Pennsylvania Department of Environmental Protection

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0086525**
Facility Type	**Municipal**	APS ID	**324570**
Major / Minor	**Minor**	Authorization ID	**1455763**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Centre Township Municipal Authority Berks County**	Facility Name	**Centre Township Kingsgate East STP**
Applicant Address	449 Bucks Hill Road Mohrsville, PA 19541-9340	Facility Address	39 Cornerstone Drive Mohrsville, PA 19541-9250
Applicant Contact	David Phillips	Facility Contact	David Kline
Applicant Phone	(610) 926-8833	Facility Phone	(717) 560-2760
Client ID	93104	Site ID	448217
Ch 94 Load Status	Existing Hydraulic and Organic Overload	Municipality	Centre Township
Connection Status	Self-Imposed Connection Prohibition	County	Berks
Date Application Received	September 19, 2023	EPA Waived?	Yes
Date Application Accepted	October 2, 2023	If No, Reason	
Purpose of Application	NPDES renewal permit.		

Summary of Review

System Design Engineering, Inc. on behalf of the Centre Township Municipal Authority (Authority/Permittee), applied to the Pennsylvania Department of Environmental Protection (DEP) for issuance of the NPDES permit. The permit was reissued on March 21, 2019 and became effective on April 1, 2019. The permit expired on March 31, 2024 but the terms and conditions of the permit have been administratively extended since that time.

The average annual design flow and hydraulic design capacity is 0.012 MGD, and the organic loading capacity is 24 lbs BOD_5/day. The renewal application indicated the STP receives its 100% from the Centre Township.

The WQM Part II permit No. 0694424 was issued on 4/5/1995. The WQM Part II permit No. 0694424 amendment was issued on 12/28/2020.

Sludge use and disposal description and location(s): N/A because sludge hauled by ARRO Water Service.

DRBC Docket No. D-2018-006 CP-1 approval date was 6/12/2019 and expiration date is 12/31/2027.

Changes from the previous permit: E. Coli monitoring and report requirements will add to the proposed permit.

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

Approve	Deny	Signatures	Date
X		*Hilaryle* Hilary H. Le / Environmental Engineering Specialist	October 11, 2024
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	October 15, 2024

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.012
Latitude	40º 28' 4.00"	Longitude	-76º 3' 4.00"
Quad Name	Bernville	Quad Code	1537
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Irish Creek (WWF)	Stream Code	02171
NHD Com ID	25962076	RMI	0.45
Drainage Area	1.39 mi.^{2}	Yield (cfs/mi^2)	See comments below
Q_{7-10} Flow (cfs)	See comments below	Q_{7-10} Basis	See comments below
Elevation (ft)	376	Slope (ft/ft)	
Watershed No.	3-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	See comments below		
Cause(s) of Impairment	See comments below		
Source(s) of Impairment	See comments below		
TMDL Status	See comment below	Name	Irish Creek
Nearest Downstream Public Water Supply Intake	Borough of Pottstown Water and Sewer Authority		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	
PWS RMI	33.03 miles	Distance from Outfall (mi)	Approximate 40.0 miles

Changes Since Last Permit Issuance:

Drainage Area
The discharge is to Unnamed Tributary 02171 to Irish Creek at RMI 0.45. A drainage area upstream of the discharge point is estimated to be 1.39 sq.mi. according to USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
USGS StreamStats produced a Q_{7-10} flow of 0.0223 cfs. However, the drainage area used in regression equations to calculate the low flow statistics is lower than the minimum required value; therefore, the produced Q_{7-10} flow may not be entirely accurate. Consequently, flows measured at USGS gage station on the Schuylkill River at Berne (station No. 01470500) have been correlated with the stream conditions at the point of discharge as follows:

$$\text{Low Flow Yield} = Q_{7\text{-}10gage} / \text{Drainage Area}_{gage} = 86 \text{ cfs} / 358 \text{ sq.mi.} = 0.24 \text{ cfs/sq.mi.}$$
$$Q_{7\text{-}10site} = \text{Low Flow Yield} * \text{Drainage Area}_{site} = 0.24 \text{ cfs/sq.mi} * 1.39 \text{ sq.mi.} = 0.334 \text{ cfs.}$$

Unnamed Tributary 02171 to Irish Creek
Under Pa Code §93.9f, the entire Irish Creek basin is designated as warm water and migratory fishes. The main stem, Schuylkill River is also designated as warm water and migratory fishes. No special protection water(s) is therefore impacted by this discharge. No Class A Wild Trout fishery is impacted by this discharge. While Pennsylvania's 2024 integrated water quality report indicates that the receiving stream is not impaired, the report also specifies that Irish Creek is impaired for excessive siltation resulting from agricultural activities and derelict lands. A Total Maximum Daily Load (TMDL) has been prepared in 2012 to address this impairment. More details will be discussed later in this fact sheet.

Public Water Supply Intake
The fact sheet developed for the last permit renewal indicates that the nearest downstream public water supply intake is the Borough of Pottstown Water and Sewer Authority, located on the Schuylkill River approximately 40.0 miles from the discharge. Given the distance, the discharge is not expected to significantly affect the water supply.

Treatment Facility Summary				
Treatment Facility Name: Centre Township Kingsgate E STP				
WQM Permit No.	**Issuance Date**			
0694424	4/5/1995			
0694424 A-1	12/28/2020			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.012
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.012	24	Not Overloaded	Sludge Holding	Other WWTP

Changes Since Last Permit Issuance:

The WWTP is an extended air/activated sludge type treatment process with an influent comminutor, EQ tank, 2 extended air treatment tanks, 2 clarifiers, 3 sludge thickening/aerobic digester tanks, chlorine contact tank, and outfall to Unnamed Tributary to Irish Creek.

Chlorine tablets are used for disinfection.

Sludge generated from the facility is stored in the sludge holding tank prior to being hauled off site via Marlin Nolt, LLC and ARRO Water Service.

Compliance History	
Summary of DMRs:	A summary of past 12-month DMR is presented on the next page.
Summary of Inspections:	May 8, 2018: Kevin Buss, DEP Water Quality Specialist, conducted a compliance evaluation inspection. No issues were specified on the inspection report. Recommendation was please submit the new chemical additive notification form for the anti-foam concentrate.
Other Comments:	There is currently no open violation associated with this facility or permittee.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from September 1, 2023 to August 31, 2024)

