pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0034959**
Facility Type	**Non-Municipal**	APS ID	**1025282**
Major / Minor	**Minor**	Authorization ID	**1330544**

Applicant and Facility Information

Applicant Name	**Pinebloom Corp**	Facility Name	**Wolfs Camping Resort**
Applicant Address	308 Timberwolf Run	Facility Address	308 Timberwolf Run
	Knox, PA 16232-4072		Knox, PA 16232-4072
Applicant Contact	Peter Titley	Facility Contact	Peter Titley
Applicant Phone	(814) 797-1103	Facility Phone	(814) 797-1103
Client ID	244730	Site ID	447616
Ch 94 Load Status	Not Overloaded	Municipality	Beaver Township
Connection Status	No Limitations	County	Clarion
Date Application Received	September 29, 2020	EPA Waived?	Yes
Date Application Accepted	October 27, 2020	If No, Reason	

Purpose of Application: Renewal application for a minor sewage facility.

Summary of Review

Act 14 – Proof of notification were submitted and received.

There is one open violation for subject client no. 244730 as of 12/17/2021 with the Safe Drinking Water Program, violation date is 9/9/2019. It is currently being determined if there is a plan in place to resolve these violations.

Monitoring frequencies for DO, pH, and TRC are being increased from 1/week on the previous renewal to 1/day in order to comply with Table 6-3 from the Permit Writers Manual and current department practices.

This facility is currently submitting eDMR reports.

The consent order and agreement (COA), dated April 28, 2005, was fulfilled on September 18, 2017.

Sludge use and disposal description and location(s): Septage must be pumped and hauled off-site by a septage hauler for land application under a general permit authorized by DEP or disposal at an STP.

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		Jon F. Bucha Jonathan F. Bucha / Civil Engineer General	December 17, 2021
X		Justin C. Dickey Justin C. Dickey, P.E. / Environmental Engineer Manager	December 21, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.015
Latitude	41º 11' 18"	Longitude	-79º 31' 48"
Quad Name	Knox	Quad Code	0909
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Canoe Creek (HQ-CWF)	Stream Code	49382
NHD Com ID	102670837	RMI	1.4
Drainage Area	1.26 mi^2	Yield (cfs/mi^2)	0.0875
Q_{7-10} Flow (cfs)	0.11025	Q_{7-10} Basis	Piney Ck @ Piney PA (Gage # 03030600 '71 – '93)
Elevation (ft)	1283	Slope (ft/ft)	-
Watershed No.	17-B	Chapter 93 Class.	HQ-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	-	Name	-

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°C)	20	CWF Default
Hardness (mg/L)		
Other:	0.1	NH_3-N Default

Nearest Downstream Public Water Supply Intake		Parker Area Water Authority	
PWS Waters	Allegheny River	Flow at Intake (cfs)	951
PWS RMI	85.0	Distance from Outfall (mi)	21

Changes Since Last Permit Issuance: Low flow yield was updated from 0.139 cfsm to 0.0875 cfsm based USGS data. This change in low flow yield had a slight impact on WQM 7.0 modeling by reducing the ammonia nitrogen limit from 11 mg/L to 8.5 mg/L. Other slight refinements were made to drainage area and elevations using Streamstats and Google Earth.

Other Comments: This treatment system is capable of meeting effluent requirements. *No changes in effluent quality and/or design flow are proposed. Therefore, anti-degradation requirements are met.* JCD

Treatment Facility Summary				
Treatment Facility Name: Wolfs Camping Resort				
WQM Permit No.	**Issuance Date**			
1616403	July 20, 2016			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Stabilization Lagoon	Hypochlorite	0.015
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.0151	25.2	Not Overloaded	None	Hauled away

Changes Since Last Permit Issuance: The treatment system has been upgraded from a lagoon system to a recirculating sand filter since the previous permit issuance. Treatment consists of (WQM permit no. 1616403, dated July 20, 2016) four 5,050-gallon septic tanks in series followed by one 2,500-gallon septic tank, 500,000-gallon aerated equalization basin, a 2,500-gallon dosing pump station with two alternating timed submersible pumps, 9,790 sq. ft. sand filter (89' x 110') with alternating spray nozzles, recirculating pump station, tablet chlorination, two 1,500-gallon chlorine contact tanks in series, tablet dichlorination, 482.5-gallon dichlorination with effluent flow meter and weir, where the treated effluent discharges into Unnamed Tributary 49382 to Canoe Creek (HQ-CWF).

