Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0038482**
Facility Type	**Municipal**	APS ID	**1104396**
Major / Minor	**Minor**	Authorization ID	**1468506**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Fox Township Sewer Authority**	Facility Name	**Fox Township STP**
Applicant Address	116 Irishtown Road PO Box 186	Facility Address	129 Gahr Road
	Kersey, PA 15846-2608		Kersey, PA 15846
Applicant Contact	Jerry Zimmerman	Facility Contact	
Applicant Phone	(814) 885-6552	Facility Phone	(814) 885-6156
Client ID	112577	Site ID	271118
Ch 94 Load Status	Not Overloaded	Municipality	Fox Township
Connection Status	No Limitations	County	Elk
Date Application Received	December 29, 2023	EPA Waived?	Yes
Date Application Accepted	January 19, 2024	If No, Reason	

Purpose of Application: Renewal of existing NPDES Permit

Summary of Review

The Fox Township Sewer Authority (FTSA) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of a NPDES permit for the Fox Township Sewer Authority STP. The permit was originally issued on June 27, 2019, with an effective date of July 1, 2019. The permit expired on June 30, 2024, but the terms and conditions of the permit have been administratively extended since that time.

Based on the review outlined in this fact sheet, it is recommended that the permit be drafted, and a notice of the draft permit be published in the *Pennsylvania Bulletin* for public comments for 30 days.

Sludge use and disposal description and location(s): Noble Environmental' s Greentree Landfill

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		*Aaron Baar* Aaron Baar / Project Manager	June 8, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	June 9, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.4
Latitude	41º 21' 55.53"	Longitude	-78º 36' 52.21"
Quad Name	0817	Quad Code	Kersey
Wastewater Description:	Sewage Effluent		

Receiving Waters	Unnamed Tributary to Daguscahonda Run (CWF)	Stream Code	50483
NHD Com ID	102666327	RMI	0.43
Drainage Area	1.09 sq. mi.	Yield (cfs/mi^2)	0.0562
Q_{7-10} Flow (cfs)	0.0613	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1875.85	Slope (ft/ft)	
Watershed No.	17-A	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	METALS		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Daguscahonda Run Watershed TMDL

Background/Ambient Data		Data Source
pH (SU)	7.0	Assumed, default value
Temperature (°F)	20	CWF, default value
Hardness (mg/L)	100	Assumed, default value
Other: Ammonia (mg/L)	0.1	Assumed, default value

Nearest Downstream Public Water Supply Intake		PA American Water Company - Clarion	
PWS Waters	Clarion River	Flow at Intake (cfs)	90.7
PWS RMI	33.3	Distance from Outfall (mi)	~71

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001*	Design Flow (MGD)	.4
Latitude	41º 25' 16.4"	Longitude	-78º 38' 39.6"
Quad Name	0817	Quad Code	Kersey
Wastewater Description:	Sewage Effluent		

Receiving Waters	Elk Creek (CWF)	Stream Code	50459
NHD Com ID	102665559	RMI	6.92
Drainage Area	47.1 sq. mi.	Yield (cfs/mi^2)	0.146921
Q_{7-10} Flow (cfs)	3.37	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1471.32	Slope (ft/ft)	
Watershed No.	17-A	Chapter 93 Class.	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	Final	Name	Elk Creek TMDL (Elk County) 50459

Background/Ambient Data		Data Source
pH (SU)	7.0	Assumed, default value
Temperature (°F)	20	CWF, default value
Hardness (mg/L)	100	Assumed, default value
Other: Ammonia (mg/L)	0.1	Assumed, default value

Nearest Downstream Public Water Supply Intake		PA American Water Company - Clarion	
PWS Waters	Clarion River	Flow at Intake (cfs)	90.7
PWS RMI	33.3	Distance from Outfall (mi)	~70.5

Comments

For modelling purposes, Elk Creek is considered to be the receiving water in this Protection Report while Daguscahonda Run is considered to be the outfall (001*) with a Q7-10 flow of 0.4 mgd – see the Water Quality-Based Limitations Section below for a more in-depth description of the modelling for this draft permit.

Drainage Area

The discharge (001*) is to Elk Creek at RMI 6.92. A drainage area upstream of the discharge is determined to be 47.1 sq.mi. according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/.

Stream Flow

According to StreamStats, Elk Creek below the Daguscahonda Run watershed has a Q_{7-10} of 3.37 cfs and a Q_{30-10} of 4.36 cfs. This information was used to obtain a Low Flow Yield (LFY), and a chronic Q_{30-10}:Q_{7-10} ratio for the discharge point as follows (Guidance No. 391-2000-023).

Q_{7-10} = 3.37 cfs
Q_{30-10} = 4.36 cfs
Q_{30-10}:Q_{7-10} = 4.36 cfs / 3.37 cfs = 1.2938
LFY = 3.37 cfs/47.1 mi^2 = 0.0715 cfs/mi^2

For WQM modelling purposes, the default acute (Q_{1-10}) exposure stream value of 0.64 cfs was utilized in the absence of other information.

Elk Creek

25 Pa Code §93.9 classifies the receiving water, Elk Creek, with a Cold-Water Fishery (CWF) Existing Use designation. 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. The discharge is in a stream segment listed as not fully attaining uses.

Local Watershed Total Maximum Daily Loads (TMDLs)

According to PA's 2024 integrated water quality monitoring and assessment report, UNT to Daguscahonda Run in the vicinity of the point of discharge is currently assessed for aquatic life and fish consumption. The assessment found aquatic life in the waterway to be impaired due to acid mine drainage and fish consumption to be impaired due to the atmospheric deposition of mercury. The aquatic life evaluation is listed as Category 4a in the 2024 integrated report, indicating that the water is impaired for one or more uses not needing a TMDL because a TMDL has been completed. The fish consumption evaluation is listed as Category 5 in the 2024 Integrated Report, indicating that the water may be impaired for one or more uses by a pollutant that requires the development of a TMDL.

According to PA's 2024 integrated water quality monitoring and assessment report, Elk Creek in the vicinity of the point of discharge is currently assessed for aquatic life and fish consumption. The assessment found aquatic life in the waterway is supported but that fish consumption to be impaired due to the atmospheric deposition of mercury. The aquatic life evaluation is listed as Category 2 in the 2024 integrated report, indicating that the water is meeting some but not all uses. The assessment status of the remaining uses may be unknown because data are insufficient to assess the water, or it may be impaired. The fish consumption evaluation is listed as Category 5 in the 2024 Integrated Report, indicating that the water may be impaired for one or more uses by a pollutant that requires the development of a TMDL.

Both the existing Elk Creek TMDL (EPA Approved June 20, 2006) and the Daguscahonda Run Watershed TMDL (EPA Approved March 28, 2005) have been taken into consideration during this review.

Public Water Supply Intake

The nearest downstream public water supply intake is the PA American Water Company - Clarion intake, locate on the Clarion River approximately 71 miles from the point of discharge. Considering the nature of the discharge and distance, the discharge is not expected to impact the water supply.

Class A Wild Trout Streams

The receiving stream is not a Class A Wild Trout stream; therefore, no Class A Wild Trout Fishery is impacted by this discharge.

Treatment Facility Summary				
Treatment Facility Name: Fox Township STP				
WQM Permit No.	**Issuance Date**			
2402401 A-1	July 22, 2010			
2402401	November 26, 2002			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Aerated Lagoon	Gas Chlorine	0.4
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.4	734.0	Not Overloaded	Aerobic Digestion	Landfill

FTSA owns and operates the wastewater treatment facility located at 129 Gahr Road (Fox Township, Elk County); the facility only serves Fox Township. The application states that the facility does not accept any industrial wastewater, only sanitary wastewater from 735 residential customers and an identified number of commercial/industrial users connected to the system. With an annual average design flow and hydraulic design capacity of 0.04 MGD, the treatment process, as described in the application, is configured as follows:

Raw Influent Screening → Oxidation Ditch → Secondary Clarification → Chlorine Contact Tank → Outfall 001

The facility utilizes soda ash for pH adjustment and an unidentified polymer to condition the sludge for dewatering. Solids handling is facilitated by a belt filter press.