Parameter	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23
Flow (MGD) Average Monthly	0.010447	0.009714	0.009818	0.010865	0.012087	0.01386	0.011842	0.013964	0.013282	0.009892	0.009313	0.010015
Flow (MGD) Daily Maximum	0.015395	0.014075	0.012623	0.027489	0.020543	0.019883	0.01782	0.026879	0.023084	0.014553	0.015609	0.013646
pH (S.U.) Daily Minimum	7.09	7.38	7.28	7.15	6.9	6.91	7.1	7.0	7.04	7.2	7.01	7.3
pH (S.U.) Daily Maximum	8.52	8.51	8.48	8.16	8.18	8.46	8.6	8.42	8.79	8.11	8.37	8.78
DO (mg/L) Daily Minimum	6.0	6.8	7.4	7.5	7.0	7.3	8.0	7.94	7.78	7.32	5.26	6.99
TRC (mg/L) Average Monthly	0.16	0.17	0.18	0.18	0.18	0.16	0.21	0.13	0.16	0.2	0.2	0.21
TRC (mg/L) Instantaneous Maximum	0.28	0.43	0.39	0.48	0.26	0.5	0.50	0.38	0.45	0.47	0.36	0.56
CBOD5 (lbs/day) Average Monthly	0.3	0.3	0.3	0.4	0.4	0.4	0.7	0.8	0.6	1.1	0.4	0.2
CBOD5 (lbs/day) Weekly Average	0.4	0.3	0.4	0.5	0.4	0.4	0.7	0.8	0.9	1.8	0.4	0.3
CBOD5 (mg/L) Average Monthly	4.1	3.2	3.4	4.3	5.2	2.7	7.6	7.3	6.5	16.5	5.9	3.3
CBOD5 (mg/L) Weekly Average	4.0	4.0	4.0	6.0	7.0	3.0	8.0	8.0	10.0	27.0	6.0	4.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	12	12	10	21	20	15	16	18	17	16	13	14
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	17	17	14	24	28	18	17	23	19	19	14	14
BOD5 (mg/L) Raw Sewage Influent Average Monthly	143.4	136.8	123.4	233	231	106.4	185	162	184	210	190	179
TSS (lbs/day) Average Monthly	< 0.5	< 0.5	< 0.4	< 0.7	0.5	< 0.6	< 0.4	0.7	0.7	1.2	< 0.5	< 0.4
TSS (lbs/day) Raw Sewage Influent Average Monthly	5	8	9	6	8	9	5	8	7	4	4	4

TSS (lbs/day) Raw Sewage Influent Daily Maximum	6	8	10	7	10	9	5	8	7	5	4	5
TSS (lbs/day) Weekly Average	0.7	0.5	0.4	1.0	0.6	0.7	0.5	0.9	1.0	1.2	0.7	0.5
TSS (mg/L) Average Monthly	< 6.5	< 5.3	< 4.3	< 7.5	6.0	< 4.4	< 5.2	6.2	7.9	15.6	< 7.0	< 5.2
TSS (mg/L) Raw Sewage Influent Average Monthly	58	86.6	101	71	117	65	53.8	67	72	50	58	56
TSS (mg/L) Weekly Average	9.0	7.0	5.0	11.0	7.0	5.0	6.0	8.0	11.0	18.0	10.0	6.0
Fecal Coliform (No./100 ml) Geometric Mean	< 1	4	< 1	< 5	< 2	1	2	< 3	10	3	< 1	< 4
Fecal Coliform (No./100 ml) Instantaneous Maximum	1	13	< 1	22	6	2	3	9	11	12	1	18
Nitrate-Nitrite (lbs/day) Daily Maximum			2			3.0			3			4
Nitrate-Nitrite (mg/L) Daily Maximum			19.6			23.1			40.1			52.4
Total Nitrogen (lbs/day) Daily Maximum			2			4.0			3			4
Total Nitrogen (mg/L) Daily Maximum			20.9			24.4			42.5			53.6
Ammonia (lbs/day) Average Monthly	< 0.008	< 0.009	0.07	< 0.009	< 0.08	< 0.01	< 0.009	< 0.01	< 0.09	0.07	0.02	< 0.008
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	0.83	< 0.1	< 0.8	< 0.1	< 0.1	< 0.12	< 0.97	0.9	0.33	< 0.1
TKN (lbs/day) Daily Maximum			0.1			0.2			0.2			0.08
TKN (mg/L) Daily Maximum			1.34			1.34			2.41			1.21
Total Phosphorus (lbs/day) Daily Maximum			0.5			0.4			0.5			0.5
Total Phosphorus (mg/L) Daily Maximum			4.46			2.55			6.87			7.37

Existing Effluent Limitations and Monitoring Requirements

Outfall 001,

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Daily Max	XXX	1/day	Grab
D.O.	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	2.5	4.0	XXX	25	40	50	2/month	8-Hr Composite
BOD Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	2/month	8-Hr Composite
TSS	3.0	4.5	XXX	30	45	60	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Ammonia Nov 1 - Apr 30	2.0	XXX	XXX	20	XXX	40	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	1.8	XXX	XXX	18	XXX	36	2/month	8-Hr Composite
Total Phosphorus	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
Total Kjeldahl Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
Nitrate-Nitrite as N	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
Total Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	Calculation

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.012
Latitude 40º 28' 4.00" **Longitude** -76º 3' 4.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

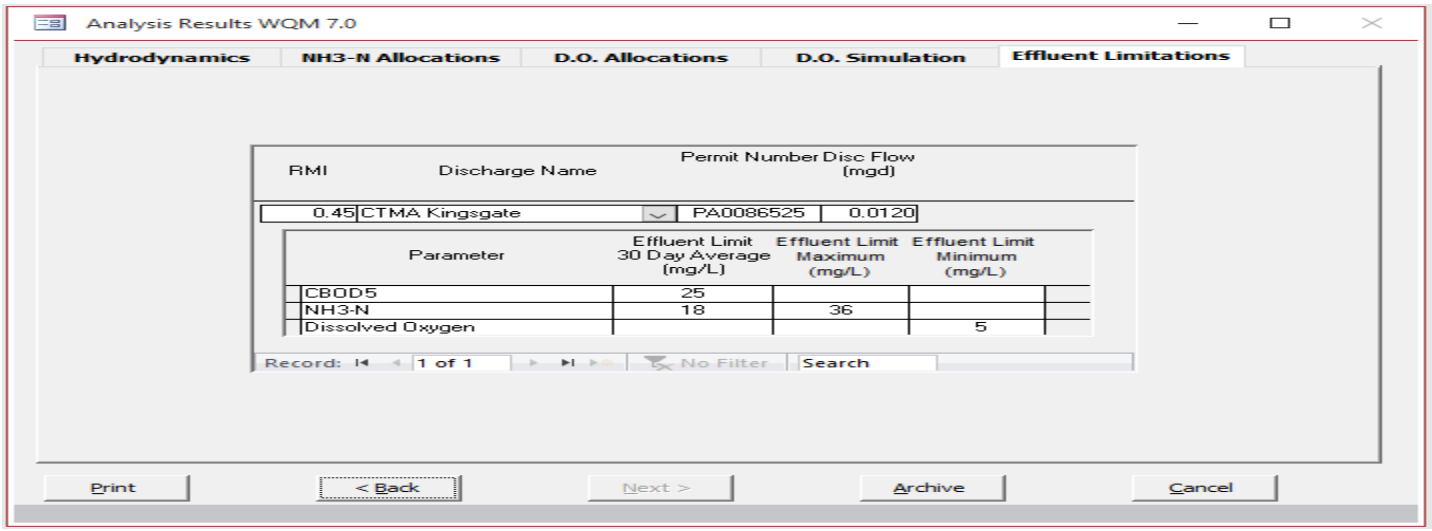
Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	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:

Water Quality-Based Limitations

Ammonia (NH_3-N):
NH_3N calculations are based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the in-stream NH_3-N criteria used in the attached WQM 7.0 computer model of the stream:

*	Discharge pH	=	7.0	(Default)
*	Discharge Temperature	=	25°C	(Default)
*	Stream pH	=	7.0	(Default)
*	Stream Temperature	=	25ºC	(Default)
*	Background NH_3-N	=	0 mg/L	(Default)
*				



