pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0218740**
Facility Type	**Municipal**	APS ID	**1088587**
Major / Minor	**Minor**	Authorization ID	**1439862**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Mt Pleasant Township Westmoreland County**	Facility Name	**Mountain Shadows Phase I STP**
Applicant Address	P.O. Box 158	Facility Address	S.R. 981
	Mammoth, PA 15664-0158		Norvelt, PA 15674
Applicant Contact	Caprice Mills	Facility Contact	Ester Glasser
Applicant Phone	(724) 423-5653	Facility Phone	(724) 832-1800
Client ID	35030	Site ID	541765
Ch 94 Load Status		Municipality	Mount Pleasant Township
Connection Status		County	Westmoreland
Date Application Received	May 8, 2023	EPA Waived?	Yes
Date Application Accepted	May 18, 2023	If No, Reason	

Purpose of Application: Renewal of NPDES Permit for proposed discharge of treated sewage.

Summary of Review

This application is for a renewal which was previously issued on November 2nd, 2018.

This STP has not been built. The proposed treatment process consists of flow equalization, extended aeration, final clarification, fixed media filtration, chlorination, and dechlorination.

Part II Permit No. 6501410 issued on August 9, 2001 authorized construction of the plant to treat an average design flow of 0.025 mgd. The receiving stream, drainage swale to Boyer Run in the Sewickley Creek and Youghiogheny River Basins, is currently classified as a warm water fishery.

The effluent limitations were modeled in WQM 7.0 and TRC_Calc.

The applicant is currently enrolled in eDMR and has been submitting NOD DMRs.

The Act 14-PL 834 Municipal Notification was provided by the April 10, 2023 letter provided to Westmoreland County and the May 12, 2023 letter provided to Mount Pleasant Township.

This facility has not yet been constructed, therefore there is no discharge history for the facility.

Approve	Deny	Signatures	Date
x		John Price Jack Price / Environmental Engineering Specialist	October 23, 2023
x		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	February 2, 2024

Summary of Review
Sludge use and disposal description and location: This facility currently does not produce sludge and does not have a sludge hauling agreement. 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)	0.025
Latitude	40º 11' 17"	Longitude	-79º 30' 38"
Quad Name	Mount Pleasant	Quad Code	1709
Wastewater Description:	Sewage Effluent		
Receiving Waters	Boyer Run (WWF)	Stream Code	37763
NHD Com ID	69913531	RMI	2.78
Drainage Area	1.49 mi^2	Yield (cfs/mi^2)	0.00879
Q_{7-10} Flow (cfs)	0.0131	Q_{7-10} Basis	USGS Streamstats
Elevation (ft)	1037	Slope (ft/ft)	0.00947
Watershed No.	19-D	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	Final	Name	Sewickley Creek Watershed

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

Nearest Downstream Public Water Supply Intake		Westmoreland County Municipal Authority-McKeesport PWS ID: 5020025	
PWS Waters	Youghiogheny River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	21.1 Linear Miles

Changes Since Last Permit Issuance: As previously stated, the proposed discharge was modelled in WQM 7.0 and TRC_Calc. The following changes resulted:

- Average Monthly Summer Ammonia Nitrogen concentration limit was reduced from 3.0 mg/L to 2.5 mg/L.
- Average Monthly Summer Ammonia Nitrogen mass limit was reduced 1.88 lbs./day to 1.56 lbs./day
- Average Monthly Winter Ammonia Nitrogen concentration limit was reduced from 9.0 mg/L to 7.5 mg/L.
- Average Monthly Winter Ammonia Nitrogen mass limit was reduced from 0.63 lbs./day to 0.52 lbs./day.
- Average Monthly CBOD5 and TSS mass limits were rounded to 2.0 as required by the Permit Writing Manual.
- Monitoring was added for Average Monthly BOD5 Influent and TSS Influent as required for POTWs by 92a.47(a)(3) and PADEP's SOP - *New and Reissuance Sewage Individual NPDES Permit Applications SOP No. BCW-PMT-002 (Version 2.0, Revised February 3, 2022)*.

