pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0239224**
Facility Type	**Non-Municipal**	APS ID	**1096844**
Major / Minor	**Minor**	Authorization ID	**1454877**

Applicant and Facility Information

Applicant Name	**Gentile Enterprises LLC**	Facility Name	**Keystone Charter School**
Applicant Address	201 Main Street	Facility Address	425 S Good Hope Road
	Greenville, PA 16125-2227		Greenville, PA 16125-8629
Applicant Contact	Roderick Donghia	Facility Contact	
Applicant Phone	(724) 589-5546	Facility Phone	(724) 813-8838
Applicant Email	r.donghia@gmail.com		
Client ID	111062	Site ID	264754
Ch 94 Load Status	Not Overloaded	Municipality	West Salem Township
Connection Status	No Limitations	County	Mercer
Date Application Received	September 5, 2023	EPA Waived?	Yes
Date Application Accepted	November 29, 2023	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit for an Existing Discharge of 0.06

Summary of Review

This is a renewal Sewage Individual NPDES Permit for an Existing Discharge of 0.006 MGD from a non-municipal minor sewage facility.

Treatment permitted under WQM Permit 4303410 consists of: A comminutor with bypass bar screen, a 6,000 GPD package activated sludge STP consisting of an aerated 2,380 gallon flow equalization tank, a 1,459 gallon aerated sludge digester, three aeration tanks in series consisting of two 8,985 gallon tanks followed by one 6,371 gallon tank totaling 24,341 gallons, a 1,057 gallon settling tank, tablet chlorine disinfection with a 335 gallon chlorine contact tank, a 139 gallon post aeration/dechlorination tank, and a 500 gallon effluent pumping tank.

No changes to discharge quantity or quality are being proposed as part of this renewal.

This facility is currently submitting eDMR reports.

Act 14 – Proof of Notification was submitted and received.

SPECTIAL CONDITIONS: NONE

The EPA waiver is in effect.

There is ONE open violation in WMS for the subject Client ID (111062) as of November 30, 2023 associated with Safe Drinking Water Section.

Approve	Deny	Signatures	Date
X		Aeshah Shameseldin Aeshah Shameseldin / Civil Engineer Trainee	November 30, 2023
		Vacant / Environmental Engineer Manager	Okay to Draft JCD 1/22/2024

Summary of Review
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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.006
Latitude	41º 24' 14.37"	Longitude	-80º 27' 17.67"
Quad Name	Greenville West	Quad Code	41080D4
Wastewater Description:	Sewage Effluent		

Receiving Waters	Big Run (WWF)	Stream Code	36106
NHD Com ID	130027480	RMI	6.18
Drainage Area	11.8 square mile	Yield (cfs/mi^2)	0.05
Q_{7-10} Flow (cfs)	0.59	Q_{7-10} Basis	Little Shenango River at Greenville, Streamgage # 3102500
Elevation (ft)	1014	Slope (ft/ft)	---
Watershed No.	20-A	Chapter 93 Class.	WWF
Existing Use	---	Existing Use Qualifier	---
Exceptions to Use	---	Exceptions to Criteria	---
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	---		
Source(s) of Impairment	---		
TMDL Status	---	Name	---

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°F)	25.0	Default
Hardness (mg/L)	100	Default
Other:		

Nearest Downstream Public Water Supply Intake		Sharpsville Borough Water Company	
PWS Waters	Shenango River	Flow at Intake (cfs)	94.3
PWS RMI	33.2	Distance from Outfall (mi)	27.5

Changes Since Last Permit Issuance: None

Other Comments: None.

Treatment Facility Summary

Treatment Facility Name: Keystone Charter School

WQM Permit No.	Issuance Date
4303410 A-1	02/22/2011

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia Reduction	Activated Sludge	Hypochlorite	0.006

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.006	46.2	Not Overloaded	---	---

Changes Since Last Permit Issuance: None.

Other Comments: None.

