pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0085367**
Facility Type	**Non-Municipal**	APS ID	**601589**
Major / Minor	**Minor**	Authorization ID	**1332536**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Sills Family Campground**	Facility Name	**Sills Family Campground**
Applicant Address	1906 Bowmansville Road	Facility Address	1906 Bowmansville Road
	Mohnton, PA 19540		Mohnton, PA 19540
Applicant Contact	Klinton Auker	Facility Contact	Klinton Auker
Applicant Phone	(717) 484-4806	Facility Phone	(717) 484-4806
Client ID	253042	Site ID	444151
Ch 94 Load Status	Not Overloaded	Municipality	Brecknock Township
Connection Status	No Limitations	County	Lancaster
Date Application Received	November 3, 2020	EPA Waived?	Yes
Date Application Accepted	November 12, 2020	If No, Reason	

Purpose of Application: NPDES Permit Renewal.

Summary of Review

Sills Family Campground has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of their National Pollutant Discharge Elimination System (NPDES) permit. The permit was issued on April 5, 2016 and became effective on May 1, 2016. The permit authorized discharge of treated sewage from the existing facility located in Brecknock Township, Lancaster County into UNT to Little Muddy Creek. The existing permit expiration date was April 30, 2021, and the permit has been administratively extended since that time.

Per the previous fact sheet, Sills Family Campground WWTP was originally discharging to a malfunctioning subsurface system. The WWTP was installed in 1987, and was designed for 10,000 gpd but was only permitted for 7,590 gpd due to planning approval. Treated sewage is pumped 1,700 ft. through a 2 in. force main along Bowmansville Road to an UNT to Little Muddy Creek. Stream discharge is utilized during the summer camping season and then diverted to the subsurface system for the off season. There are about eight people living in the campground year-round. The campground has 100 campsites and is served partially by gravity and partially by a pump station. The WWTP flow is measured by water usage.

Changes in this renewal: E. Coli monitoring has been added to this permit.

Sludge use and disposal description and location(s): Offsite WWTP

Supplemental information for this facility is provided at the end of this fact sheet.

Approve	Deny	Signatures	Date
X		Benjamin R. Lockwood Benjamin R. Lockwood / Environmental Engineering Specialist	November 22, 2021
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E. / Program Manager	

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)	.00759
Latitude	40º 14' 11"	Longitude	76º 2' 1"
Quad Name	Terre Hill	Quad Code	1737
Wastewater Description:	Sewage Effluent		
Receiving Waters	UNT to Little Muddy Creek (TSF)	Stream Code	07769
NHD Com ID	57461211	RMI	1.72
Drainage Area	1.26 mi^2	Yield (cfs/mi^2)	0.0825
Q_{7-10} Flow (cfs)	0.104	Q_{7-10} Basis	USGS PA StreamStats
Elevation (ft)	530	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	TSF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	N/A		
Source(s) of Impairment	N/A		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Lancaster City Water Bureau		
PWS Waters	Conestoga River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	29.8

Changes Since Last Permit Issuance: USGS PA StreamStats provided a drainage area of 1.26 mi^2 and a Q_{7-10} of 0.104 cfs at the point of discharge.

Other Comments: None

Treatment Facility Summary				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.00759
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.00759		Not Overloaded	Sludge Holding	Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: The WWTP process consists of the following: 1 Grease Remover – 1 Equalization Tank – 2 Aeration Tanks – 1 Settling Tank – 1 Chlorine Contact Tank – 1 Sludge Holding Tank – Outfall 001 to UNT to Little Muddy Creek