Sewickley Creek Watershed TMDL

The discharge is to Boyer Run which flows into the Sewickley Creek Watershed that has a Final TMDL and is impaired by metals and pH. This sewage discharge is not expected to contribute to the stream impairment for which abandoned mine drainage is source of such impairment. No WLAs have been developed for this sewage discharge and they are not expected to contribute to the stream impairment for these pollutants. To determine if reasonable potential exists, a yearly reporting requirement for Iron, Aluminum, and Manganese has been incorporated into this permit cycle. If reasonable

potential does not exist, the reporting requirement may be removed in the next potential. Please note that the receiving stream, Boyer Run, is not itself impaired by metals or pH.

Treatment Facility Summary

Treatment Facility Name: Mountain Shadows Phase I STP

WQM Permit No.	Issuance Date
6501410	August 9, 2001

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg. Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration	Chlorination	0.025

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.025	43	Not Overloaded	N/A	N/A

Compliance History

Summary of DMRs:	The facility has not yet been built.
Summary of Inspections:	Inspections have noted the facility has not been constructed and that eDMRs are submitted as “No Discharge.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.025
Latitude 40º 11' 17.00" **Longitude** -79º 30' 38.00"
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)	Limit (lbs./day)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	2.0	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	2.0	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 proposed discharge was evaluated using WQM 7.0 to evaluate CBOD5, ammonia Nitrogen, and Dissolved Oxygen Parameters. The modeling results show technology based effluent limitations for CBOD5 are appropriate.

Water Quality-Based Limitations

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

Parameter	Limit (mg/l)	Limit (lbs./day)	SBC	Model
Ammonia Nitrogen (May 1 to Oct 31)	2.50	0.52	Average Monthly	WQM 7.0 Version 1.1
Ammonia Nitrogen (Nov 1 to Apr 30)	7.71	1.60	Average Monthly	WQM 7.0 Version 1.1*
Dissolved Oxygen	4 (min)	-	Average Monthly	WQM 7.0 Version 1.1
Total Residual Chlorine	0.05	-	Average Monthly	TRC_CALC

*The Implementation Guidance of Section 93.7 Ammonia Criteria recommends the limit for winter ammonia nitrogen be determined from the most stringent of either a winter setup for a WQM 7.0 Model or three times the results of the summer model. In this case, the most stringent of these options is three times the summer limit, or 7.5 mg/L.

Comments: N/A, this facility has not yet been constructed.

Best Professional Judgment (BPJ) Limitations

Comments: N/A

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) 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.

This facility is not seeking to revise previously established effluent limits and the facility is currently in compliance with these existing limits.

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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	Daily 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	0.05	XXX	0.19	1/day	Grab
CBOD5	2.0	XXX	XXX	10.0	XXX	20.0	2/month	Grab
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
TSS	2.0	XXX	XXX	10.0	XXX	20.0	2/month	Grab
TSS Raw Sewage Influent	Report	XXX	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
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	1.56	XXX	XXX	7.5	XXX	15.0	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	0.52	XXX	XXX	2.5	XXX	5.0	2/month	Grab

Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

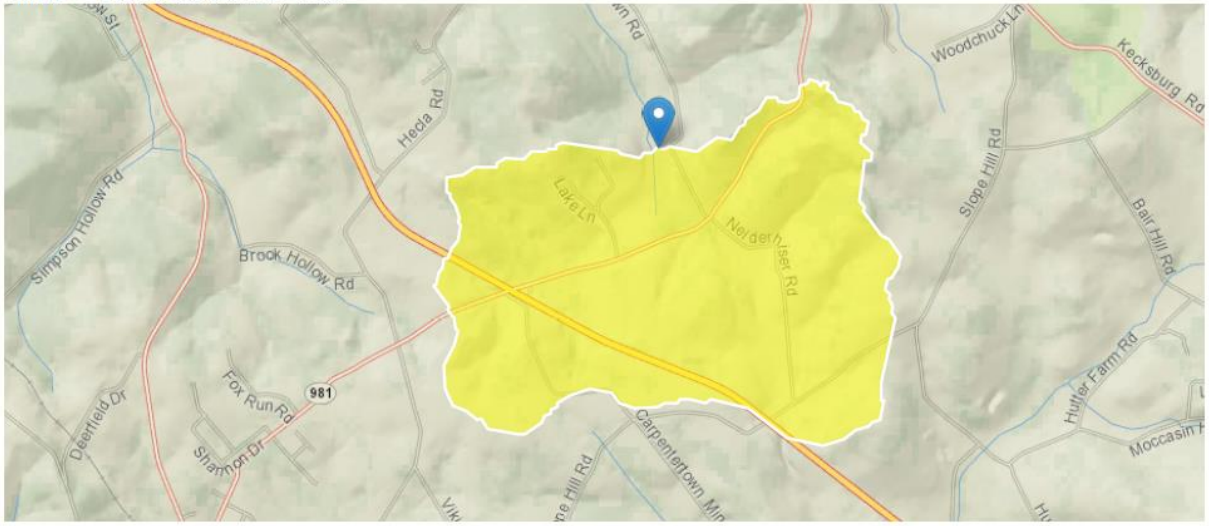
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Total Aluminum	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Total Iron	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Total Manganese	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