Compliance History

DMR Data for Outfall 001 (from October 1, 2022 to September 30, 2023)

Parameter	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22
Flow (MGD) Average Monthly	0.0014	0.0003	0.0002	0.0003	0.0016	0.0016	0.0017	0.0016	0.0014	0.0013	0.0017	0.0016
Flow (MGD) Daily Maximum	0.0018	0.0012	0.0003	0.0014	0.0018	0.0018	0.0018	0.0017	0.0016	0.0017	0.0019	0.0018
pH (S.U.) Instantaneous Minimum	7.1	7.0	7.0	7.0	7.1	7.0	6.9	7.0	6.9	6.7	7.0	7.0
pH (S.U.) Instantaneous Maximum	7.4	7.4	7.6	7.4	7.5	7.5	7.6	7.5	7.5	7.5	7.5	7.5
DO (mg/L) Instantaneous Minimum	6.9	7.0	7.1	7.0	6.9	6.7	7.0	6.9	7.1	7.0	7.1	6.9
TRC (mg/L) Average Monthly	0.2	0.3	0.2	0.3	0.2	0.2	0.3	0.2	0.3	0.3	0.2	0.3
TRC (mg/L) Instantaneous Maximum	0.3	0.3	0.3	0.4	0.3	0.3	0.34	0.3	0.4	0.3	0.3	0.4
CBOD5 (mg/L) Average Monthly	4.0	3.8	4.4	4.7	4.0	4.0	4.5	4.4	4.3	4.5	3.6	3.7
TSS (mg/L) Average Monthly	11.0	10.5	9.0	13.0	9.5	13.5	10.5	9.0	14.0	10.5	7.5	9.0
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Total Nitrogen (mg/L) Average Quarterly	21.2			21.9			22.1			21.7		
Ammonia (mg/L) Average Monthly	10.0	10.2	10.4	10.1	10.1	10.2	9.2	9.9	10.1	10.0	10.1	10.0
Ammonia (mg/L) Instantaneous Maximum	10.1	10.4	10.5	10.3	10.2	10.2	10.0	9.9	10.2	10.2	10.2	10.2
Total Phosphorus (mg/L) Average Quarterly	3.727			3.635			3.680			3.167		

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .006
Latitude 41º 24' 14.37" **Longitude** -80º 27' 17.67"
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)
E. Coli	Report (No./100 ml)	IMAX	-	92a.61

Comments: Monitoring for E. Coli is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Water Quality-Based Limitations

A "Reasonable Potential Analysis" determined the following parameters were candidates for limitations: N/A

CBOD5, Ammonia, and DO are evaluated using WQM 7.0 (See Attachment 1). TRC is evaluated using the TRC spread sheet (See Attachment 2). Nitrogen, phosphorus and E Coli are monitor and report.

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	4.0	Daily Min.	WQM 7.0
CBOD5	25	Avg. Monthly	WQM 7.0
	50	IMAX	
Ammonia Nitrogen (May 1 – Oct 31)	25.0	Average Monthly	WQM 7.0
	50.0	IMAX	

Comments: WQM modeling resulted in the summer limits calculated above. Based on the previous NPDES Permit and eDMR data, the previous limits of 10.5 mg/l monthly average and 21.0 instantaneous maximum are attainable, so they will be retained. The winter limits are calculated as three times the summer limits (75.0 Avg. Monthly, 150.0 IMAX), but since the technology-based limits are more protective, they will be used.

Best Professional Judgment (BPJ) Limitations

Comments: Monitoring for total nitrogen, total phosphorus ~~and raw sewage influent monitoring for BOD_5 and TSS~~ are placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Anti-Backsliding

No backsliding of limits is being proposed.

