Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0272469**
Facility Type	**Municipal**	APS ID	**1125318**
Major / Minor	**Minor**	Authorization ID	**1505727**

Applicant and Facility Information

Applicant Name	**Marion Township Butler County**	Facility Name	**Boyers STP**
Applicant Address	PO Box 141 2275 W Sunbury Road Suite B Boyers, PA 16020-0141	Facility Address	Clay Street Boyers, PA 16020
Applicant Contact	Michele Burd	Facility Contact	
Applicant Phone	(724) 735-2637	Facility Phone	
Client ID	134852	Site ID	811373
Ch 94 Load Status	Not Overloaded	Municipality	Marion Township
Connection Status	No Limitations	County	Butler
Date Application Received	November 1, 2024	EPA Waived?	Yes
Date Application Accepted		If No, Reason	
Purpose of Application	This is an application to renew a Minor Sewage Treatment Plant that serves the village of Boyers and Marion Township.		

Summary of Review

Treatment at the existing facility consists of (WQM Permit No. 1020408): An influent pump station with a duplex submersible sewage pumps rated 60 GPM @ 29 ft TDH, three 22,000 gallon baffled septic tanks in series, a recirculation vault, a 13,500 gallon dosing tank with two submersible pumps rated at 260 GPM @ 19 ft TDH, two 9,540 sw. ft. open recirculating sand filter beds, tablet chlorine disinfection with a 2,000 gallon chlorine contact tank, tablet de-chlorination, and a 6 inch diameter HDPE discharge line.

The facility became operational in June of 2024. The construction of this plant was due to a CO&A from the Department, which was terminated on November 25, 2024, following the completion of obligations set forth in the CO&A. Based on the one Chapter 94 report submitted by the facility so far, the facility is not overloaded, and the facility seems to be in good working order.

There are currently 4 open violations in WMS for the subject Client ID (134852) as of 10/30/25. The open violations consist of 3 violations with the Safe Drinking Water Program out of the NWRO and 1 violation with the Water Planning and Conservation Program out of the NWRO.

Sludge use and disposal description and location(s): Since the renewal for the permit was due in 2024 and the facility began operation in that year no data was available for sludge/biosolids production and disposal.

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		Dustin Hargenrater Dustin Hargenrater / Project Manager	October 28, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	November 4, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.037
Latitude	41º 6' 35.29"	Longitude	-79º 54' 23.76"
Quad Name	West Sunbury	Quad Code	41079A8
Wastewater Description:	Sewage Effluent		

Receiving Waters	Slippery Rock Creek (CWF)	Stream Code	34032
NHD Com ID	126222934	RMI	42.7
Drainage Area	28.3	Yield (cfs/mi^2)	0.019
Q_{7-10} Flow (cfs)	0.554	Q_{7-10} Basis	USGS – StreamStats
Elevation (ft)	1187	Slope (ft/ft)	---
Watershed No.	20-C	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		Name	

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°F)	20	Default - CWF
Hardness (mg/L)	100	Default
Other:		

Nearest Downstream Public Water Supply Intake		PA American – Ellwood City	
PWS Waters	Slippery Rock Creek	Flow at Intake (cfs)	53.1
PWS RMI	0.1	Distance from Outfall (mi)	44

Changes Since Last Permit Issuance: No changes since last permit issuance.

Compliance History

DMR Data for Outfall 001 (from September 1, 2024 to August 31, 2025)

Parameter	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24
Flow (MGD) Average Monthly	0.012201	0.016457	0.023389	0.028892	0.03036	0.02439	0.036558	0.027948	0.032685	0.024668	0.017887	0.014779
Flow (MGD) Daily Maximum	0.0134	0.046963	0.099096	0.078396	0.083739	0.038654	0.03889	0.041914	0.05917	0.035883	0.029122	0.017039
pH (S.U.) Daily Minimum	7.7	7.7	7.1	7.7	7.8	7.8	7.8	7.6	7.5	8.0	7.3	7.0
pH (S.U.) Daily Maximum	8.3	8.3	8.4	8.3	8.2	8.1	8.3	8.1	8.4	8.8	8.4	8.2
DO (mg/L) Daily Minimum	7.37	7.56	6.82	6.51	7.14	6.27	6.87	6.71	6.23	7.01	6.62	6.75
TRC (mg/L) Average Monthly	0.2	0.2	0.2	0.2	0.1	0.3	0.4	0.1	0.3	0.1	0.2	0.2
TRC (mg/L) Instantaneous Maximum	0.62	0.74	0.81	0.42	0.38	0.84	1.27	0.26	1.27	0.24	1.2	0.79
CBOD5 (lbs/day) Average Monthly	< 0.3	2.0	1.0	0.7	1.0	< 0.3	< 1.0	< 0.6	< 0.6	< 0.4	< 0.2	< 0.2
CBOD5 (lbs/day) Weekly Average	0.4	3.3	1.6	1.1	1.0	< 0.4	< 1.6	0.8	< 0.8	< 0.5	< 0.3	< 0.3
CBOD5 (mg/L) Average Monthly	< 2.3	17.4	3.8	3.6	7.1	< 2.0	< 2.0	< 2.7	< 2.0	< 2.0	< 2.0	< 2.0
CBOD5 (mg/L) Weekly Average	2.7	27.2	4.49	5.16	7.09	< 2.0	< 2.0	3.48	< 2.0	< 2.0	< 2.0	< 2.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	35	20	52	58	8	30	95	45	E	47	38	8
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	59	30	95	71	8	58	161	48	E	47	63	8
BOD5 (mg/L) Raw Sewage Influent Average Monthly	281	185.4	160.7	381	55.4	173	171	225	E	186	289	94.1
TSS (lbs/day) Average Monthly	0.6	0.8	< 1.4	< 0.8	< 0.7	< 0.8	< 2.5	< 1.0	< 1.5	< 1.1	< 0.6	< 0.5