Compliance History	
Summary of DMRs:	DMR results for the past year are presented below.
Summary of Inspections:	Since the last renewal of the facility's NPDES permit, the following inspections have been logged: March 13, 2024: An Incidence Inspection was conducted by Melanie Lewis. A wastewater release from a Wal-Mart parking lot manhole, on March 8, 2024 was discussed. No violations were noted. December 14, 2022: A CEI was conducted by Alan Poyer. No new violations were noted, but the following unresolved violations were listed: 1. 25 Pa. Code 92a.41(a)(10): Failure to utilize approved analytical methods. % solids for reporting sludge disposal on sludge/biosolids form should be determined periodically through laboratory testing. An acceptable form is method 2540 in Standard Methods for the Examination of Water and Wastewater,18th edition. Authority was conducting onsite analysis without laboratory accreditation. Mr Zimmerman stated beginning in January 2023 % solid testing will be done by DEP certified lab. 2. 25 Pa. Code 92a.41(a)(12): Failure to submit monitoring reports or properly complete monitoring reports. Operator is currently using a in-house spreadsheet. Mr. Zimmerman states he will begin using the Department's permit required Influent process control form starting in January 2023. 3. 25 Pa. Code 92a.41(a)(12): Failure to submit a required DMR supplemental report. Influent is reported currently on effluent form will begin using Influent form in Jan. 23. 4. 25 Pa. Code 92a.61(f)(1): Failure to properly document monitoring activities and results. Operator will begin completing/submitting Influent supplemental forms beginning January 2023. 5. 25 Pa. Code 92a.61(f)(1): Failure to properly document monitoring activities and results. Operator is reporting max CBOD 5 and TSS values instead of weekly average for loading in October 2022 DMR . Mr. Zimmerman states he will do revision in EDMR to correct reporting issue. Various recommendations were noted.

Other Comments: As of June 8, 2025, there are no open violations associated with this facility.

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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	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	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	83.4	133	XXX	25.0	40.0	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	100	150	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-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
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	Report	1/month	24-Hr Composite
Ammonia May 1 - Oct 31	60.0	XXX	XXX	18.0	XXX	36	1/month	24-Hr Composite
Total Phosphorus	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Aluminum	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	Report	1/year	24-Hr Composite
Total Copper	0.20	XXX	XXX	0.06	XXX	0.15	1/month	24-Hr Composite
Total Iron	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	Report	1/year	24-Hr Composite
Total Manganese	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	Report	1/year	24-Hr Composite

Compliance Sampling Location: Outfall 001

Compliance History

DMR Data for Outfall 001 (from May 1, 2024 to April 30, 2025)

Parameter	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24
Flow (MGD) Average Monthly	0.212	0.240	0.221	0.183	0.201	0.149	0.129	0.128	0.167	0.142	0.152	0.171
Flow (MGD) Weekly Average	0.250	0.328	0.310	0.230	0.228	0.172	0.144	0.136	0.217	0.167	0.180	0.189
pH (S.U.) Instantaneous Minimum	7.0	6.8	6.7	6.9	6.7	6.6	6.6	6.6	6.8	6.7	6.6	6.6
pH (S.U.) Instantaneous Maximum	7.3	7.2	7.1	7.2	7.1	7.2	7.2	7.3	7.0	7.1	7.1	7.0
DO (mg/L) Instantaneous Minimum	7.0	7.3	7.4	7.1	6.7	6.0	5.6	5.4	5.4	5.2	5.6	6.4
TRC (mg/L) Average Monthly	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
TRC (mg/L) Instantaneous Maximum	0.5	0.5	0.5	0.4	0.5	0.5	0.3	0.3	0.4	0.5	0.4	0.51
CBOD5 (lbs/day) Average Monthly	3.2	4.7	3.9	0.5	4.1	2.9	2.3	2.1	2.8	3.0	4.0	3.1
CBOD5 (lbs/day) Weekly Average	3.9	8.1	6.1	5.4	4.2	3.4	3.1	2.2	3.7	4.0	4.9	3.8
CBOD5 (mg/L) Average Monthly	2.0	2.5	2.3	2.0	2.4	2.5	2.2	2.0	2.0	2.6	3.0	2.3
CBOD5 (mg/L) Weekly Average	2.0	4.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	3.0	4.0	3.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	208	227	231	198	227	247	275	211	214	134	143	247
BOD5 (mg/L) Raw Sewage Influent Average Monthly	145	128	137	156	137	211	268	204	150	116	107	181
TSS (lbs/day) Average Monthly	5	8	6	4	7	4	3	3	4	3.0	4.0	4.0

TSS (lbs/day) Raw Sewage Influent Average Monthly	230	257	320	216	285	362	274	207	244	286	364	338
TSS (lbs/day) Weekly Average	6	14	10	11	8	5	3	3	6	4.0	4.0	5.0
TSS (mg/L) Average Monthly	3.0	4.0	3.5	3.0	4.2	3.0	3.0	3.0	3.0	3.0	3.0	3.0
TSS (mg/L) Raw Sewage Influent Average Monthly	162	140	185	175	172	318	265	198	172	258	270	239
TSS (mg/L) Weekly Average	3.0	7.0	5.0	6.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Fecal Coliform (No./100 ml) Geometric Mean	1.6	3	8.9	2.0	1.6	2.9	11	14.1	1.4	3.5	4.0	7.90
Fecal Coliform (No./100 ml) Instantaneous Maximum	4	12	31	4	5	15	1986	111	4.0	17	16	28
Total Nitrogen (lbs/day) Average Quarterly		12.57			11.4			8.80			10.7	
Total Nitrogen (mg/L) Average Quarterly		6.18			7.36			9.02			8.45	
Ammonia (lbs/day) Average Monthly	10.5	1.4	1.4	8.9	5.1	1.1	0.5	0.5	0.7	0.6	1.0	1.2
Ammonia (mg/L) Average Monthly	6.6	0.8	0.8	7.0	3.0	0.9	0.5	0.5	0.5	0.5	0.8	0.9
Ammonia (mg/L) Instantaneous Maximum	8.94	1.4	1.12	9.53	6.74	1.92						
Total Phosphorus (lbs/day) Average Quarterly		2.82			6.67			3.61			8.01	
Total Phosphorus (mg/L) Average Quarterly		1.39			4.3			3.7			6.32	
Total Aluminum (lbs/day) Annual Average					0.02							
Total Aluminum (mg/L) Annual Average					0.013							

Total Aluminum (mg/L) Instantaneous Maximum					0.013							
Total Copper (lbs/day) Average Monthly	0.009	0.01	0.01	0.007	0.01	0.03	0.02	0.02	0.02	0.01	0.01	0.01
Total Copper (mg/L) Average Monthly	0.006	0.006	0.007	0.006	0.009	0.03	0.02	0.02	0.01	0.01	0.01	0.01
Total Iron (lbs/day) Annual Average					0.488							
Total Iron (mg/L) Annual Average					0.315							
Total Iron (mg/L) Instantaneous Maximum					0.315							
Total Manganese (lbs/day) Annual Average					0.11							
Total Manganese (mg/L) Annual Average					0.072							
Total Manganese (mg/L) Instantaneous Maximum					0.072							

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .4
Latitude 41º 21' 54.00" **Longitude** -78º 36' 53.00"
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: These standards apply, subject to water quality analysis and BPJ where applicable.