Regarding NH_3-N limits, the attached computer printout of the WQM 7.0 stream model (version 1.1) indicates that a limit of 18.0 mg/L as a monthly average and 36.0 mg/L instantaneous maximum (IMAX) are necessary to protect the aquatic life from toxicity effects at the point of discharge. Therefore, the existing summer limits of 18.0 mg/L monthly average & 36.0 mg/L IMAX are same and will remain in the proposed permit. The existing winter average monthly limit of 20.0 mg/L & IMAX limit of 40.0 mg/L will remain in place. Recent DMRs and inspection reports show that the facility has been consistently achieving these limits. Mass limits are calculated as follows:

Summer average monthly mass limit: 18.0 mg/L x 0.012 MGD x 8.34 = 1.8 lbs/day
Winter average monthly mass limit: 20.0 mg/L x 0.012 MGD x 8.34 = 2.0 lbs/day

Dissolved Oxygen (D.O.):
The minimum D.O. of 5.0 mg/L is required per 25 Pa. Code § 93.7. It is recommended that this limit be maintained in the proposed permit to ensure the protection of water quality standards. This approach is consistent with DEP's current Standard Operating Procedure (SOP) No. BCW-PMT-033, version 2.0 revised February 5, 2024, and has been applied to other point source dischargers throughout the state.

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$):
The attached computer printout of the WQM 7.0 stream model (ver. 1.1) indicates that a monthly average limit of 25.0 mg/L, or secondary treatment, is adequate to protect the water quality of the stream. Therefore, the existing summer permit 25.0 mg/L as AML, 40.0 mg/L as weekly average limit (AWL), & 50.0 mg/L as IMAX will remain in the proposed permit. Recent DMRs and inspection reports show that the facility has typically been achieving concentrations below this limit. Mass limits are calculated as follows:

Summer Average monthly mass limit: 25.0 mg/L x 0.012 MGD x 8.34 = 2.502 (2.5) lbs/day
Summer Average weekly mass limit: 40.0 mg/L x 0.012 MGD x 8.34 = 4.00 (4.0) lbs/day

pH:
The effluent discharge pH should remain above 6.0 and below 9.0 standard units according to 25 Pa. Code § 95.2(1).

Total Suspended Solids (TSS):
The existing technology-based limits of 30.0 mg/L average monthly, 45.0 mg/L weekly average, and 60.0 mg/L IMAX will remain in the proposed permit based on the minimum level of effluent quality attainable by secondary treatment based on 25 Pa. Code § 92a.47. Recent DMRs and inspection reports show that the facility has been consistently achieving these limits. Mass limits are calculated as follows:

Average monthly mass limit: 30.0 mg/L x 0.012 MGD x 8.34 = 3.0 lbs/day
Average weekly mass limit: 45.0 mg/L x 0.012 MGD x 8.34 = 4.5 lbs/day

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

E. Coli:
As recommended by DEP's SOP No. BCW-PMT-033, version 2.0 revised February 5, 2024, a routine monitoring for E. Coli will be included in the proposed permit under 25 Pa. Code § 92a.61. This requirement applies to all sewage dischargers greater than 0.002 MGD in their new and reissued permits. A monitoring frequency of 1/year will be included in the permit to be consistent with the recommendation from this SOP.

Raw Sewage Influent Monitoring:
As a result of negotiation with EPA, influent monitoring of TSS and BOD_5 are required for any POTWs; therefore, influent sampling of BOD_5 and TSS will remain in the proposed permit. A 24-hr composite sample type will be required to be consistent with the proposed sampling frequency for TSS and BOD_5 in the effluent.

Total Residual Chlorine (TRC):
The attached computer printout utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for TRC (ID No. 391-2000-015) for developing chlorine limitations. The attached printout indicates that a water quality limit of 0.5 mg/L monthly average and 1.6 mg/L IMAX would be needed to prevent toxicity concerns. Therefore, the existing TRC limit of 0.5 mg/L monthly average and 1.6 mg/L IMAX are same and will remain in the proposed permit.

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.334	= Q stream (cfs)	0.5	= CV Daily
0.012	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 5.758	1.3.2.iii	WLA cfc = 5.606
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 2.146	5.1d	LTA_cfc = 3.259

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

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)**

Stormwater:
There is no known stormwater outfall associated with this facility.

Toxics:
The application submitted for this permit renewal did not require sampling of toxics pollutants. According to the application, there is no commercial establishment/business within the service area. Therefore, there is no toxics pollutants of concern from this discharge.

Irish Creek Total Maximum Daily Load (TMDL):
Irish Creek is impaired for excessive siltation as a result of agricultural activities and derelict lands. A TMDL was developed in 2012 to address this impairment and specifies a Total Suspended Solids wasteload allocation (WLA) of 3.0 lbs/day (average monthly) or 1,095.88 lbs/yr (annual average) for this facility. However, since this TMDL has not yet been finalized, it is not appropriate at this time to include this WLA in the permit. DEP has therefore determined to include the following reopener clause in Part C of this permit in case the TMDL is finalized during the upcoming permit term:

"A Total Maximum Daily Load (TMDL) for sediment was developed by the Department in 2012 to address impairments noted in Pennsylvania's 2010 Integrated Report for the Irish Creek watershed in Berks County. In case the TMDL is finalized and approved by U.S. EPA during this permit term, the permit will be reopened and modified, if necessary, to reflect any TMDL requirements associated with this facility."

Chesapeake Bay Total Maximum Daily Load (TMDL):
The facility is not located within the Chesapeake Bay watershed; therefore, no Chesapeake Bay TMDL has been taken into consideration at this time.

Additional Considerations

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

Mass Loading Limitations
All applicable effluent mass loading limits will be based on the formula: design flow x concentration limit x conversion factor of 8.34.

Total Phosphorus / Total Nitrogen
DEP's current Standard Operating Procedure for establishing effluent limitations for individual sewage permits (SOP no. BPNPSM-PMT-033) recommends a routine monitoring of Total Phosphorus and Total Nitrogen for facilities with design flows greater than 0.002 MGD. The requirement to monitor for these pollutants will therefore be included in the permit. Since the receiving stream is not impaired for nutrients at this time, a quarterly monitoring will provide ample data for further evaluation.

Delaware River Basin Commission Permitting
The facility is located in the Delaware River basin; yet, the discharge is less than 0.05 MGD. DRBC approval is not required for those facilities discharging less than 0.05 MGD.

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.

Antibacksliding Requirements
Unless specified otherwise throughout this fact sheet, effluent limits for all pollutants of concern have been developed at least as stringent as effluent limits written in the existing permit renewal. This approach is consistent with 40 CFR §122.44(l)(1).