TSS (lbs/day) Raw Sewage Influent Average Monthly	35	23	40	47	24	25	63	37	E	39	52	7
TSS (lbs/day) Raw Sewage Influent Daily Maximum	62	39	73	70	24	40	104	41	E	39	78	9
TSS (lbs/day) Weekly Average	0.7	1.1	< 1.8	< 1.1	< 0.7	< 0.9	< 3.9	< 1.2	< 2.0	< 1.3	< 0.7	< 0.7
TSS (mg/L) Average Monthly	5.5	7.0	< 6.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
TSS (mg/L) Raw Sewage Influent Average Monthly	275	213	122	279	163	149.5	118	186	E	156	418	66
TSS (mg/L) Weekly Average	6.0	9.0	7.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	5.0	< 5.0	< 5.0
Fecal Coliform (No./100 ml) Geometric Mean	> 2420	< 1	< 6	68	1	< 1	< 1	< 1	< 5	> 49	> 49	> 70
Fecal Coliform (No./100 ml) Instantaneous Maximum	> 2420	< 1	42	1553	1	1	< 1	< 1	21	> 2420	> 2420	> 2420
Total Nitrogen (lbs/day) Average Quarterly			0.1			0.1			0.03			0.03
Total Nitrogen (mg/L) Average Quarterly			12.9			15.6			3.81			4.13
Ammonia (lbs/day) Average Monthly	0.3	0.1	0.1	0.3	0.1	< 0.2	5	2	2	0.3	< 0.01	< 0.01
Ammonia (mg/L) Average Monthly	2.29	1.067	0.532	1.72	0.691	< 1.28	10.54	6.58	5.12	1.173	< 0.1	< 0.1
Total Phosphorus (lbs/day) Average Quarterly			0.005			< 0.001			0.001			0.0009
Total Phosphorus (mg/L) Average Quarterly			0.598			< 0.15			0.12			0.11
Total Aluminum (lbs/day) Annual Average									0.01			

Total Aluminum (mg/L) Annual Average									0.035			
Total Iron (lbs/day) Annual Average									< 0.007			
Total Iron (mg/L) Annual Average									< 0.02			
Total Manganese (lbs/day) Annual Average									0.06			
Total Manganese (mg/L) Annual Average									0.195			

Compliance History

Effluent Violations for Outfall 001, from: October 1, 2024 To: August 31, 2025

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	08/31/25	Geo Mean	> 2420	No./100 ml	200	No./100 ml
Fecal Coliform	11/30/24	Geo Mean	> 49	No./100 ml	2000	No./100 ml
Fecal Coliform	10/31/24	Geo Mean	> 49	No./100 ml	2000	No./100 ml
Fecal Coliform	10/31/24	IMAX	> 2420	No./100 ml	10000	No./100 ml
Fecal Coliform	11/30/24	IMAX	> 2420	No./100 ml	10000	No./100 ml
Fecal Coliform	05/31/25	IMAX	1553	No./100 ml	1000	No./100 ml
Fecal Coliform	08/31/25	IMAX	> 2420	No./100 ml	1000	No./100 ml

Summary of Inspections: There have been 4 inspections at the site since 2022. There were 2 follow-up inspections and 2 routine/partial inspections. There was only one inspection that a violation was noted and that was the follow-up inspection regarding the CO&A status.

Other Comments: The 8/31/25 violation was the only one that had information regarding the violation in the non-compliance form. The violation was due to an equipment failure and the equipment was repaired as the corrective action.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .037
Latitude 41º 6' 33.90" **Longitude** -79º 54' 27.40"
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: The technology-based limits above apply as more stringent Water Quality Based Limitations were not calculated through modeling efforts.

Based on the SOP for Establishing Effluent Limitations for Individual Sewage Permits E. Coli monitoring has been added to the permit. E. Coli monitoring will be established on a 1/year frequency due the discharge flow being between 0.002 MGD and 0.05 MGD.

Water Quality-Based Limitations

The discharge was modeled using WQM 7.0 v 1.1 and TRC_CALC. The WQM 7.0 model uses a mass balance equation using in-stream data for Q_{7-10}, Yield, Drainage Area, average concentration data for pH from the facility, and discharge rate of the facility. It then uses these values to calculate WQBELs for CBOD5, Ammonia-Nitrogen, and Dissolved Oxygen. The TRC_CALC model takes into consideration the Q_{7-10} of the receiving stream and the discharge rate and uses a mass balance approach to calculate WQBELs for Total Residual Chlorine.