Water Quality-Based Limitations

Comments

The receiving water, UNT to Daguscahonda Run, is affected by Abandoned Mine Drainage (AMD). In accordance with § 95.5 of the PA Code, sewage wastes discharged to waters polluted by abandoned coal mine drainage are required to receive secondary treatment. Secondary treatment, per § 92a.47, includes:

1. Monthly average discharge limitation for BOD_5 and TSS may not exceed 30 milligrams per liter. If $CBOD_5$ is specified instead of BOD_5 the limitation may not exceed 25 milligrams per liter.
2. Weekly average discharge limitation for BOD_5 and TSS may not exceed 45 milligrams per liter for POTW facilities. If $CBOD_5$ is specified instead of BOD_5 the limitation may not exceed 40 milligrams per liter.
3. On a concentration basis, the monthly average percent removal of BOD_5 or $CBOD_5$, and TSS, must be at least 85% for POTW facilities.
4. From May through September, a monthly average discharge limitation for fecal coliform of 200/100 mL as a geometric mean and an instantaneous maximum effluent limitation not greater than 1,000/100 mL.
5. From October through April, a monthly average discharge limitation for fecal coliform of 2,000/100 mL as a geometric mean and an instantaneous maximum effluent limitation not greater than 10,000/100 mL.
6. Provision for the disposal or beneficial use of sludge in accordance with applicable Department regulations.
7. Compliance with § 95.2(1) and (2) (relating to effluent standards for industrial waste).
8. Compliance with § 92a.48 (b) (relating to industrial waste permit) if chlorine is used.

Previous renewals of this permit have analyzed the impact of the discharge from the Fox Township STP on Elk Creek immediately downstream from the confluence of Elk Creek and Daguscahonda Run. The entirety of the Daguscahonda Run watershed is currently impaired for aquatic life. Elk Creek immediately below the confluence with Daguscahonda Run is the first water downstream of the Fox Township STP that has been determined to be attaining uses and supporting aquatic life. Therefore, in accordance with previous renewals of this permit, discharge limits for the Fox Township STP have been developed to be protective of aquatic life in Elk Creek downstream of the confluence with Daguscahonda Run.

In accordance with previous renewals, the flow rate from the Daguscahonda Run watershed into Elk Creek has been assumed in this Protection Report to only be comprised of Fox Township STP effluent at the treatment plant's design flow rate of 0.4 mgd.

As stated previously, for modelling purposes Elk Creek is considered to be the receiving water in this Protection Report while Daguscahonda Run is considered to be the outfall (001*) with a Q7-10 flow of 0.4 mgd – see below for a description of the modelling for this draft permit.

CBOD5, NH3-N and Dissolved Oxygen (DO)

WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's guidance no. 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. The model was utilized using data derived by USGS StreamStats and past permits.

Modelling was conducted in two phases. Phase 1 entailed an evaluation of the decay of BOD5, Ammonia and DO between RMI 0.43 and 0.001 of UNT Daguscahonda at existing discharge limits. Phase 2 took the model results from Phase 1, attributed the resulting loading to the discharge of Daguscahonda Run into Elk Creek, and the model was re-run the model with Elk Creek as the receiving water and Daguscahonda Run as a pseudo-outfall into Elk Creek.

The model output indicated that no change was recommended to CBOD5, Ammonia or DO at the pseudo-outfall. In accordance with previous permits, this conclusion demonstrates that current discharges from the Fox Township STP are still protective of water quality in Elk Creek.

See attached for model inputs and outputs.

Toxics

A reasonable potential (RP) analysis was done for Total Copper, Total Lead and Total Zinc using the sampling results provided with the application. Additionally, a RP analysis was also completed for Total Aluminum, Total Iron and Total Manganese since these parameters have existing monitoring requirements due to the presence of AMD. The Department's Toxics Management Spreadsheet (Version 1.4) was used to perform the RP analysis for these parameters at a pH of 6.8 and a discharge hardness of 100 mg/L. The sample sizes for all analyzed parameters were less than 10, so the maximum reported effluent concentration was utilized in the analysis. The analysis indicates that monitoring requirements for Total Copper and Total Zinc are appropriate.

☑ ***CRL*** CCT (min): 14.416 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	Report	Report	Report	Report	Report	mg/L	0.046	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	mg/L	0.36	AFC	Discharge Conc > 10% WQBEL (no RP)

In conformity with the Department's SOP for Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers (SOP No. BCW-PMT-037), the Department proposes to establish monitoring requirements in the draft permit for Total Zinc due to effluent concentrations exceeding 10% of the WQBEL (i.e., RP is demonstrated). In conformity with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (PA Doc No. 362-0400-001), Table 6-3 (plant design flow = 0.4 mgd,), weekly monitoring of Total Zinc is proposed.

Due to anti-backsliding provisions, the existing discharge limit for Total Copper and the existing monitoring requirements for Total Aluminum, Total Iron and Total Manganese will remain unchanged from the previous renewal of this permit.

The full TMS report is presented at the end of this report.

E. Coli Monitoring

In conformity with the Department's *Establishing Effluent Limitations for Individual Sewage Permits* (SOP No. BCW-PMT-033) and as authorized by § 92a.61 of the PA Code, quarterly E. Coli monitoring has been proposed in this permit. The collection method will be via grab sample.

Best Professional Judgment (BPJ) Limitations

Total Residual Chlorine

Since chlorine is used for disinfection, Total Residual Chlorine (TRC) effluent levels must be regulated in accordance with 25 Pa Code §92a.48(b). DEP's TRC_CALC worksheet is utilized to determine if the existing BAT TBEL is still appropriate. The worksheet indicates that the existing limits of 0.5 mg/L (average monthly) and 1.6 mg/L (IMAX) are still protective of water quality.

The Department's TRC_CALC worksheet is presented at the end of this report.

Total Phosphorus & Total Nitrogen

DEP's SOP no. BPNPSM-PMT-033 (Establishing Effluent Limitations for Individual Sewage Permits) recommends monitoring requirements for Total Phosphorus and Total Nitrogen for all sewage facilities. Therefore, routine monitoring for Total Phosphorus and Total Nitrogen are recommended to be continued in this permit. Sampling frequency for TP and TN is currently required 1/quarter.

Additional Considerations

Flow Monitoring

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

Monitoring Frequency and Sample Type

The existing permit currently has monthly concentration and mass discharge limits for Ammonia and Total Copper. The Department's Guidance Document 362-0400-001 (Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits, Table 6.3) recommends sampling these parameters 1/week. The draft permit proposes changing the sampling frequency of both Ammonia and Total Copper to 1/week.

The existing permit requires the permittee to collect 24-hour composite samples of Ammonia (Nov 1- Apr 30), Total Aluminum, Total Iron and Total Manganese, but requires the reporting of instantaneous maximum sampling results. Instantaneous maximum sampling results which would only be appropriate for grab samples. This permit proposes the removal of the instantaneous maximum reporting requirement since there is no associated sampling requirement for these parameters. This change constitutes permissible backsliding on the grounds that the reporting requirement was imposed erroneously. The same number of samples are required to be collected and the limits for these parameters remain unchanged.

Unless discussed otherwise above, the permit's monitoring frequency and sample type for all parameters will remain unchanged from the last permit renewal.

Antidegradation Requirements

All effluent limitations and monitoring requirements have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected.

Anti-backsliding Requirement

All effluent limits proposed in this fact sheet are as stringent as effluent limits specified in the existing permit renewal unless noted otherwise above. This approach is in accordance with 40 CFR §122.44(l(1).

