.0	2.0	1.5	2.0	2.0	1.4	1.4	1.0	2.0	1.0
UV Transmittance (%) Average Monthly	2.7	2.0	2.6	2.3	2.3	2.6	2.9	2.3	2.2	2.7	2.8	2.8
Ammonia (lbs/day) Average Monthly	0.6	0.6	1.2	0.5	0.7	1.1	0.5	2.0	2.0	8.1	5.4	4.0
Ammonia (mg/L) Average Monthly	0.6	0.8	1.7	0.7	1.2	1.6	0.9	2.5	2.3	8.1	5.9	5.5

Compliance History, Cont'd

Effluent Violations for Outfall 001, from: January 1, 2020 To: December 31, 2020

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
pH	06/30/20	Min	5.9	S.U.	6.0	S.U.

Summary of Inspections:	According to eFACTS, the most recent inspection of the facility by the Department was on July 3, 2017. This inspection identified no violations.
Other Comments:	A query in WMS found no open violations for Independence Cross Creek Joint Sewer Authority in eFACTS.

Existing Effluent Limitations and Monitoring Requirements

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	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
CBOD5	70	115	XXX	25	40	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	85	130	XXX	30	45	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
UV Transmittance (%)	XXX	XXX	Report	Report	XXX	XXX	1/day	Measured
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Ammonia Nov 1 - Apr 30	62	XXX	XXX	21.0	XXX	42	1/week	8-Hr Composite
Ammonia May 1 - Oct 31	20	XXX	XXX	7.0	XXX	14	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.354
Latitude 40º 17' 2.00" **Longitude** -80º 28' 9.00"
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)

Comments: The above limitations are applicable and included in the existing permit and will remain.

Water Quality-Based Limitations

DO, CBOD5 and NH3-N

The facility has existing water quality-based limits for ammonia nitrogen and a BPJ limit of 4.0 mg/L for Dissolved Oxygen (DO). The Department uses the WQM7.0 model to evaluate point source discharges of 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 of the discharge to Cross Creek and showed that more stringent ammonia-nitrogen limitations are necessary to protect the receiving stream (see Attachment B). As in previous approvals, the winter (November through April) ammonia limitation was determined by a factor of three times the summer (May through October) limit. The more stringent limitations are the result of the lower stream flow used than in previous reviews. A review of the recent DMR indicates that the limitation is achievable.

Water Quality Toxics Management

No additional “Reasonable Potential Analysis” was performed to determine additional toxic parameters as potential candidates for limitations or monitoring for the minor wastewater treatment plant discharge with no significant industrial users.

Nutrient Requirements

Annual Nutrient monitoring was included in the existing permit and will remain. A review of the nutrient monitoring for the past five years found the Total Nitrogen and Total Phosphorus to average 7.5 mg/L and 5.8 mg/L, respectively.

Best Professional Judgment

No additional BPJ limitations are necessary beyond the DO limit noted above.

Anti-Backsliding

No proposed limitations were made less stringent consistent with the anti-degradation requirements 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	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
CBOD5	70	115	XXX	25	40	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	85	130	XXX	30	45	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
UV Transmittance (%)	XXX	XXX	Report	Report	XXX	XXX	1/day	Measured
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Ammonia Nov 1 - Apr 30	50.7	XXX	XXX	17.2	XXX	34.4	1/week	8-Hr Composite
Ammonia May 1 - Oct 31	16.9	XXX	XXX	5.74	XXX	11.4	1/week	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	Weekly Average	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall 001