Compliance History

DMR Data for Outfall 001 (from November 1, 2020 to October 31, 2021)

Parameter	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20
Flow (MGD) Average Monthly	0.006	0.007	0.010	0.009	0.009	0.006	0.005	0.005	0.005	0.005	0.005	0.005
pH (S.U.) Minimum	7.5	7.2	7.6	7.8	7.3	7.7	7.6	7.6	7.5	7.8	7.6	7.8
pH (S.U.) Maximum	8.0	7.8	8.0	8.2	7.9	8.2	7.9	8.2	7.8	8.1	8.0	8.1
DO (mg/L) Minimum	5.93	5.7	5.78	6.0	8.0	6.9	6.0	6.56	7.95	6.4	8.8	5.0
TRC (mg/L) Average Monthly	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.3	0.5	0.4	0.5
TRC (mg/L) Instantaneous Maximum	0.54	0.54	0.55	0.5	0.61	0.64	0.54	0.66	0.61	0.58	0.64	0.68
CBOD5 (mg/L) Average Monthly	3	3	3	3	3	3	36	3	3	3	3	3
TSS (mg/L) Average Monthly	5	12	7	4	3	3	3	3	7	5	3	3
Fecal Coliform (CFU/100 ml) Geometric Mean	1	1	1	1	1	1	49	1	2	1	1	1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	1	1	1	1	2	1	2420	1	2	1	1	1
Total Nitrogen (mg/L) Average Monthly	18.4	9.45	17.9	34.4	27	2.51	3.42	1.82	5.60	2.83	4.51	11.8
Ammonia (mg/L) Average Monthly	6	7	6	6	4	0.2						
Total Phosphorus (mg/L) Average Monthly	0.85	0.84	0.81	0.23	0.16	0.11	0.17	0.11	0.10	0.16	0.14	0.110

Compliance History

Effluent Violations for Outfall 001, from: December 1, 2020 To: October 31, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
CBOD5	April, 2021	Avg Mo	36	mg/L	25	mg/L
Ammonia Nitrogen	July, 2020	Avg Mo	20	mg/L	11	mg/L
Ammonia Nitrogen	June, 2020	Avg Mo	17	mg/L	11	mg/L
CBOD5	May, 2020	Avg Mo	28	mg/L	25	mg/L
Ammonia Nitrogen	Oct, 2019	Avg Mo	22	mg/L	11	mg/L
Ammonia Nitrogen	Sep, 2019	Avg Mo	16	mg/L	11	mg/L
Fecal Coliform	Aug, 2019	IMAX	2420	CFU/100 mL	1000	mg/L
CBOD5	Aug, 2019	Avg Mo	33	mg/L	11	mg/L
Ammonia Nitrogen	Aug, 2019	Avg Mo	30	mg/L	11	mg/L
Ammonia Nitrogen	July, 2019	Avg Mo	20	mg/L	11	mg/L

Summary of Inspections: An inspection occurred on 9/13/2017, where no violations were noted.

Other Comments: This facility has had only 1 effluent violation in 2021, which has been considerably better performance than 2019 and 2020. The facility should continue to meet effluent limitations with proper maintenance and operation.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .015
Latitude 41º 11' 18.30" **Longitude** -79º 31' 40.54"
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)

Water Quality-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Model
Ammonia Nitrogen	8.5	Avg Monthly	WQM 7.0 (version 1.1)
Ammonia Nitrogen	25.0	Avg Monthly	WQM 7.0 (version 1.1)
Total Residual Chlorine (TRC)	0.4	Avg Monthly	TRC_Calc Spreadsheet
Total Residual Chlorine (TRC)	1.5	IMAX	TRC_Calc Spreadsheet

Comments: Water quality modeling for ammonia nitrogen has determined that an effluent limitation of 8.5 mg/L is required to protect the stream quality. Wintertime ammonia nitrogen limits were determined by using a seasonal multiplier of 3 times the summertime average monthly limit according to the Establishing Effluent Limitations SOP and using rounding guidance for conventional pollutants from the Permit Writers Manual.

TRC limits on the previous permit renewal were technology based 0.5 mg/L average monthly with an imax of 1.6 mg/L. This permit renewal has a water quality-based effluent limitation of an average monthly TRC limit of 0.4 mg/L and 1.5 mg/L imax. It is unclear if the facility can meet the average monthly limitation. Therefore, a 3-year compliance schedule has been included.