WQM 7.0:
The following data were used in the attached computer model (WQM 7.0) of the stream:

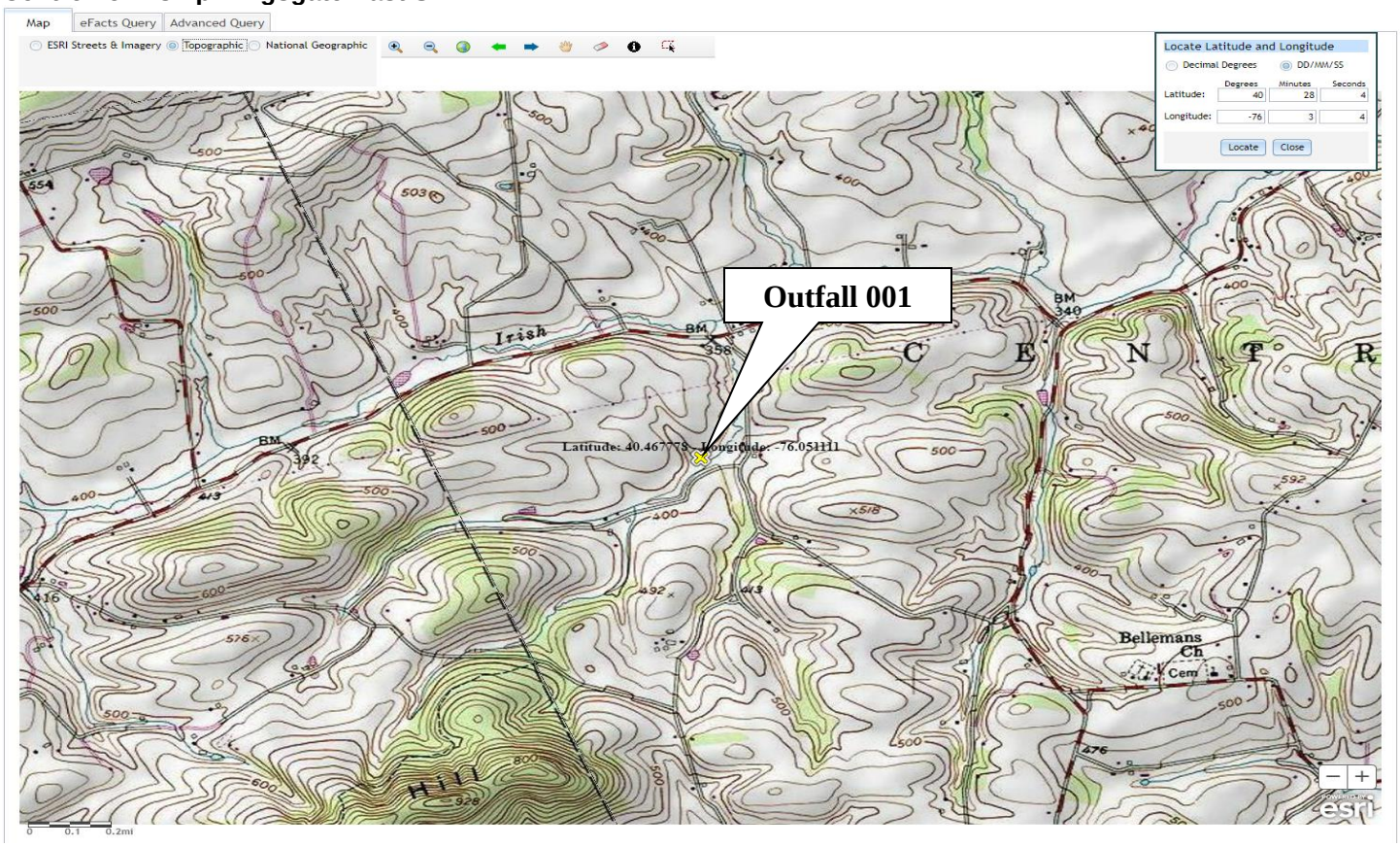
*	Discharge pH	=	7.0	(Default)
*	Discharge Temperature	=	25°C	(Default)
*	Stream pH	=	7.0	(Default)
*	Stream Temperature	=	25°C	(Default)
*	Background NH_3-N	=	0 mg/L	(Default)

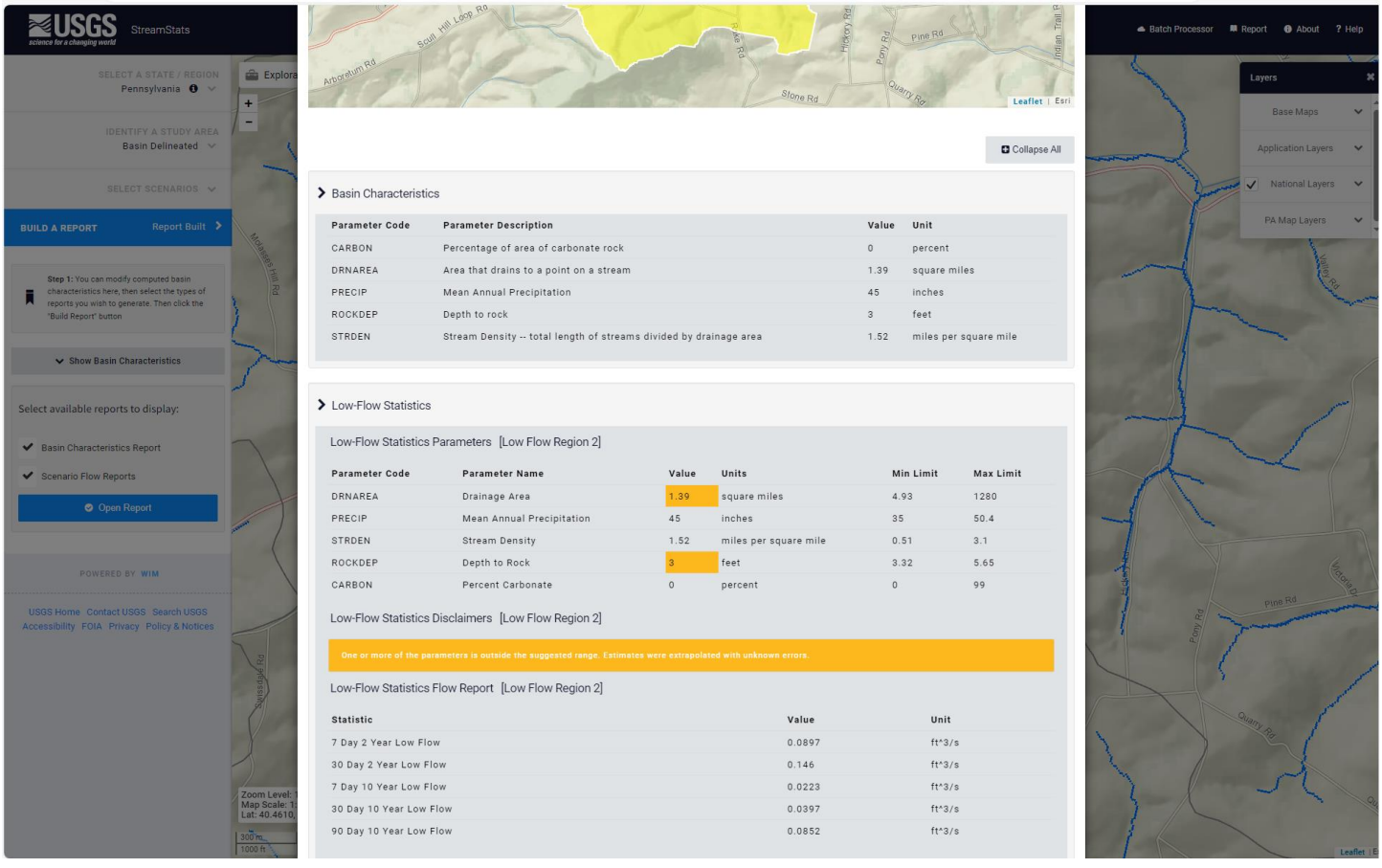
Node 1: Outfall 001(02171) to Irish Creek