Annual Fees

An annual fee clause is continued in the permit in accordance with 25 Pa. Code § 92a.62. The facility covered by the permit is classified in the Minor Sewage Facility >=0.05 and <1 MGD fee category, which has an annual fee of $1,000.

Mass Loading Limitations

Unless stated otherwise in this fact sheet, mass loading effluent limits are calculated based on the formula: design flow (average annual) (MGD) x concentration limit (mg/L) at design flow x conversion factor (8.34).

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" (386-0400-001), 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	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	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	83.4	133	XXX	25.0	40.0	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	100	150	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-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
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	Report	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	60.0	XXX	XXX	18.0	XXX	36	1/week	24-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)	Required
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum	Measurement Frequency	Sample Type
Total Phosphorus	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Aluminum	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	24-Hr Composite
Total Copper	0.20	XXX	XXX	0.06	XXX	0.15	1/week	24-Hr Composite
Total Iron	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	24-Hr Composite
Total Manganese	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	24-Hr Composite
Total Zinc	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001

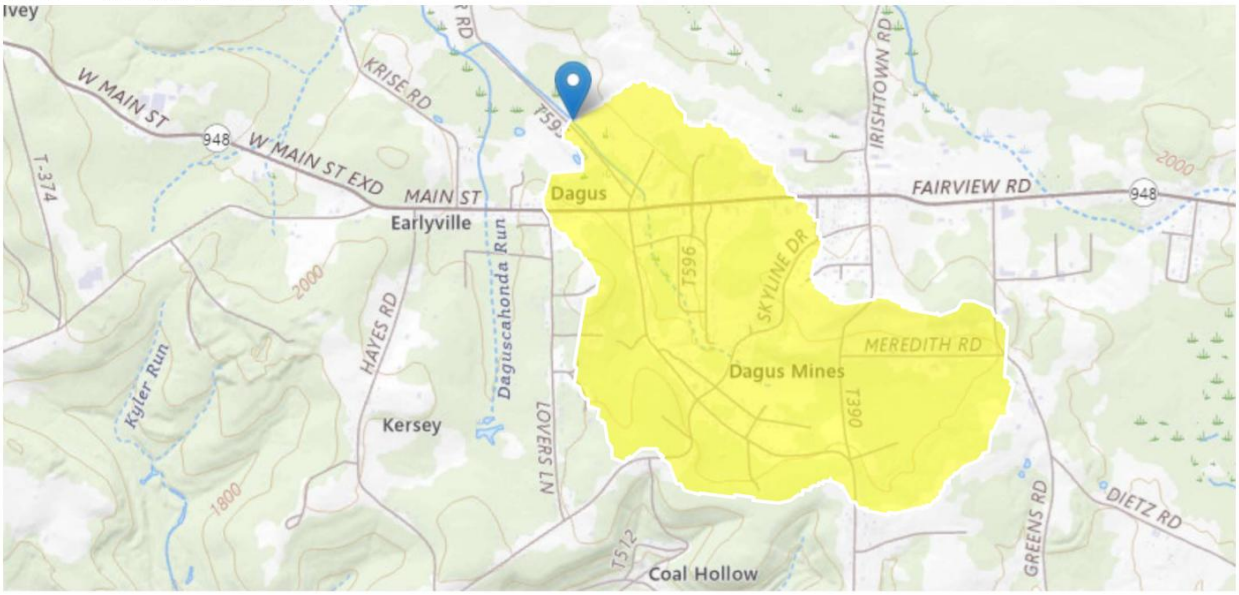
Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:


Daguscahonda Run
Gahr Rd
Old RR
Old RR
Old RR
310015 - DISCHARGE POINT
Gahr Rd
Krise Rd
Sheeley Rd
Uhl Rd
Black Cherry Rd
Beisinal Ln
Kersey
Fox Twp
Main
948
W Main St
Earlyville
Dagus
Main St
948
Main St
948
Lipsey Ln
Hemlock Lane Ext
Spruce Ln
Taylor St
Skyline Dr

Outfall 001

StreamStats Report

Region ID: PA
Workspace ID: PA20250524170523171000
Clicked Point (Latitude, Longitude): 41.36541, -78.61447
Time: 2025-05-24 13:05:42 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.09	square miles
ELEV	Mean Basin Elevation	1960	feet
PRECIP	Mean Annual Precipitation	45	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.09	square miles	2.33	1720
ELEV	Mean Basin Elevation	1960	feet	898	2700
PRECIP	Mean Annual Precipitation	45	inches	38.7	47.9

Low-Flow Statistics Disclaimers [Low Flow Region 3]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.145	ft^3/s
30 Day 2 Year Low Flow	0.214	ft^3/s
7 Day 10 Year Low Flow	0.0613	ft^3/s
30 Day 10 Year Low Flow	0.0851	ft^3/s
90 Day 10 Year Low Flow	0.127	ft^3/s

Low-Flow Statistics Citations

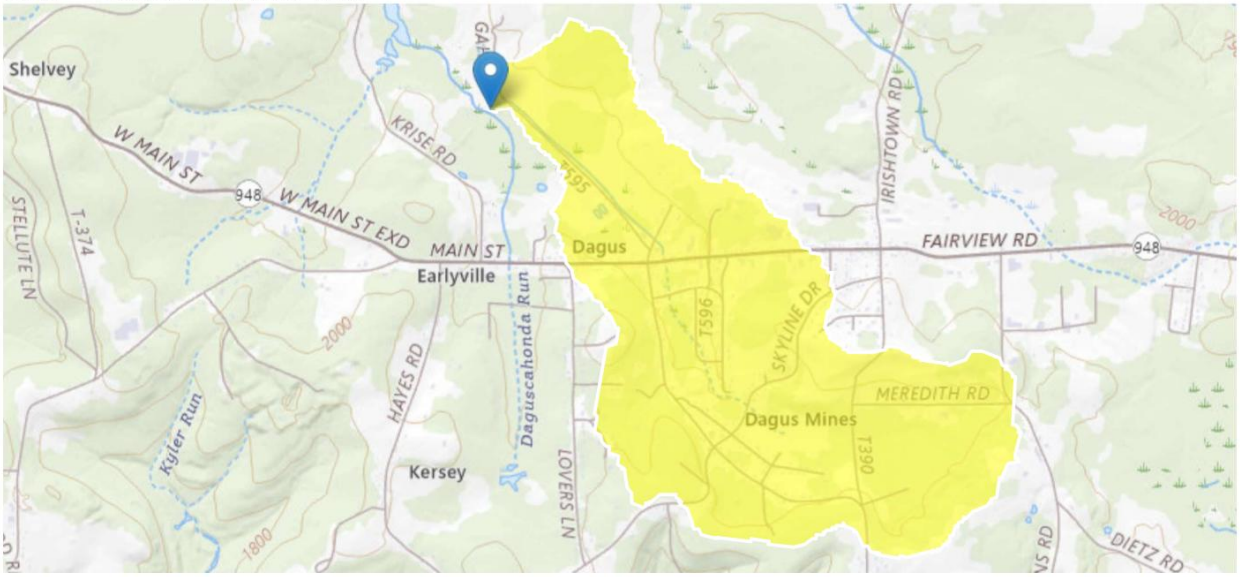
Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Application Version: 4.29.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Outfall 001 Downstream Reach

StreamStats Report

Region ID: PA
Workspace ID: PA20250524170723509000
Clicked Point (Latitude, Longitude): 41.36845, -78.62072
Time: 2025-05-24 13:07:42 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.27	square miles
ELEV	Mean Basin Elevation	1952	feet
PRECIP	Mean Annual Precipitation	45	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.27	square miles	2.33	1720
ELEV	Mean Basin Elevation	1952	feet	898	2700
PRECIP	Mean Annual Precipitation	45	inches	38.7	47.9