Best Professional Judgment (BPJ) Limitations

Comments: Monitoring for Total Nitrogen, Total Phosphorus, and E. Coli is based on Ch. 92a.61 and the Departments SOP for Establishing Effluent Limitations for Individual Sewage Permits (SOP No. BPNPSM-PMT-033). E. Coli monitoring of 1/year is a new addition to this permit renewal. Total Nitrogen and Total Phosphorus monitoring frequencies will remain at 1/month based on eDMR data and compliance history.

Anti-Backsliding

Anti-Backsliding considerations do not apply since the effluent limitations have not been relaxed from the previous permit renewal.

Proposed Effluent Limitations and Monitoring Requirements

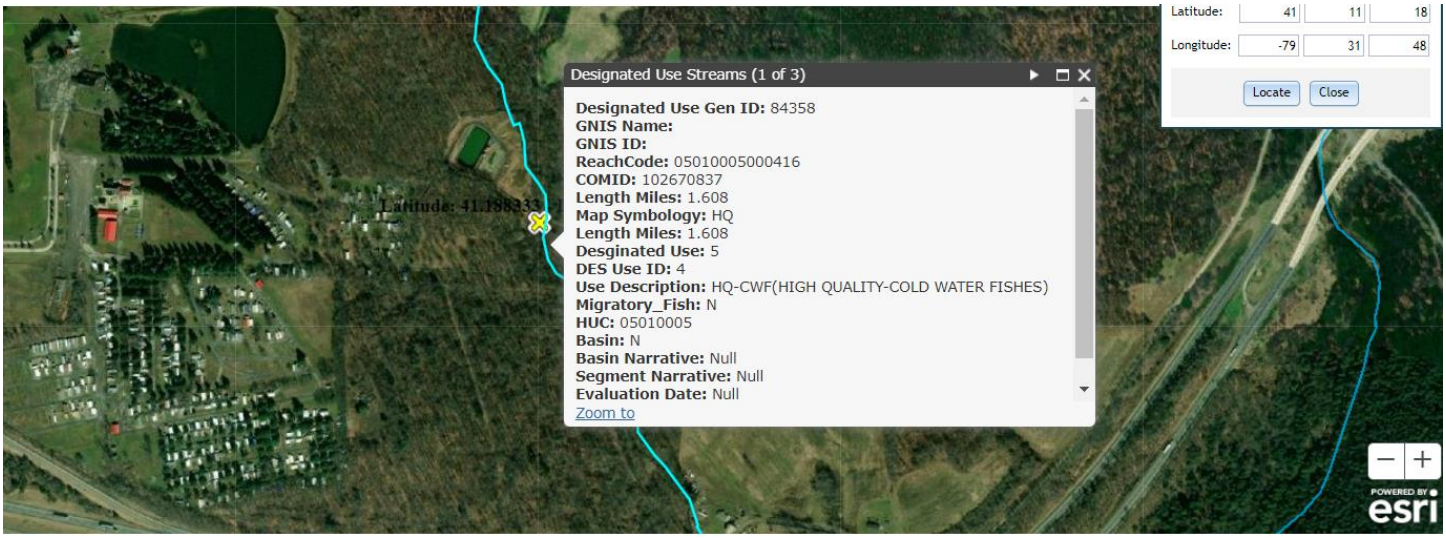
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date. (Final TRC limits effective 3-years after Permit Effective 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	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC (interim)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
TRC (final)	XXX	XXX	XXX	0.4	XXX	1.5	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
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	8.5	XXX	17	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