WQM 7.0 v 1.1 Modeling Results

The modeling results for the WQM 7.0 v 1.1 Model produced limits of 25 mg/L average monthly limit for CBOD5, Ammonia-Nitrogen limitations of 25 mg/L average monthly and 50 mg/L Instantaneous Maximum, and Dissolved Oxygen limitation of 4 mg/l Instantaneous Minimum. These values are all in the previous permit so therefore the limitations and frequencies will be retained for this permit renewal.

TRC_CALC Modeling Results

The TRC_CALC model produced a 0.5 mg/L average monthly limit and a 1.6 mg/L Instantaneous Maximum limit. These values are in the previous permit so the limitation and frequency will not change with the renewal of this permit.

Best Professional Judgment (BPJ) Limitations

Comments: No new BPJ Limits are being imposed for this permit renewal. The monitoring in the previous permit for Total Nitrogen, Total Phosphorous, Total Aluminum, Total Manganese, and Total Iron will be retained for this permit renewal based on the SOP for Establishing Effluent Limitations for Individual Sewage Permits".

Anti-Backsliding

According to the Clean Water Act Section 402(o)(1) "In the case of effluent limitations established on the basis of subsection (a)(1)(B) of this section, a permit may not be renewed, reissued, or modified on the bases of effluent guidelines promulgated under section 1314(b) of this title subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit. In the case of effluent limitations established on the bases of section 1311(b)(1)(C) or section 1313(d) of this title, a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit except in compliance with section 1313(d)(4) of this title."

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	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	7.7	12.3	XXX	25.0	40.0	50	2/month	Grab
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
TSS	9.2	13.8	XXX	30.0	45.0	60	2/month	Grab
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/month	Grab
Ammonia May 1 - Oct 31	7.7	XXX	XXX	25.0	XXX	50	1/month	Grab
Total Phosphorus	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab

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		
Total Aluminum	Report Annual Avg	XXX	XXX	Report Annual Avg	XXX	XXX	1/quarter	Grab
Total Iron	Report Annual Avg	XXX	XXX	Report Annual Avg	XXX	XXX	1/quarter	Grab
Total Manganese	Report Annual Avg	XXX	XXX	Report Annual Avg	XXX	XXX	1/quarter	Grab

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	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	7.7	12.3	XXX	25.0	40.0	50	2/month	Grab
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
TSS	9.2	13.8	XXX	30.0	45.0	60	2/month	Grab
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/month	Grab
Ammonia May 1 - Oct 31	7.7	XXX	XXX	25.0	XXX	50	1/month	Grab

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		
Total Phosphorus	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
Total Aluminum	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Total Iron	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Total Manganese	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
E. Coli (No./100mL)	XXX	XXX	XXX	Report Annl Avg	XXX	Report IMAX	1/year	Grab

Compliance Sampling Location: Outfall 001, after disinfection.

Attachment 1
WQM 7.0 Modeling Results

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
20C	34032	SLIPPERY ROCK CREEK	**42.700**	1187.00	28.30	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	0.019	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Boyers STP	PA0272469	0.0370	0.0000	0.0000	0.000	25.00	7.67

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	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
20C	34032	SLIPPERY ROCK CREEK	**42.080**	1186.00	28.60	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	0.019	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20C	34032	SLIPPERY ROCK 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												
42.700	0.54	0.00	0.54	.0572	0.00031	.554	18	32.51	0.06	0.635	20.48	7.03
Q1-10 Flow												
42.700	0.34	0.00	0.34	.0572	0.00031	NA	NA	NA	0.05	0.791	20.71	7.05
Q30-10 Flow												
42.700	0.73	0.00	0.73	.0572	0.00031	NA	NA	NA	0.07	0.542	20.36	7.03

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	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34032	SLIPPERY ROCK 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
42.700	Boyers STP	15.07	50	15.07	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
42.700	Boyers STP	1.83	25	1.83	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)		
42.70	Boyers STP	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34032	SLIPPERY ROCK CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
42.700	0.037	20.481	7.034
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
18.000	0.554	32.513	0.060
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.21	0.676	2.41	0.726
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.835	9.916	Owens	6
Reach Travel Time (days)			
0.635			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.063	4.03	2.30	7.85
0.127	3.86	2.19	7.88
0.190	3.69	2.09	7.92
0.254	3.53	2.00	7.97
0.317	3.38	1.91	8.01
0.381	3.24	1.82	8.06
0.444	3.10	1.74	8.10
0.508	2.97	1.66	8.14
0.571	2.84	1.59	8.17
0.635	2.72	1.52	8.17

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34032	SLIPPERY ROCK 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)
42.700	Boyers STP	PA0272469	0.037	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Attachment 2
TRC_CALC Modeling Results

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.554	= Q stream (cfs)	0.5	= CV Daily
0.037	= 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 = 3.107	1.3.2.iii	WLA cfc = 3.021
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 1.158	5.1d	LTA_cfc = 1.756

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)**