Low-Flow Statistics Disclaimers [Low Flow Region 3]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.169	ft^3/s
30 Day 2 Year Low Flow	0.249	ft^3/s
7 Day 10 Year Low Flow	0.0721	ft^3/s
30 Day 10 Year Low Flow	0.0997	ft^3/s
90 Day 10 Year Low Flow	0.148	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Application Version: 4.29.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

DMR Metals

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

WATER MANAGEMENT SYSTEM
ELECTRONIC DISCHARGE MONITORING REPORT - INTERNAL

Region: NWRO
County: All
Municipality: All
Permit(s): PA0038482
PF Inspector: All

PERMIT	AUTH ID	PF NAME	PF ID	CLIENT ID	MONITORING START DATE	MONITORING END DATE	REPORT FREQUENCY	DUE DATE	DMR VERSION	DMR RECEIVED DATE	REPORT STATUS	DMR VERSION 1 LATE IND	OUTFALL	DISCHARGE	MONITORING LOCATION	PARAMETER CODE	PARAMETER	LOAD 1 SSC	CONC UNIT S	CONC 2 VALUE	CONC 2 LIMIT	CONC 2 SSC
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2020	12/31/2020	Annually	01/28/2021	1	01/27/2020	Submitted	No	001	Yes	Final Effluent	01105	Aluminum, Total	Annual Average	mg/L	0.02	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2020	12/31/2020	Annually	01/28/2021	2	01/15/2021	Submitted		001	Yes	Final Effluent	01105	Aluminum, Total	Annual Average	mg/L	0.05	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2021	12/31/2021	Annually	01/28/2022	1	01/05/2022	Submitted	No	001	Yes	Final Effluent	01105	Aluminum, Total	Annual Average	mg/L	0.018	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2022	12/31/2022	Annually	01/28/2023	1	01/16/2023	Submitted	No	001	Yes	Final Effluent	01105	Aluminum, Total	Annual Average	mg/L	0.016	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2023	12/31/2023	Annually	01/28/2024	1	01/11/2024	Submitted	No	001	Yes	Final Effluent	01105	Aluminum, Total	Annual Average	mg/L	0.022	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2024	12/31/2024	Annually	01/28/2025	1	01/09/2025	Submitted	No	001	Yes	Final Effluent	01105	Aluminum, Total	Annual Average	mg/L	0.013	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2020	12/31/2020	Annually	01/28/2021	1	01/27/2020	Submitted	No	001	Yes	Final Effluent	01045	Iron, Total	Annual Average	mg/L	0.119	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2020	12/31/2020	Annually	01/28/2021	2	01/15/2021	Submitted		001	Yes	Final Effluent	01045	Iron, Total	Annual Average	mg/L	0.08	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2021	12/31/2021	Annually	01/28/2022	1	01/05/2022	Submitted	No	001	Yes	Final Effluent	01045	Iron, Total	Annual Average	mg/L	0.034	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2022	12/31/2022	Annually	01/28/2023	1	01/16/2023	Submitted	No	001	Yes	Final Effluent	01045	Iron, Total	Annual Average	mg/L	0.095	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2023	12/31/2023	Annually	01/28/2024	1	01/11/2024	Submitted	No	001	Yes	Final Effluent	01045	Iron, Total	Annual Average	mg/L	0.07	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2024	12/31/2024	Annually	01/28/2025	1	01/09/2025	Submitted	No	001	Yes	Final Effluent	01045	Iron, Total	Annual Average	mg/L	0.315	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2020	12/31/2020	Annually	01/28/2021	1	01/27/2020	Submitted	No	001	Yes	Final Effluent	01055	Manganese, Total	Annual Average	mg/L	0.092	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2020	12/31/2020	Annually	01/28/2021	2	01/15/2021	Submitted		001	Yes	Final Effluent	01055	Manganese, Total	Annual Average	mg/L	0.03	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2021	12/31/2021	Annually	01/28/2022	1	01/05/2022	Submitted	No	001	Yes	Final Effluent	01055	Manganese, Total	Annual Average	mg/L	0.027	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2022	12/31/2022	Annually	01/28/2023	1	01/16/2023	Submitted	No	001	Yes	Final Effluent	01055	Manganese, Total	Annual Average	mg/L	0.029	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2023	12/31/2023	Annually	01/28/2024	1	01/11/2024	Submitted	No	001	Yes	Final Effluent	01055	Manganese, Total	Annual Average	mg/L	0.051	Monitor and Report	Annual Average
PA0038482	1210495	FOX TWP STP	293892	112577	01/01/2024	12/31/2024	Annually	01/28/2025	1	01/09/2025	Submitted	No	001	Yes	Final Effluent	01055	Manganese, Total	Annual Average	mg/L	0.072	Monitor and Report	Annual Average