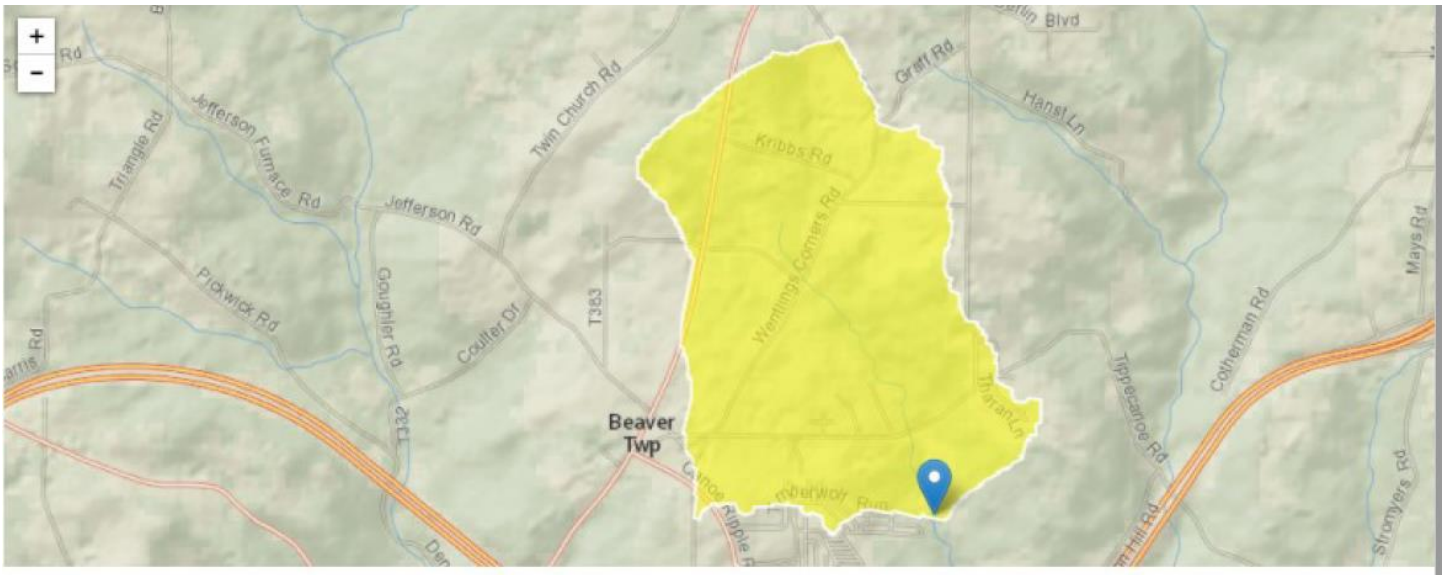
Compliance Sampling Location: Outfall 001 after disinfection.

Attachment A – eMAP Stream Designation



ATTACHMENT B

StreamStats REPORT – RMI 1.4 On Unnamed Trib 49382 to Canoe Creek

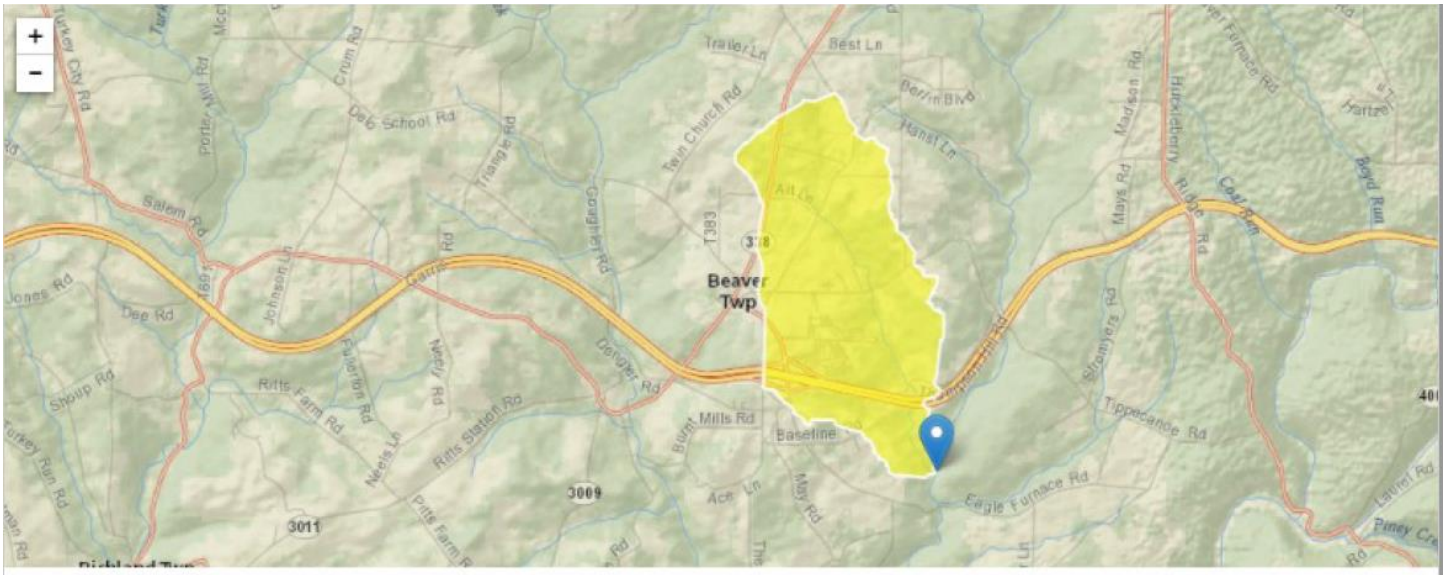


Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.26	square
ELEV	Mean Basin Elevation	1437	feet
PRECIP	Mean Annual Precipitation	43	inches