Proposed Effluent Limitations and Monitoring Requirements

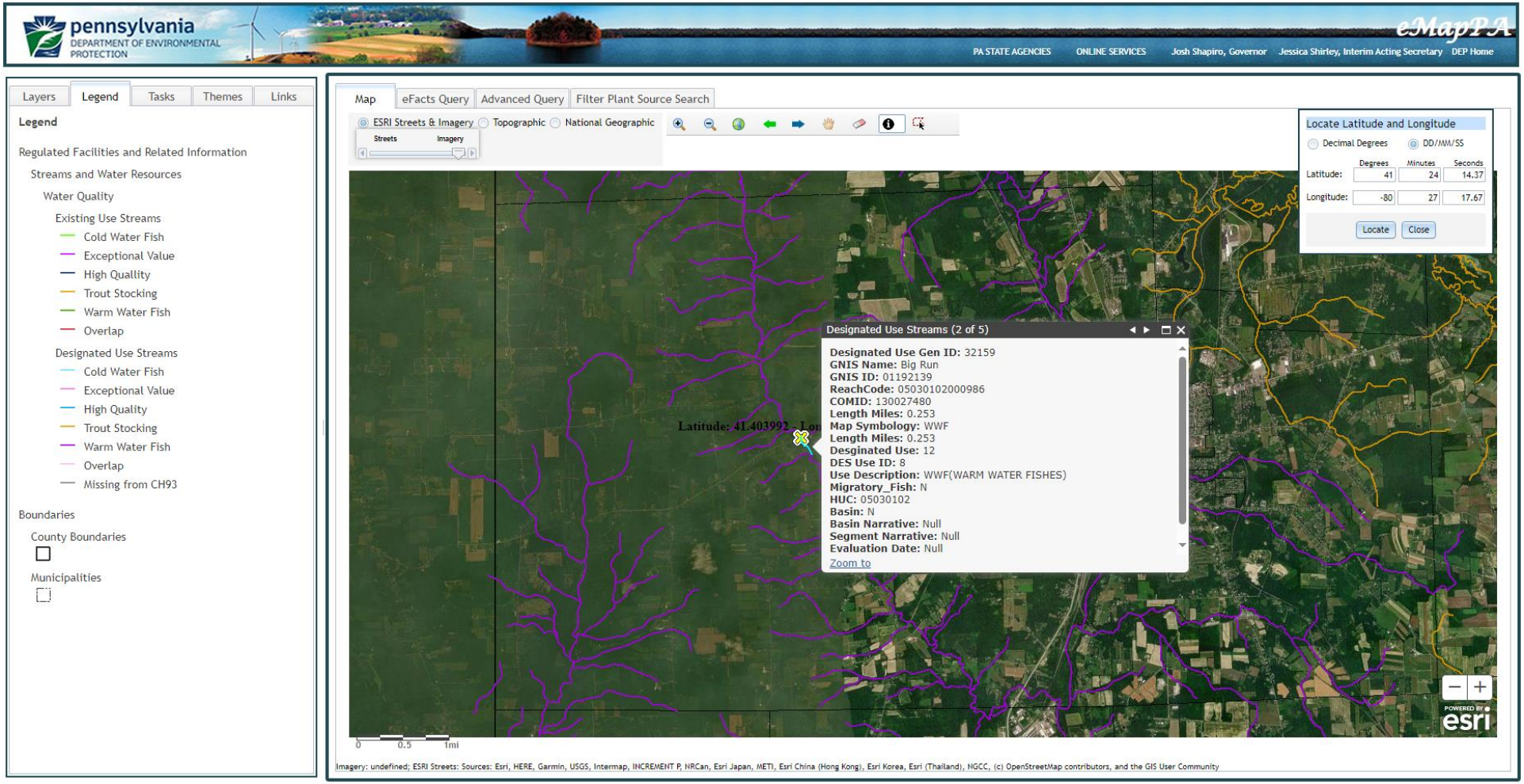
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). 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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	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	XXX	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	10.5	XXX	21.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab

Compliance Sampling Location: Outfall 001, after disinfection.