DMR pH

Apr-25		Mar-25		Feb-25		Jan-25		Dec-24		Nov-24		Oct-24		Sep-24		Aug-24		Jul-24		Jun-24		May-24	
7.3	5.01187E-08	6.8	1.58489E-07	7.1	7.94E-08	7.0	1E-07	7.0	1E-07	6.9	1.26E-07	6.7	2E-07	6.8	1.58E-07	6.8	1.58E-07	6.9	1.26E-07	6.6	2.51E-07	7.0	1E-07
7.1	7.94328E-08	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	7.0	1E-07	6.9	1.26E-07	7.0	1E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	7.0	1E-07	6.7	2E-07
7.2	6.30957E-08	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	6.9	1.26E-07	6.8	1.58E-07	7.0	1E-07	6.8	1.58E-07	6.8	1.58E-07	6.7	2E-07	6.9	1.26E-07	6.8	1.58E-07
7.1	7.94328E-08	6.8	1.58489E-07	6.7	2E-07	7.0	1E-07	6.9	1.26E-07	6.6	2.51E-07	6.9	1.26E-07	6.8	1.58E-07	6.9	1.26E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07
7.0	0.0000001	6.8	1.58489E-07	6.8	1.58E-07	6.9	1.26E-07	6.7	2E-07	6.6	2.51E-07	6.9	1.26E-07	6.8	1.58E-07	6.9	1.26E-07	6.7	2E-07	6.8	1.58E-07	6.8	1.58E-07
7.2	6.30957E-08	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	6.8	1.58E-07	7.2	6.31E-08	6.9	1.26E-07	6.7	2E-07	6.8	1.58E-07	7.1	7.94E-08	6.7	2E-07	6.8	1.58E-07
7.0	0.0000001	6.9	1.25893E-07	6.9	1.26E-07	7.0	1E-07	6.9	1.26E-07	7.0	1E-07	6.6	2.51E-07	6.8	1.58E-07	6.8	1.58E-07	7.0	1E-07	6.7	2E-07	6.7	2E-07
7.1	7.94328E-08	6.8	1.58489E-07	7.0	1E-07	7.0	1E-07	6.7	2E-07	7.0	1E-07	6.6	2.51E-07	6.6	2.51E-07	6.8	1.58E-07	7.0	1E-07	6.8	1.58E-07	6.8	1.58E-07
7.0	0.0000001	6.8	1.58489E-07	6.9	1.26E-07	7.0	1E-07	6.9	1.26E-07	6.6	2.51E-07	7.1	7.94E-08	6.6	2.51E-07	6.8	1.58E-07	6.8	1.58E-07	6.7	2E-07	6.9	1.26E-07
7.0	0.0000001	6.8	1.58489E-07	7.0	1E-07	7.0	1E-07	6.9	1.26E-07	6.6	2.51E-07	7.0	1E-07	7.3	5.01E-08	7.0	1E-07	6.8	1.58E-07	6.6	2.51E-07	6.8	1.58E-07
7.1	7.94328E-08	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	7.0	1E-07	7.0	1E-07	6.9	1.26E-07	7.2	6.31E-08	6.8	1.58E-07	6.8	1.58E-07	6.6	2.51E-07	6.8	1.58E-07
7.0	0.0000001	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	7.0	1E-07	6.8	1.58E-07	6.8	1.58E-07	7.0	1E-07	7.0	1E-07	6.8	1.58E-07	6.9	1.26E-07	6.8	1.58E-07
7.0	0.0000001	6.8	1.58489E-07	6.8	1.58E-07	7.2	6.31E-08	7.0	1E-07	6.7	2E-07	6.6	2.51E-07	7.0	1E-07	7.0	1E-07	6.7	2E-07	6.8	1.58E-07	6.8	1.58E-07
7.0	0.0000001	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	7.0	1E-07	6.6	2.51E-07	6.8	1.58E-07	7.0	1E-07	6.9	1.26E-07	6.8	1.58E-07	6.7	2E-07	6.8	1.58E-07
7.0	0.0000001	6.8	1.58489E-07	6.8	1.58E-07	7.1	7.94E-08	6.9	1.26E-07	7.1	7.94E-08	6.8	1.58E-07	6.9	1.26E-07	6.9	1.26E-07	6.8	1.58E-07	6.7	2E-07	6.7	2E-07
7.3	5.01187E-08	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	6.8	1.58E-07	7.0	1E-07	6.8	1.58E-07	6.8	1.58E-07	6.9	1.26E-07	6.8	1.58E-07	6.7	2E-07	6.7	2E-07
7.1	7.94328E-08	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	6.9	1.26E-07	7.0	1E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	6.7	2E-07	7.0	1E-07
7.0	0.0000001	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	6.9	1.26E-07	6.6	2.51E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	6.6	2.51E-07	6.9	1.26E-07
7.0	0.0000001	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	7.1	7.94E-08	6.6	2.51E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	6.9	1.26E-07	6.7	2E-07	6.8	1.58E-07
7.3	5.01187E-08	6.8	1.58489E-07	6.7	2E-07	7.0	1E-07	7.0	1E-07	7.0	1E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	7.0	1E-07	6.8	1.58E-07
7.2	6.30957E-08	6.9	1.25893E-07	6.7	2E-07	7.2	6.31E-08	7.0	1E-07	6.9	1.26E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	7.0	1E-07	6.8	1.58E-07
7.2	6.30957E-08	6.8	1.58489E-07	6.7	2E-07	7.0	1E-07	7.0	1E-07	6.7	2E-07	6.9	1.26E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	6.9	1.26E-07	6.8	1.58E-07
7.3	5.01187E-08	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	6.9	1.26E-07	6.7	2E-07	6.7	2E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	6.9	1.26E-07	6.8	1.58E-07
7.2	6.30957E-08	6.8	1.58489E-07	6.8	1.58E-07	7.0	1E-07	7.0	1E-07	6.6	2.51E-07	6.6	2.51E-07	6.8	1.58E-07	6.9	1.26E-07	6.8	1.58E-07	6.9	1.26E-07	6.8	1.58E-07
7.1	7.94328E-08	7.0	0.0000001	6.8	1.58E-07	7.1	7.94E-08	7.0	1E-07	6.8	1.58E-07	6.9	1.26E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07
7.0	0.0000001	7.0	0.0000001	6.8	1.58E-07	7.0	1E-07	7.0	1E-07	7.0	1E-07	6.7	2E-07	6.8	1.58E-07	6.9	1.26E-07	6.9	1.26E-07	6.8	1.58E-07	7.0	1E-07
7.0	0.0000001	7.0	0.0000001	6.8	1.58E-07	7.1	7.94E-08	7.0	1E-07	7.0	1E-07	7.2	6.31E-08	6.6	2.51E-07	6.9	1.26E-07	6.9	1.26E-07	6.8	1.58E-07	7.0	1E-07
7.0	0.0000001	7.2	6.30957E-08	6.8	1.58E-07	7.0	1E-07	7.0	1E-07	7.0	1E-07	7.2	6.31E-08	6.7	2E-07	6.8	1.58E-07	6.8	1.58E-07	6.6	2.51E-07	6.8	1.58E-07
7.0	0.0000001	7.1	7.94328E-08			7.0	1E-07	7.0	1E-07	7.0	1E-07	7.1	7.94E-08	6.8	1.58E-07	6.8	1.58E-07	6.8	1.58E-07	7.1	7.94E-08	6.7	2E-07
7.0	0.0000001	7.1	7.94328E-08			7.0	1E-07	7.0	1E-07	7.1	7.94E-08	7.0	1E-07	6.7	2E-07	6.8	1.58E-07	6.8	1.58E-07	7.0	1E-07	6.8	1.58E-07
		7.0	0.0000001			7.2	6.31E-08	7.0	1E-07			7.0	1E-07			6.9	1.26E-07	6.8	1.58E-07			6.6	2.51E-07
AVG:	8.3085E-08		1.40662E-07		1.55E-07		9.53E-08		1.17E-07		1.56E-07		1.47E-07		1.6E-07		1.43E-07		1.52E-07		1.69E-07		1.58E-07
AVG pH:	7.1		6.9		6.8		7.0		6.9		6.8		6.8		6.8		6.8		6.8		6.8		6.8

Mean pH: 6.8

Copper

	Facility:	Fox Township STP												
	NPDES #:	PA0038482												
	Outfall No:	001												
	n (Samples/Month):	4												
	Reviewer/Permit Engineer:	Aaron Baar												
Parameter Name	Total Copper													
Units	mg/L													
Detection Limit	0.004													
Sample Date	*When entering values below the detection limit, enter "ND" or use the < notation (eg. <0.02)*													
4/1/2025	0.005													
4/8/2025	0.005													
4/15/2025	0.006													
4/25/2025	0.005													
4/30/2025	0.008													
3/4/2025	0.007													
3/11/2025	0.005													
3/18/2025	0.005													
3/25/2025	0.006													
2/4/2025	0.006													
2/11/2025	0.007													
2/18/2025	0.009													
2/25/2025	0.006													
1/7/2025	0.005													
1/14/2025	0.005													
1/22/2025	0.007													
1/28/2025	0.005													
12/3/2024	0.02													
12/17/2024	0.006													
12/22/2024	0.007													
12/29/2024	0.005													
11/5/2024	0.026													
11/12/2024	0.054													
11/19/2024	0.029													
11/26/2024	0.012													
10/1/2024	0.018													
10/15/2024	0.014													
10/22/2024	0.014													
10/29/2024	0.019													
9/3/2024	0.013													
9/10/2024	0.019													
9/17/2024	0.015													
9/25/2024	0.013													
8/6/2024	0.014													
8/13/2024	0.012													
8/20/2024	0.01													
8/27/2024	0.015													
7/1/2024	0.012													
7/16/2024	0.013													
7/23/2024	0.012													
7/30/2024	0.022													
6/4/2024	0.014													
6/11/2024	0.012													
6/19/2024	0.005													
6/25/2024	0.007													
5/7/2024	0.008													
5/14/2024	0.009													
5/21/2024	0.009													
5/29/2024	0.013													