Other Comments: N/A

StreamStats Report

Region ID: PA
Workspace ID: PA20230703124402941000
Clicked Point (Latitude, Longitude): 40.18751, -79.51269
Time: 2023-07-03 08:44:24 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.49	square miles
ELEV	Mean Basin Elevation	1147	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.49	square miles	2.26	1400
ELEV	Mean Basin Elevation	1147	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

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 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0426	ft^3/s

Statistic	Value	Unit
30 Day 2 Year Low Flow	0.0804	ft^3/s
7 Day 10 Year Low Flow	0.0131	ft^3/s
30 Day 10 Year Low Flow	0.0271	ft^3/s
90 Day 10 Year Low Flow	0.0538	ft^3/s

Low-Flow Statistics Citations

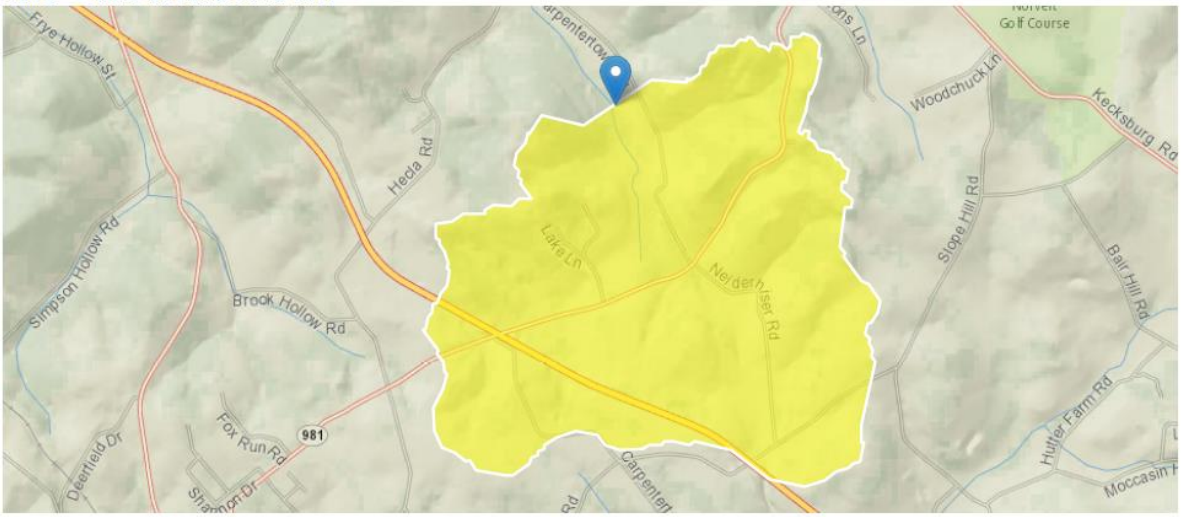
Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Application Version: 4.16.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment 2: USGS Streamstats-Downstream

StreamStats Report

Region ID: PA
Workspace ID: PA20230703124925667000
Clicked Point (Latitude, Longitude): 40.19222, -79.51462
Time: 2023-07-03 08:49:45 -0400



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Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.86	square miles
ELEV	Mean Basin Elevation	1142	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.86	square miles	2.26	1400
ELEV	Mean Basin Elevation	1142	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

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 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0546	ft^3/s

Statistic	Value	Unit
30 Day 2 Year Low Flow	0.102	ft^3/s
7 Day 10 Year Low Flow	0.0172	ft^3/s
30 Day 10 Year Low Flow	0.0349	ft^3/s
90 Day 10 Year Low Flow	0.0686	ft^3/s

Low-Flow Statistics Citations

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

Application Version: 4.16.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment 3: WQM 7.0-Summer Model Run