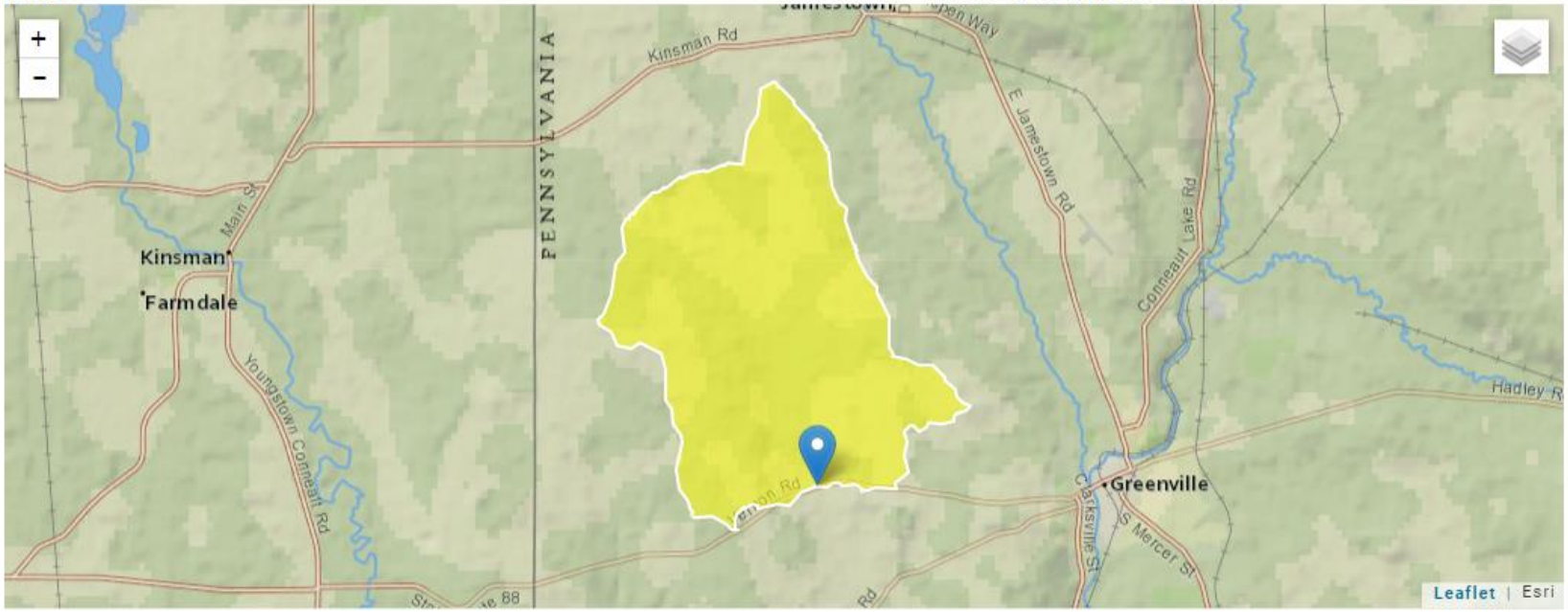
Outfall Location - eMap with Aerial Imagery



Drainage Area at Outfall 001 Location – StreamStats with Aerial Imagery

StreamStats Report

Region ID:	PA
Workspace ID:	PA20231129155945034000
Clicked Point (Latitude, Longitude):	41.40402, -80.45499
Time:	2023-11-29 11:00:07 -0500