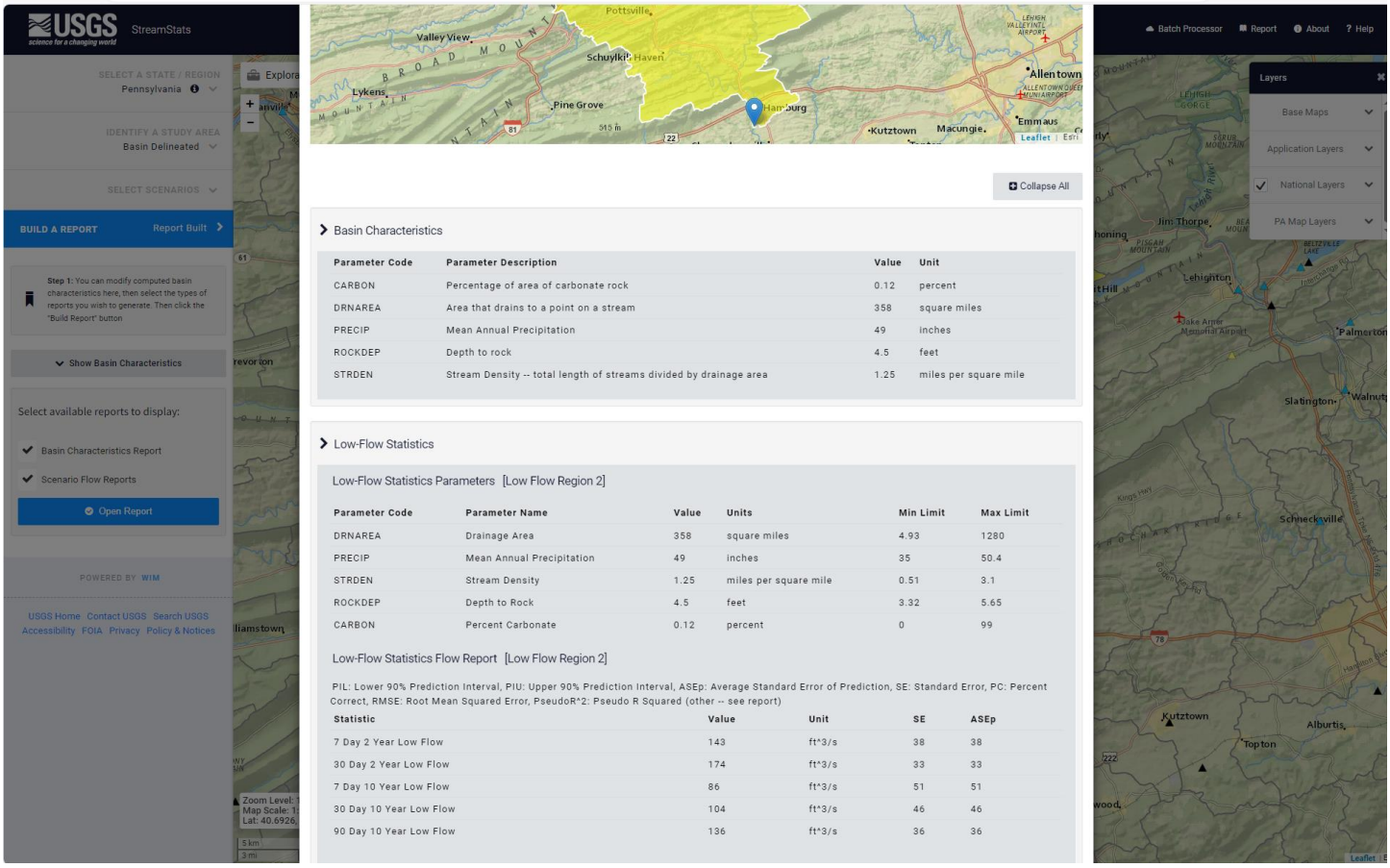
Elevation:	376.0 ft (USGS National Map Viewer)
Drainage Area:	1.39 mi^2 (USGS PA StreamStats)
River Mile Index:	0.45 (PA DEP eMapPA)
Low Flow Yield:	0.24 cfs/mi^2
Discharge Flow:	0.012 MGD

Node 2: At confluence with Irish Creek (02153)

Elevation:	350.0 ft (USGS National Map Viewer)
Drainage Area:	1.56 mi^2 (USGS PA StreamStats)
River Mile Index:	0.001 (PA DEP eMapPA)
Low Flow Yield:	0.24 cfs/mi^2
Discharge Flow:	0.0 MGD


Map
eFacts Query
Advanced Query
ESRI Streets & Imagery
Topographic
National Geographic
Locate Latitude and Longitude
Decimal Degrees
DD/MM/SS
Degrees
Minutes
Seconds
Latitude: 40 28 4
Longitude: -76 3 4
Locate
Close
Outfall 001
Latitude: 40.467778 Longitude: -76.051111
Irish
BM 358
BM 340
BM 392
C E N T R
Bellemans Ch
Cem
Hill
esri


USGS StreamStats
science for a changing world
SELECT A STATE / REGION
Pennsylvania
IDENTIFY A STUDY AREA
Basin Delineated
SELECT SCENARIOS
BUILD A REPORT
Report Built
Step 1: You can modify computed basin characteristics here, then select the types of reports you wish to generate. Then click the "Build Report" button
Show Basin Characteristics
Select available reports to display:
Basin Characteristics Report
Scenario Flow Reports
Open Report
POWERED BY WIM
USGS Home Contact USGS Search USGS
Accessibility FOIA Privacy Policy & Notices
Arboretum Rd
Scott Hill Loop Rd
Stone Rd
Pine Rd
Quarry Rd
Leaflet | Esri
Collapse All
Basin Characteristics
Parameter Code | Parameter Description | Value | Unit
CARBON | Percentage of area of carbonate rock | 0 | percent
DRNAREA | Area that drains to a point on a stream | 1.39 | square miles
PRECIP | Mean Annual Precipitation | 45 | inches
ROCKDEP | Depth to rock | 3 | feet
STRDEN | Stream Density -- total length of streams divided by drainage area | 1.52 | miles per square mile
Low-Flow Statistics
Low-Flow Statistics Parameters [Low Flow Region 2]
Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit
DRNAREA | Drainage Area | 1.39 | square miles | 4.93 | 1280
PRECIP | Mean Annual Precipitation | 45 | inches | 35 | 50.4
STRDEN | Stream Density | 1.52 | miles per square mile | 0.51 | 3.1
ROCKDEP | Depth to Rock | 3 | feet | 3.32 | 5.65
CARBON | Percent Carbonate | 0 | percent | 0 | 99
Low-Flow Statistics Disclaimers [Low Flow Region 2]
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 2]
Statistic | Value | Unit
7 Day 2 Year Low Flow | 0.0897 | ft^3/s
30 Day 2 Year Low Flow | 0.146 | ft^3/s
7 Day 10 Year Low Flow | 0.0223 | ft^3/s
30 Day 10 Year Low Flow | 0.0397 | ft^3/s
90 Day 10 Year Low Flow | 0.0852 | ft^3/s
Batch Processor
Report
About
Help
Layers
Base Maps
Application Layers
National Layers
PA Map Layers
Pine Rd
Quarry Rd
Leaflet