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
19D	37763	BOYER RUN	**2.780**	1037.00	1.49	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	0.009	0.00	0.00	0.000	0.000	10.0	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
MT Shadows WWTP	PA0218740	0.0000	0.0250	0.0250	0.000	20.00	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	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
19D	37763	BOYER RUN	**2.400**	1018.00	1.86	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	0.009	0.00	0.00	0.000	0.000	10.0	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 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		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19D	37763	BOYER 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												
2.780	0.01	0.00	0.01	.0387	0.00947	.314	4.27	13.59	0.04	0.601	21.26	7.00
Q1-10 Flow												
2.780	0.01	0.00	0.01	.0387	0.00947	NA	NA	NA	0.04	0.634	20.89	7.00
Q30-10 Flow												
2.780	0.02	0.00	0.02	.0387	0.00947	NA	NA	NA	0.04	0.572	21.58	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19D	37763	BOYER 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
2.780	MT Shadows W	9.07	11.03	9.07	11.03	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
2.780	MT Shadows W	1.71	2.5	1.71	2.5	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)		
2.78	MT Shadows WWTP	25	25	2.5	2.5	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19D	37763	BOYER RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.780	0.025	21.265	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
4.266	0.314	13.590	0.039
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
19.18	1.435	1.87	0.772
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.073	21.569	Owens	5
Reach Travel Time (days)			
0.601			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.060	17.51	1.78	6.28
0.120	15.98	1.70	6.74
0.180	14.58	1.62	6.98
0.240	13.31	1.55	7.16
0.300	12.15	1.48	7.31
0.360	11.09	1.41	7.45
0.421	10.12	1.35	7.57
0.481	9.24	1.29	7.68
0.541	8.43	1.23	7.78
0.601	7.69	1.17	7.87

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37763	BOYER 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)
2.780	MT Shadows WWTP	PA0218740	0.000	CBOD5	25		
				NH3-N	2.5	5	
				Dissolved Oxygen			4

Attachment 4: WQM 7.0-Winter Model Run

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
19D	37763	BOYER RUN	**2.780**	1037.00	1.49	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	0.018	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	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
MT Shadows WWTP	PA0218740	0.0000	0.0250	0.0250	0.000	15.00	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	4.00	12.51	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
19D	37763	BOYER RUN	**2.400**	1018.00	1.86	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	0.018	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	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 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		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19D	37763	BOYER 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												
2.780	0.03	0.00	0.03	.0387	0.00947	.325	4.54	13.97	0.04	0.529	10.96	7.00
Q1-10 Flow												
2.780	0.02	0.00	0.02	.0387	0.00947	NA	NA	NA	0.04	0.578	11.98	7.00
Q30-10 Flow												
2.780	0.04	0.00	0.04	.0387	0.00947	NA	NA	NA	0.05	0.491	10.21	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19D	37763	BOYER 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
2.780	MT Shadows W	17.65	25.3	17.65	25.3	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
2.780	MT Shadows W	4.01	7.71	4.01	7.71	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)		
2.78	MT Shadows WWTP	25	25	7.71	7.71	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19D	37763	BOYER RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.780	0.025	10.962	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
4.545	0.325	13.967	0.044
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
15.71	1.400	4.60	0.349
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.436	17.201	Owens	5
Reach Travel Time (days)			
0.529			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.053	14.96	4.51	8.59
0.106	14.25	4.43	9.09
0.159	13.57	4.35	9.33
0.212	12.92	4.27	9.47
0.265	12.30	4.19	9.56
0.318	11.71	4.12	9.63
0.371	11.15	4.04	9.68
0.424	10.62	3.97	9.74
0.477	10.11	3.89	9.79
0.529	9.63	3.82	9.84

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37763	BOYER 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)
2.780	MT Shadows WWTP	PA0218740	0.000	CBOD5	25		
				NH3-N	7.71	15.42	
				Dissolved Oxygen			4

Attachment 5: TRC_Calc Model Run

TRC_CALC.xlsx

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0131	= Q stream (cfs)	0.5	= CV Daily
0.025	= 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 = 0.127	1.3.2.iii	WLA cfc = 0.116
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.047	5.1d	LTA_cfc = 0.068

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.058	AFC
		INST MAX LIMIT (mg/l) = 0.191	

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)