ATTACHMENT C

StreamStats REPORT – RMI 0.001 On Unnamed Trib 49382 to Canoe Creek



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.02	square
ELEV	Mean Basin Elevation	1406	feet
PRECIP	Mean Annual Precipitation	43	inches

ATTACHMENT D
WQM 7.0 MODEL OUTPUT FILE

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
17B	49382	Trib 49382 to Canoe 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)
1.400	Wolfs Camping	PA0034959	0.000	CBOD5	25		
				NH3-N	8.71	17.42	
				Dissolved Oxygen			4

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
17B	49382	Trib 49382 to Canoe Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.400	0.023	21.200	7.098
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
4.975	0.376	13.227	0.078
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
7.52	0.923	2.17	0.768
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.225	24.571	Owens	6
Reach Travel Time (days)			
1.103			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.110	6.75	1.99	8.06
0.221	6.06	1.83	8.06
0.331	5.45	1.68	8.06
0.441	4.89	1.54	8.06
0.551	4.39	1.42	8.06
0.662	3.94	1.30	8.06
0.772	3.54	1.20	8.06
0.882	3.18	1.10	8.06
0.992	2.86	1.01	8.06
1.103	2.56	0.93	8.06

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
17B	49382	Trib 49382 to Canoe Creek	1.400	1283.00	1.26	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	0.087	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
Wolfs Camping	PA0034959	0.0000	0.0000	0.0225	0.000	25.00	7.80

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	25.00	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
17B	49382	Trib 49382 to Canoe Creek	0.001	1095.00	2.02	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	0.087	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
17B	49382	Trib 49382 to Canoe 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												
1.400	0.11	0.00	0.11	.0348	0.02545	.376	4.97	13.23	0.08	1.103	21.20	7.10
Q1-10 Flow												
1.400	0.07	0.00	0.07	.0348	0.02545	NA	NA	NA	0.06	1.319	21.65	7.14
Q30-10 Flow												
1.400	0.15	0.00	0.15	.0348	0.02545	NA	NA	NA	0.09	0.963	20.94	7.07

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
17B	49382	Trib 49382 to Canoe 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
1.400	Wolfs Camping	12.75	38.4	12.75	38.4	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
1.400	Wolfs Camping	1.72	8.71	1.72	8.71	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)		
1.40	Wolfs Camping	25	25	8.71	8.71	4	4	0	0

Attachment E – Discharge pH

Wolfs Camping Resort
Beaver Twp, Clarion County
PA0034959
Discharge pH

Date	pH min	pH max	10^ -pH min	10^ -pH max	& pH max)	-Log (Ave pH)
Sep-21	7.2	7.8	6.3096E-08	1.585E-08	3.947E-08	**7.4**
Aug-21	7.6	8	2.5119E-08	1E-08	1.756E-08	**7.8**
Jul-21	7.8	8.2	1.5849E-08	6.31E-09	1.108E-08	**8.0**
Sep-20	7.8	8.2	1.5849E-08	6.31E-09	1.108E-08	**8.0**
Aug-20	7.7	8.1	1.9953E-08	7.943E-09	1.395E-08	**7.9**
Jul-20	7.8	8.2	1.5849E-08	6.31E-09	1.108E-08	**8.0**
Sep-19	7.6	8.2	2.5119E-08	6.31E-09	1.571E-08	**7.8**
Aug-19	7.8	8.2	1.5849E-08	6.31E-09	1.108E-08	**8.0**
Jul-19	7.5	8.2	3.1623E-08	6.31E-09	1.897E-08	**7.7**
Sep-18	7.6	8.1	2.5119E-08	7.943E-09	1.653E-08	**7.8**
					Median:	**7.8**

Attachment F – TRC_Calc Spreadsheet

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.11025	= Q stream (cfs)	0.5	= CV Daily
0.0225	= 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 = 1.029	1.3.2.iii	WLA cfc = 0.996
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.384	5.1d	LTA_cfc = 0.579

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.472	AFC
		INST MAX LIMIT (mg/l) = 1.544	

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)**