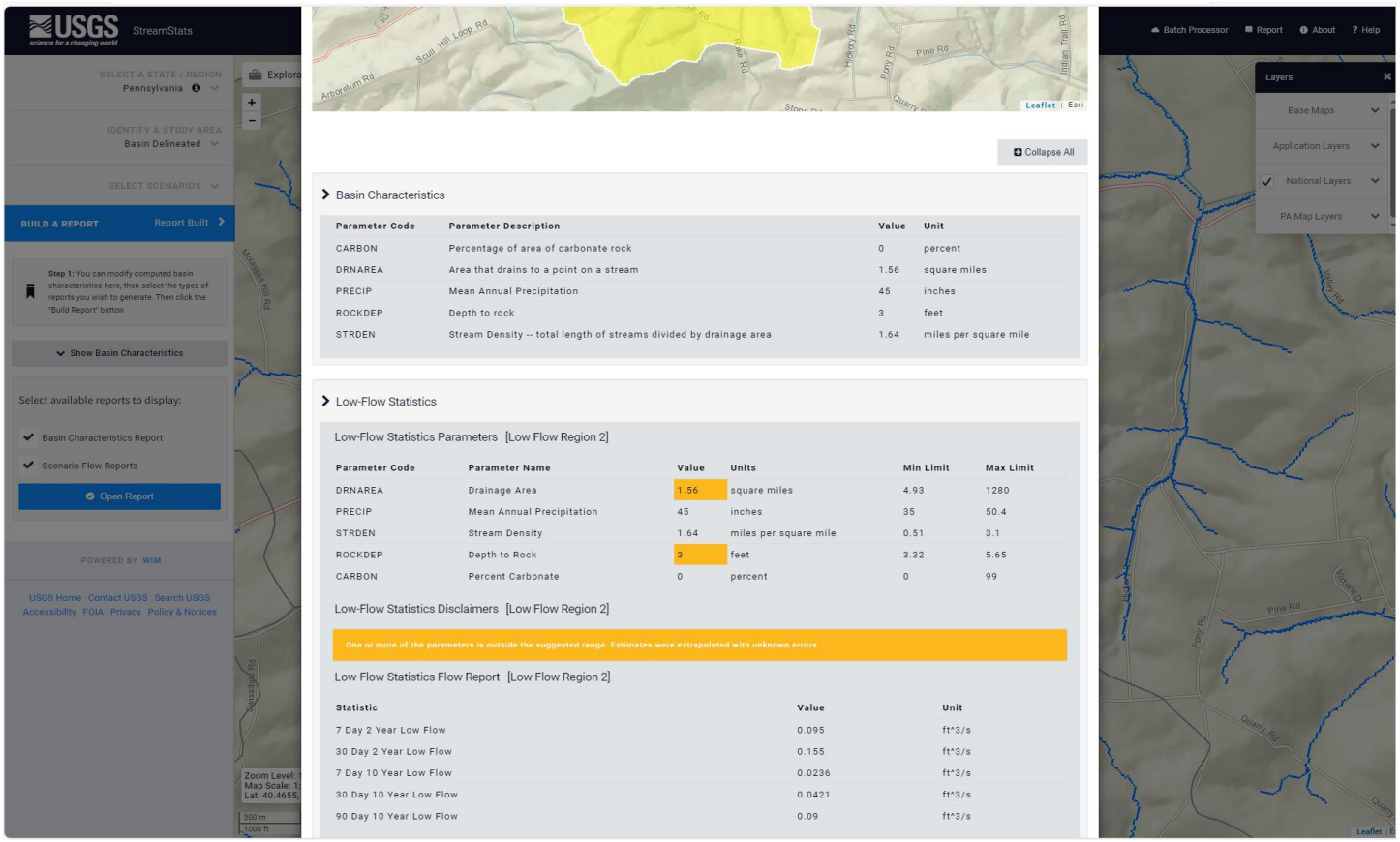


Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0.12	percent
DRNAREA	Area that drains to a point on a stream	358	square miles
PRECIP	Mean Annual Precipitation	49	inches
ROCKDEP	Depth to rock	4.5	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.25	miles per square mile

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	358	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	49	inches	35	50.4
STRDEN	Stream Density	1.25	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	0.12	percent	0	99

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)

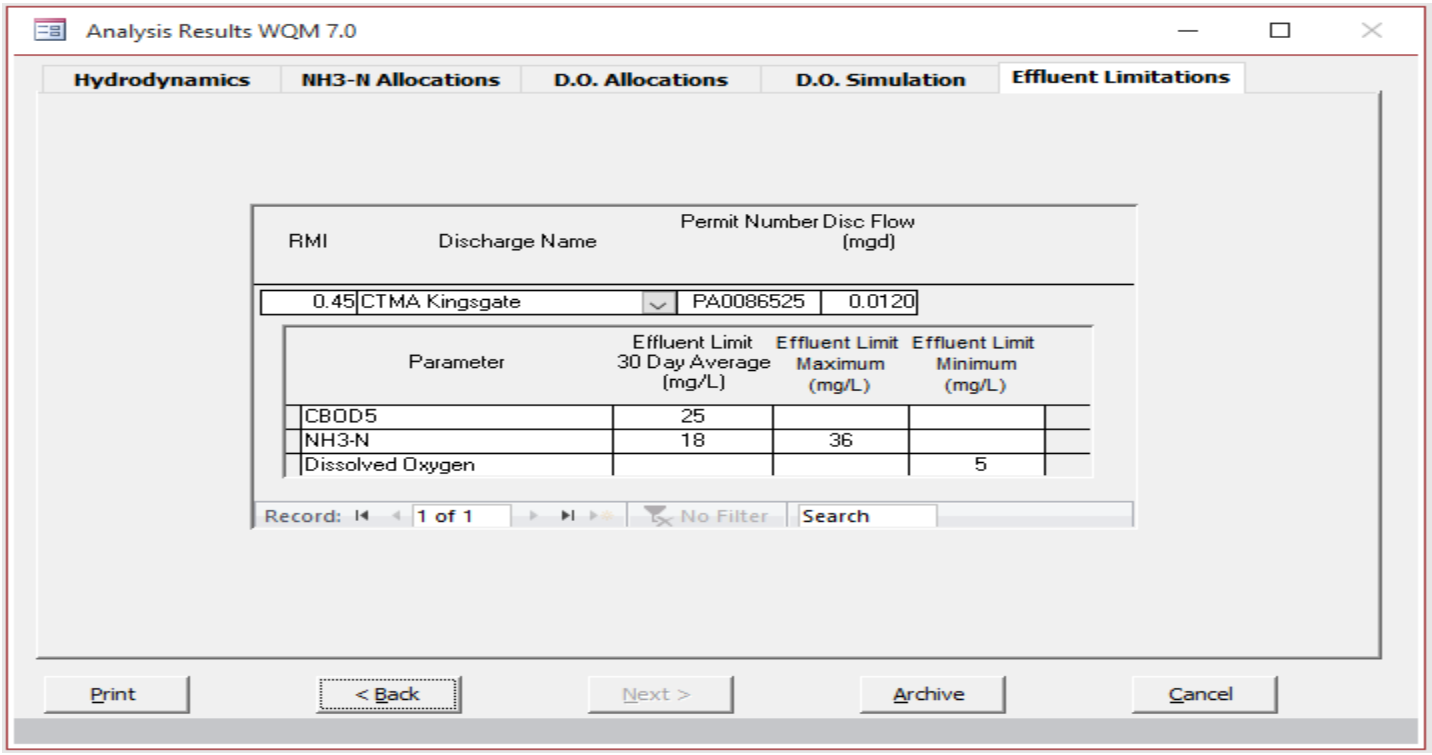
Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	143	ft^3/s	38	38
30 Day 2 Year Low Flow	174	ft^3/s	33	33
7 Day 10 Year Low Flow	86	ft^3/s	51	51
30 Day 10 Year Low Flow	104	ft^3/s	46	46
90 Day 10 Year Low Flow	136	ft^3/s	36	36