Collapse All

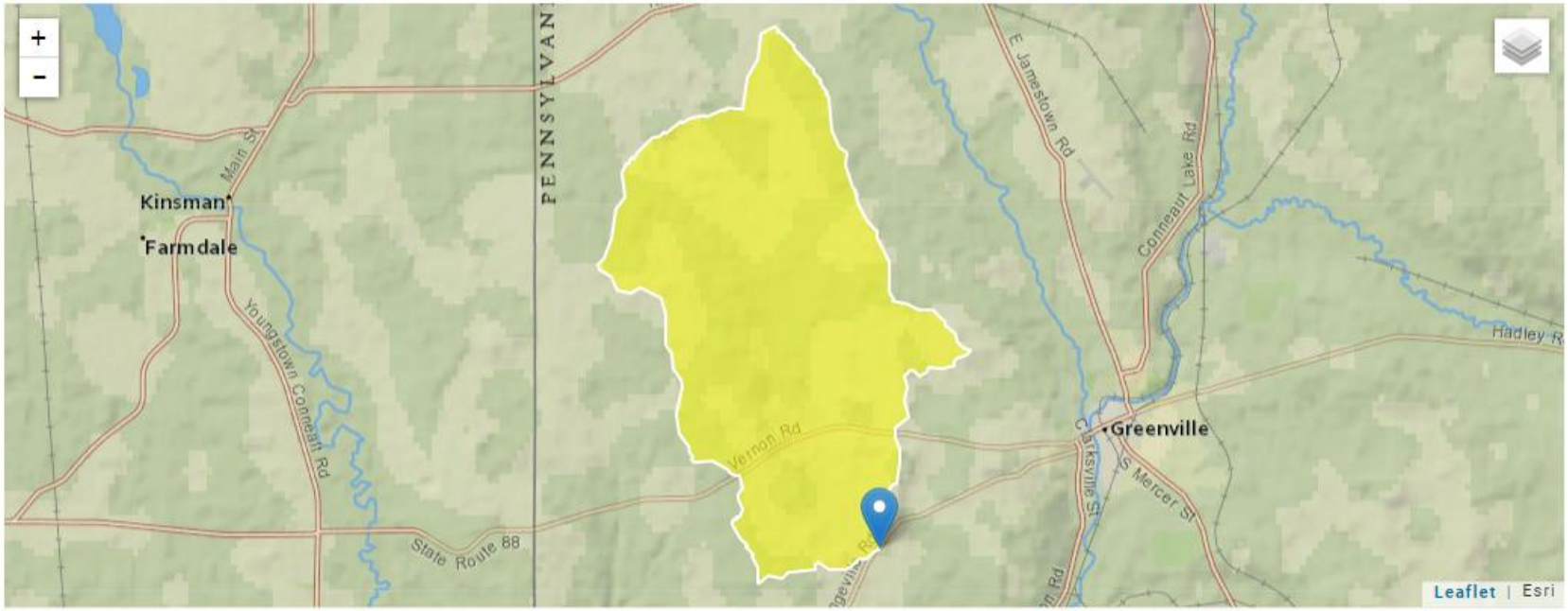
Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	11.8	square miles

Drainage Area – Downstream RMI 4.32 – StreamStats with Aerial Imagery

StreamStats Report

Region ID:	PA
Workspace ID:	PA20231129161021307000
Clicked Point (Latitude, Longitude):	41.38401, -80.44084
Time:	2023-11-29 11:10:43 -0500



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Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	14.5	square miles

Attachment 1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20A	36106	BIG 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)
6.180	Keystone Char.	PA0239224	0.006	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20A	36106	BIG RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.180	0.006	25.000	7.002
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
13.679	0.484	28.244	0.090
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.36	0.102	0.39	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.485	18.676	Owens	5
Reach Travel Time (days)			
1.257			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.126	2.32	0.34	7.54
0.251	2.28	0.30	7.54
0.377	2.24	0.26	7.54
0.503	2.21	0.23	7.54
0.628	2.17	0.20	7.54
0.754	2.14	0.18	7.54
0.880	2.10	0.16	7.54
1.005	2.07	0.14	7.54
1.131	2.04	0.12	7.54
1.257	2.01	0.11	7.54

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

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
20A	36106	BIG RUN	**6.180**	1014.00	11.80	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	0.050	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
Keystone Char.	PA0239224	0.0060	0.0000	0.0000	0.000	25.00	7.20

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	7.54	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
20A	36106	BIG RUN	**4.320**	972.00	14.50	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	0.050	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
		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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20A	36106	BIG 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												
6.180	0.59	0.00	0.59	.0093	0.00428	.484	13.68	28.24	0.09	1.257	25.00	7.00
Q1-10 Flow												
6.180	0.38	0.00	0.38	.0093	0.00428	NA	NA	NA	0.07	1.606	25.00	7.00
Q30-10 Flow												
6.180	0.80	0.00	0.80	.0093	0.00428	NA	NA	NA	0.11	1.060	25.00	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20A	36106	BIG 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
6.180	Keystone Char.	11.04	50	11.04	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
6.180	Keystone Char.	1.37	25	1.37	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
6.18	Keystone Char.	25	25	25	25	4	4	0	0

Attachment 2

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.59	= Q stream (cfs)	0.5	= CV Daily
0.006	= 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)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 20.296	1.3.2.iii	WLA cfc = 19.779
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 7.563	5.1d	LTA_cfc = 11.499

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)**