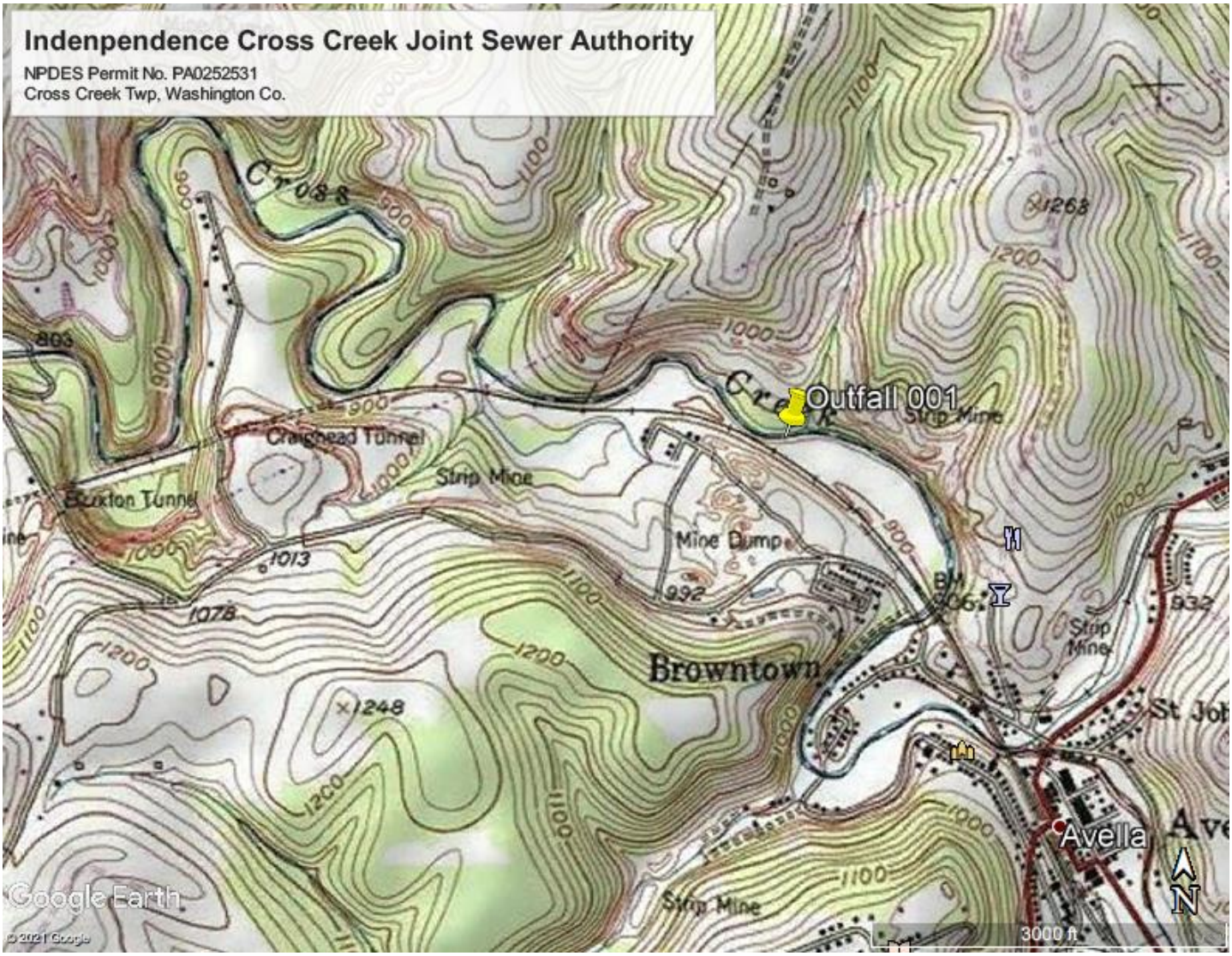
Other Comments: The limitations and monitoring above are unchanged from the existing permit except for the more stringent ammonia-nitrogen limits as explained above.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	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. 8/23/13
☐	Other: USGS StreamStats, https://streamstats.usgs.gov/ss/

Attachments:

A. Discharge Location Map
B. WQM7.0 Model

Permit No. PA0252531



Permit No. PA0252531

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
20D	33001	CROSS CREEK	12.580	872.00	47.00	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	0.020	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
Independence Cr	PA0252531	0.3540	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	4.00	8.24	0.00	0.00
NH3-N	7.00	0.00	0.00	0.70

Permit No. PA0252531

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
20D	33001	CROSS CREEK	11.970	855.00	48.00	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	0.020	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	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	5		

Permit No. PA0252531

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20D	33001	CROSS 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
12.580	Independence Cr	8.14	14	8.14	14	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
12.580	Independence Cr	1.72	5.74	1.72	5.74	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)		
12.58	Independence Cr	25	25	5.74	5.74	4	4	0	0

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20D	33001	CROSS 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												
12.580	0.94	0.00	0.94	.5476	0.00528	.587	22.42	38.2	0.11	0.330	21.84	7.00
Q1-10 Flow												
12.580	0.60	0.00	0.60	.5476	0.00528	NA	NA	NA	0.10	0.381	22.38	7.00
Q30-10 Flow												
12.580	1.28	0.00	1.28	.5476	0.00528	NA	NA	NA	0.13	0.294	21.50	7.00

Permit No. PA0252531

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20D	33001	CROSS CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
12.580	0.354	21.841	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
22.424	0.587	38.198	0.113
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
10.47	1.270	2.11	0.807
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.681	5.920	Tsivoglou	5
Reach Travel Time (days)			
0.330			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.033	10.00	2.06	6.20
0.066	9.55	2.00	5.84
0.099	9.13	1.95	5.58
0.132	8.72	1.90	5.39
0.165	8.33	1.85	5.27
0.198	7.96	1.80	5.20
0.231	7.61	1.75	5.17
0.264	7.27	1.71	5.17
0.297	6.94	1.66	5.20
0.330	6.64	1.62	5.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20D	33001	CROSS 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)
12.580	Independence Cr	PA0252531	0.354	CBOD5	25		
				NH3-N	5.74	11.48	
				Dissolved Oxygen			4