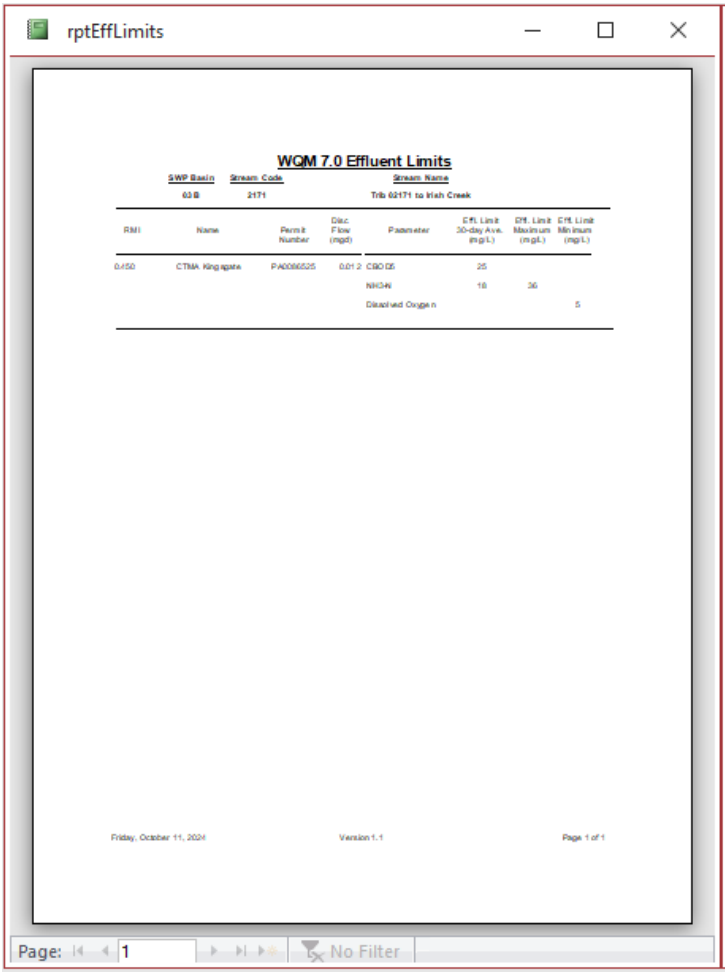


Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	1.56	square miles
PRECIP	Mean Annual Precipitation	45	inches
ROCKDEP	Depth to rock	3	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.64	miles per square mile

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.56	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	45	inches	35	50.4
STRDEN	Stream Density	1.64	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3	feet	3.32	5.65
CARBON	Percent Carbonate	0	percent	0	99

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.095	ft^3/s
30 Day 2 Year Low Flow	0.155	ft^3/s
7 Day 10 Year Low Flow	0.0236	ft^3/s
30 Day 10 Year Low Flow	0.0421	ft^3/s
90 Day 10 Year Low Flow	0.09	ft^3/s


Analysis Results WQM 7.0
Hydrodynamics
NH3-N Allocations
D.O. Allocations
D.O. Simulation
Effluent Limitations
RMI
Discharge Name
Permit Number
Disc Flow (mgd)
0.45
CTMA Kingsgate
PA0086525
0.0120
Parameter
Effluent Limit 30 Day Average (mg/L)
Effluent Limit Maximum (mg/L)
Effluent Limit Minimum (mg/L)
CBOD5
25
NH3-N
18
36
Dissolved Oxygen
5
Record: 1 of 1
No Filter
Search
Print
< Back
Next >
Archive
Cancel


rptEffLimits
WQM 7.0 Effluent Limits
SWP Basin
Stream Code
Stream Name
03B
2171
Trib 02171 to Irish 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)
0.450
CTMA Kingsgate
PA0086525
0.012
CBOD5
25
NH3-N
18
36
Dissolved Oxygen
5
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Version 1.1
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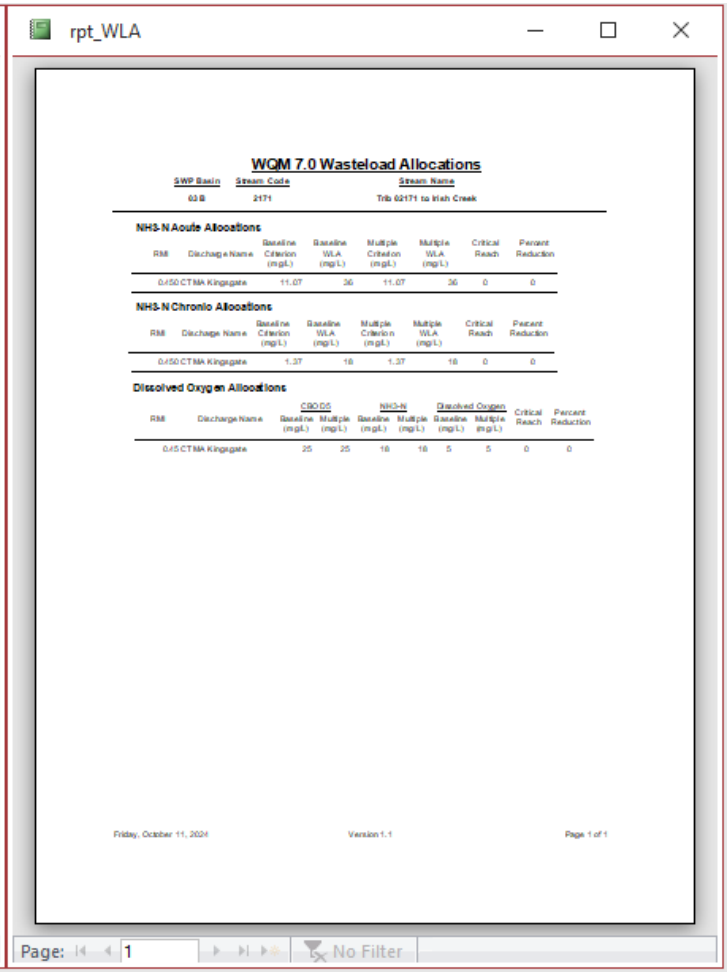
No Filter