Reviewer/Permit Engineer: Aaron Baar

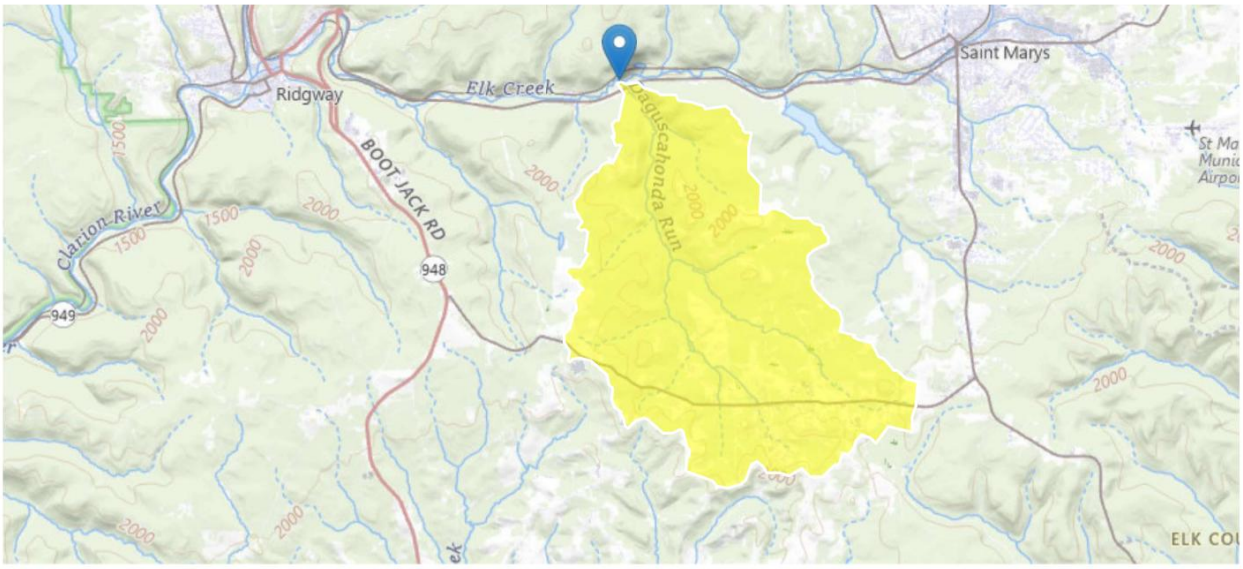
Facility: Fox Township STP
NPDES #: PA0038482
Outfall No: 001
n (Samples/Month): 4

Parameter	Distribution Applied	Coefficient of Variation (daily)	Avg. Monthly
Total Copper (mg/L)	Lognormal	0.6115040	0.0220799

Daguscahonda Run Watershed

StreamStats Report

Region ID: PA
Workspace ID: PA20250601154924360000
Clicked Point (Latitude, Longitude): 41.42104, -78.64413
Time: 2025-06-01 11:49:47 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	13.4	square miles
ELEV	Mean Basin Elevation	1928	feet
PRECIP	Mean Annual Precipitation	45	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.4	square miles	2.33	1720
ELEV	Mean Basin Elevation	1928	feet	898	2700
PRECIP	Mean Annual Precipitation	45	inches	38.7	47.9

Low-Flow Statistics Flow Report [Low Flow Region 3]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.86	ft^3/s	43	43
30 Day 2 Year Low Flow	2.63	ft^3/s	38	38
7 Day 10 Year Low Flow	0.897	ft^3/s	54	54
30 Day 10 Year Low Flow	1.18	ft^3/s	49	49
90 Day 10 Year Low Flow	1.71	ft^3/s	41	41

Low-Flow Statistics Citations

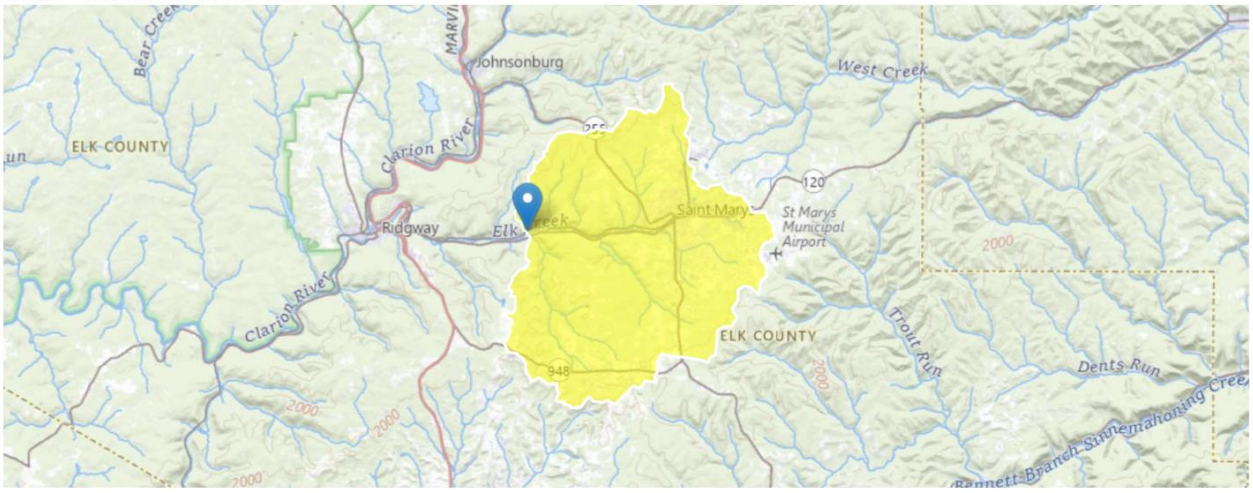
Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Application Version: 4.29.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Elk Creek Up

StreamStats Report

Region ID: PA
Workspace ID: PA20250601115623907000
Clicked Point (Latitude, Longitude): 41.42147, -78.64524
Time: 2025-06-01 07:56:47 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	47.1	square miles
ELEV	Mean Basin Elevation	1864	feet
PRECIP	Mean Annual Precipitation	45	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	47.1	square miles	2.33	1720
ELEV	Mean Basin Elevation	1864	feet	898	2700
PRECIP	Mean Annual Precipitation	45	inches	38.7	47.9

Low-Flow Statistics Flow Report [Low Flow Region 3]

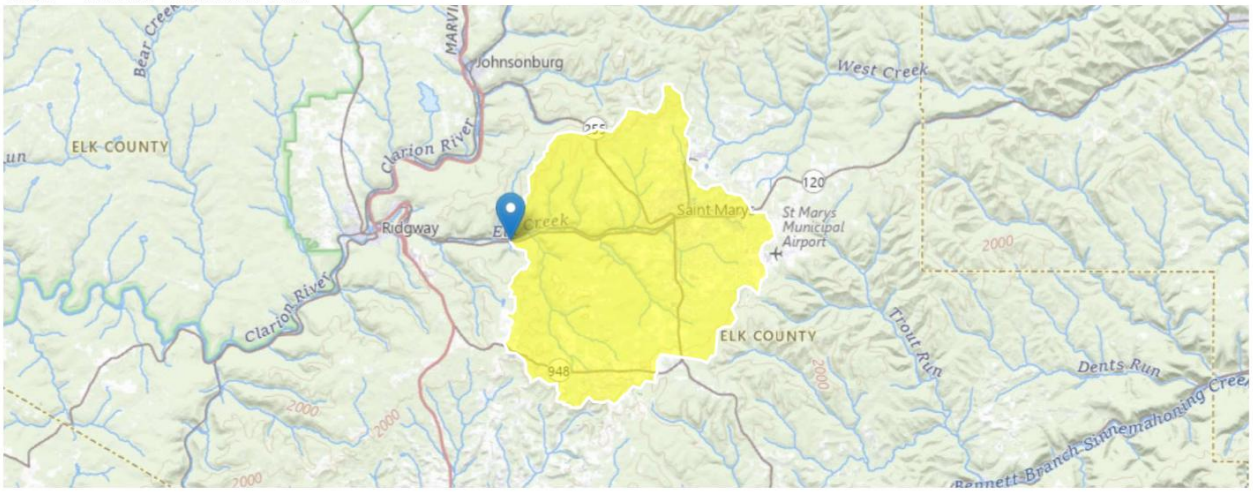
PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	6.53	ft^3/s	43	43
30 Day 2 Year Low Flow	9.06	ft^3/s	38	38
7 Day 10 Year Low Flow	3.37	ft^3/s	54	54
30 Day 10 Year Low Flow	4.36	ft^3/s	49	49
90 Day 10 Year Low Flow	6.21	ft^3/s	41	41