rpt_WLA
WQM 7.0 Wasteload Allocations
SWP Basin
Stream Code
Stream Name
03B
2171
Trib 02171 to Irish 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
0.450
CTMA Kingsgate
11.07
36
11.07
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
0.450
CTMA Kingsgate
1.37
18
1.37
18
0
0
Dissolved Oxygen Allocations
CBOD5
NH3-N
Dissolved Oxygen
RMI
Discharge Name
Baseline (mg/L)
Multiple (mg/L)
Baseline (mg/L)
Multiple (mg/L)
Baseline (mg/L)
Multiple (mg/L)
Critical Reach
Percent Reduction
0.45
CTMA Kingsgate
25
25
18
18
5
5
0
0
Friday, October 11, 2024
Version 1.1
Page 1 of 1
Page: 1
No Filter

rptDOSim

WQM 7.0 D.O. Simulation

SWP Basin	Stream Code	Stream Name
03B	21711	Trib 02171 to Irish Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.450	0.012	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach W/D Ratio**	**Reach Velocity (fps)**
7.111	0.426	16.685	0.116
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.21	0.537	0.95	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.072	26.018	Owens	5
Reach Travel Time (days)			
0.236			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.024	3.16	0.93	7.54
0.047	3.11	0.90	7.54
0.071	3.06	0.88	7.54
0.094	3.01	0.86	7.54
0.118	2.97	0.84	7.54
0.142	2.92	0.82	7.54
0.165	2.87	0.80	7.54
0.189	2.83	0.78	7.54
0.212	2.78	0.76	7.54
0.236	2.74	0.74	7.54

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rptModelSpecs

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	0.91	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		

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rptHydro

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
03B	21711	Trib 02171 to Irish Creek

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Dilc. 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												
0.450	0.00	0.00	0.00	.0186	0.01097	.426	7.11	16.69	0.12	0.236	25.00	7.00
Q1-10 Flow												
0.450	0.21	0.00	0.21	.0186	0.01097	NA	NA	NA	0.09	0.298	25.00	7.00
Q30-10 Flow												
0.450	0.45	0.00	0.45	.0186	0.01097	NA	NA	NA	0.14	0.200	25.00	7.00

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rptGeneral

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
03B	21711	Trib 02171 to Irish Creek	0.450	376.00	1.39	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	0.240	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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
CTMA Kingsgate	PA0086525	0.0120	0.0120	0.0120	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	5.00	8.24	0.00	0.00
NH3-N	18.00	0.00	0.00	0.70

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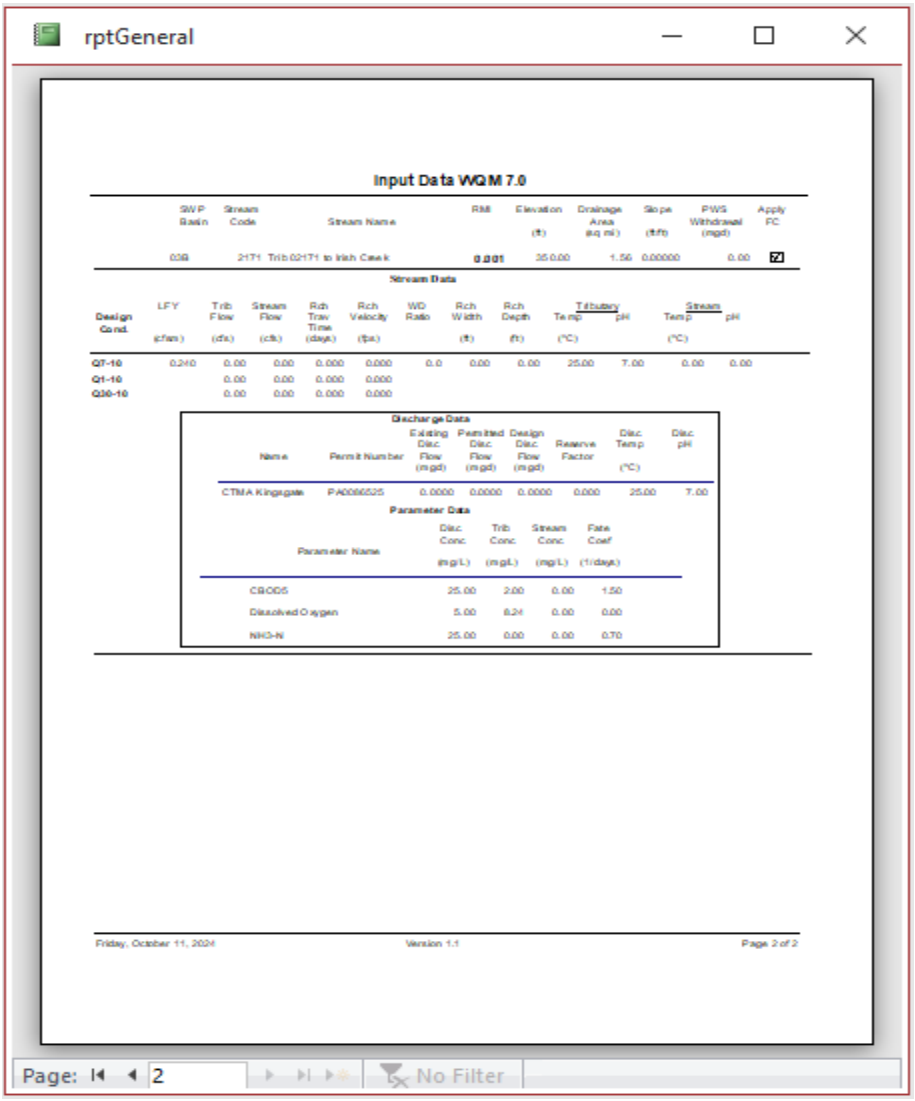
rptGeneral
Input Data WQM 7.0
SWP Basin
Stream Code
Stream Name
RMI
Elevation (ft)
Drainage Area (sq mi)
Slope (ft/ft)
PWS Withdrawal (mgd)
Apply FC
038
21711
Trib 02171 to Irish Creek
0.001
350.00
1.56
0.00000
0.00
Stream Data
Design Cond.
LFY (cfsm)
Trib Flow (cfs)
Stream Flow (cfs)
Rch Trav Time (days)
Rch Velocity (fps)
WD Ratio
Rch Width (ft)
Rch Depth (ft)
Tributary Temp (°C)
Tributary pH
Stream Temp (°C)
Stream pH
Q7-10
0.240
0.00
0.00
0.000
0.000
0.0
0.00
0.00
25.00
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
CTMA Kingsgate
PA0086525
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
5.00
8.24
0.00
0.00
NH3-N
25.00
0.00
0.00
0.70
Friday, October 11, 2024
Version 1.1
Page 2 of 2
Page: 2
No Filter

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 Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Daily Max	XXX	1/day	Grab
D.O.	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
$CBOD_5$	2.5	4.0	XXX	25.0	40.0	50.0	2/month	8-Hr Composite
BOD_5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	3.0	4.5	XXX	30.0	45.0	60.0	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Ammonia Nov 1 - Apr 30	2.0	XXX	XXX	20.0	XXX	40	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	1.8	XXX	XXX	18.0	XXX	36	2/month	8-Hr Composite
TKN	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	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	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Nitrate-Nitrite	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite
Total Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	Calculation
Total Phosphorus	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	8-Hr Composite

Compliance Sampling Location:

Other Comments:

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: BCW-PMT-033
☒	Other: DRBC regulation