Elk Creek Down

StreamStats Report

Region ID: PA
Workspace ID: PA20250601133006046000
Clicked Point (Latitude, Longitude): 41.41764, -78.65438
Time: 2025-06-01 09:30:28 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	47.4	square miles
ELEV	Mean Basin Elevation	1863	feet
PRECIP	Mean Annual Precipitation	45	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	47.4	square miles	2.33	1720
ELEV	Mean Basin Elevation	1863	feet	898	2700
PRECIP	Mean Annual Precipitation	45	inches	38.7	47.9

Low-Flow Statistics Flow Report [Low Flow Region 3]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	6.57	ft^3/s	43	43
30 Day 2 Year Low Flow	9.11	ft^3/s	38	38
7 Day 10 Year Low Flow	3.39	ft^3/s	54	54
30 Day 10 Year Low Flow	4.38	ft^3/s	49	49
90 Day 10 Year Low Flow	6.25	ft^3/s	41	41

TMS

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Fox Township STP** NPDES Permit No.: **PA0038482** Outfall No.: **001**

Evaluation Type: **Custom / Additives** Wastewater Description: **Treated Sewage**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.4	100	6.8						

				0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Total Copper	mg/L		0.0220799			0.6115						
Total Lead	mg/L	<	0.005									
Total Zinc	mg/L		0.064									
Total Aluminum	mg/L		0.06									
Total Iron	mg/L		0.488									
Total Manganese	mg/L		0.11									

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Fox Township STP, NPDES Permit No. PA0038482, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Unnamed Tributary to the Daguscahon**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	050459	6.92	1471.32	47.1			Yes
End of Reach 1	050459	5.53	1449.31	48.8			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	6.92		3.37									100	7		
End of Reach 1	5.53		3.5												

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	6.92														
End of Reach 1	5.53														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Fox Township STP, NPDES Permit No. PA0038482, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.667 Analysis Hardness (mg/l): 100 Analysis pH: 6.95

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	13.439	14.0	64.8	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	378	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	555	Chem Translator of 0.978 applied
Total Aluminum	0	0		0	750	750	3,474	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***CFC*** CCT (min): 33.718 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 6.96

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	8.956	9.33	60.1	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	20.5	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	772	Chem Translator of 0.986 applied
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	9,669	WQC = 30 day average; PMF = 1
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***THH*** CCT (min): 33.718 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	6,446	

☑ ***CRL*** CCT (min): 14.416 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	Report	Report	Report	Report	Report	mg/L	0.046	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	mg/L	0.36	AFC	Discharge Conc > 10% WQBEL (no RP)

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Lead	20.5	µg/L	Discharge Conc ≤ 10% WQBEL
Total Aluminum	2,227	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	9,669	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	6,446	µg/L	Discharge Conc ≤ 10% WQBEL

TRC_CALC Elk Creek

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	3.37	= Q stream (cfs)		0.5	= CV Daily	
5	0.4	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)			=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 1.756		1.3.2.iii	WLA cfc = 1.705
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 0.654		5.1d	LTA_cfc = 0.991
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
18			INST MAX LIMIT (mg/l) = 1.635			

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)

TRC

Outfall 001

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
17A	50483	Trib 50483 to Daguscahonda Run

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)
0.430	Fox Twp STP	PA0038482*	0.400	CBOD5	25		
				NH3-N	18	36	
				Dissolved Oxygen			4

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
17A	50483	Trib 50483 to Daguscahonda Run

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
0.430	Fox Twp STP	NA	36	13.12	36	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
0.430	Fox Twp STP	NA	18	1.51	18	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)		
0.43	Fox Twp STP	25	25	18	18	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
17A	50483	Trib 50483 to Daguscahonda Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.430	0.400	24.549	6.815
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
8.626	0.482	17.908	0.164
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
22.93	1.486	16.39	0.993
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
4.382	27.772	Owens	NA
Reach Travel Time (days)			
0.160			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.016	22.26	16.13	4.08
0.032	21.62	15.87	3.93
0.048	21.00	15.62	3.87
0.064	20.39	15.38	3.87
0.080	19.80	15.13	3.90
0.096	19.23	14.89	3.96
0.112	18.67	14.66	4.03
0.128	18.13	14.43	4.11
0.144	17.61	14.20	4.19
0.160	17.10	13.98	4.27

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	1.3883	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	4		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
17A	50483	Trib 50483 to Daguscahonda Run

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												
0.430	0.06	0.00	0.06	.6188	0.00419	.482	8.63	17.91	0.16	0.160	24.55	6.81
Q1-10 Flow												
0.430	0.04	0.00	0.04	.6188	0.00419	NA	NA	NA	0.16	0.163	24.70	6.81
Q30-10 Flow												
0.430	0.09	0.00	0.09	.6188	0.00419	NA	NA	NA	0.17	0.157	24.40	6.82

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
17A	50483	Trib 50483 to Daguscahonda Run	**0.430**	1875.85	1.09	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	0.100	0.06	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
Fox Twp STP	PA0038482*	0.4000	0.4000	0.4000	0.000	25.00	6.80

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	18.00	0.10	0.00	0.70

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
17A	50483	Trib 50483 to Daguscahonda Run	**0.001**	1866.37	1.27	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	0.100	0.07	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	0.00	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

Outfall 001*

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
17A	50459	ELK 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)
6.920	Elk Twp at Elk	PA0038482a	0.400	CBOD5	17.1		
				NH3-N	13.98	27.96	
				Dissolved Oxygen			4

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
17A	50459	ELK 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
6.920	Elk Twp at Elk	24.59	27.96	24.59	27.96	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
6.920	Elk Twp at Elk	2.17	13.98	2.17	13.98	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)		
6.92	Elk Twp at Elk	17.1	17.1	13.98	13.98	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
17A	50459	ELK CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.920	0.400	20.776	5.105
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
32.010	0.666	48.099	0.187
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.34	0.787	2.25	0.743
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.585	5.435	Tsivoglou	6
Reach Travel Time (days)			
0.454			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.045	4.18	2.18	7.39
0.091	4.03	2.11	7.25
0.136	3.89	2.04	7.16
0.181	3.75	1.97	7.11
0.227	3.61	1.90	7.08
0.272	3.48	1.84	7.08
0.318	3.35	1.78	7.09
0.363	3.23	1.72	7.11
0.408	3.11	1.66	7.15
0.454	3.00	1.61	7.18

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	1.2938	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
17A	50459	ELK 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												
6.920	3.37	0.00	3.37	.6188	0.00300	.666	32.01	48.1	0.19	0.454	20.78	5.10
Q1-10 Flow												
6.920	2.16	0.00	2.16	.6188	0.00300	NA	NA	NA	0.15	0.556	21.11	4.95
Q30-10 Flow												
6.920	4.36	0.00	4.36	.6188	0.00300	NA	NA	NA	0.21	0.401	20.62	5.20

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
17A	50459	ELK CREEK	**6.920**	1471.32	47.10	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	0.100	3.37	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
Elk Twp at Elk	PA0038482a	0.4000	0.4000	0.4000	0.000	25.00	4.30

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	17.10	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	13.98	0.10	0.00	0.70

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
17A	50459	ELK CREEK	**5.530**	1449.31	48.80	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	0.100	3.50	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	0.00	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