Compliance History	
Summary of DMRs:	A summary of the past 12-month DMR effluent data is presented on the next page of this fact sheet.
Summary of Inspections:	6/27/2016: A routine inspection was conducted. Field results provided a D.O. reading of 4.30 mg/l, below the limit of 5.0 mg/l. It was noted there were multiple violations on the most recent eDMR. The operator indicated they were having issues with the paddle wheel flow meter, which clogs frequently and gives inaccurate readings. The outfall was inspected and was clear of solids. 8/10/2016: A Notice of Violation (NOV) was issued to Sills Family Campground for not completing sampling requirements in June 2016, as well as for an NH_3-N violation and the D.O. violation from the most recent inspection. 4/26/2018: An incident inspection was performed due to a sewer overflow. There are 3 pump stations at the facility, near site 411, 220 and J-9. The Site 411 PS pump had burned out previously but the wet well did not overflow. The 220 PS did not have any apparent issues. The J-9 PS did overflow, and had a clear discharge with no solids present. The wet well was pumped down and normal operation was restored. No solids were observed. The outfall was inspected, and there were no apparent issues observed. 8/23/2018: A routine inspection was conducted. The pump stations were inspected and had no apparent issues. The grease trap had a significant amount of solids/grease accumulation on the surface. The clarifier had a significant amount of popping sludge, and the influent side of the clarifier baffle had a layer of sludge and debris. Chlorine tablets were not present in the feeder. The effluent level in the chlorine contact tank was 1 ft. the outlet, and no discharge was occurring. Field sample results were all within permitted limits. The sludge holding tank was filled to capacity and did not have sufficient freeboard. The tank was not being aerated. 10/24/2018: A NOV was issued for failure to provided sludge hauling records, and for failure to provide at least 2 ft. of freeboard in the sludge holding tank. A list of past NPDES limit violations were also noted. 7/8/2019: A routine inspection was conducted. The pump stations were inspected and were functioning with no evidence of any overflows. Tablets were not present in the chlorine contact tank feeder. Field sample results were within permitted limits. The effluent appeared to have a slight tint with fine suspended solids. The sludge holding tank was not aerated and had 4 ft. of freeboard. The supernatant appeared clear. 5/13/2020: An administrative inspection was conducted. It was noted that there were issues with the operation of the flow meter. All units were operable, and there were no outstanding needs at this time. 5/19/2020: A NOV was issued due to effluent violations during 2019. 8/21/2020: An administrative inspection was conducted. It was noted that the facility was operating normally, and all treatment units were online and operable. There had been no SSOs or equipment failures at the plant. There were no outstanding needs at the time. 9/23/2020: A routine inspection was conducted. All pumps stations were observed and functional. No issues were noted and discharge was not occurring at the time of inspection. No solids, foam, debris, or accumulations were noted at the outfall. The sludge holding tank was aerated, and had sufficient freeboard.

Other Comments: There are currently no open violations associated with the permittee or facility.

Compliance History

DMR Data for Outfall 001 (from October 1, 2020 to September 30, 2021)

Parameter	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20
Flow (MGD) Average Monthly	0.00608	0.0044655	0.006132	0.005454							0.004872	0.004998
Flow (MGD) Daily Maximum	0.01306	0.011529	0.014344	0.009993							0.010997	0.01059
pH (S.U.) Minimum	7.07	7.27	6.54	6.7							6.39	6.12
pH (S.U.) Maximum	8.25	7.88	7.85	7.86							8.03	8.7
DO (mg/L) Minimum	5.57	5.58	5.92	6.25							7.98	7.6
TRC (mg/L) Average Monthly	0.2	0.17	0.09	0.27							0.15	0.18
TRC (mg/L) Instantaneous Maximum	0.6	0.71	0.75	0.9							0.41	0.81
CBOD5 (mg/L) Average Monthly	6.0	6.0	< 3	6.0							5.0	6
TSS (mg/L) Average Monthly	12	16.0	15	21.0							18.0	14
Fecal Coliform (CFU/100 ml) Geometric Mean	1.0	< 12.0	< 1	1.0							31.0	1.0
Fecal Coliform (CFU/100 ml) Maximum	2.0	146.4	1.0	1.0							152.3	1.0
Nitrate-Nitrite (mg/L) Average Monthly	17.45	8.93	21.37	8.2							37.13	24.23
Nitrate-Nitrite (lbs) Total Monthly	14	15.0	31	11.0							42	10
Total Nitrogen (mg/L) Average Monthly	32.45	27.72	34.19	29.01							41.42	43.69
Total Nitrogen (lbs) Total Monthly	37	45	50	41							47	19
Ammonia (mg/L) Average Monthly	14.83	15.79	10.08	16.52							1.26	< 15.22
Ammonia (lbs) Total Monthly	20	27	15.0	24							1.0	< 7.0
TKN (mg/L) Average Monthly	17.45	18.79	12.78	20.86							4.29	19.46

TKN (lbs) Total Monthly	23	30	18.0	30							5.0	9.0
Total Phosphorus (mg/L) Average Monthly	3.66	3.38	4.59	4.55							5.02	5.14
Total Phosphorus (lbs) Total Monthly	4	5.0	7.0	6							6.0	2.0

Compliance History

Effluent Violations for Outfall 001, from: November 1, 2020 To: September 30, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Ammonia	08/31/21	Avg Mo	15.79	mg/L	12.5	mg/L
Ammonia	09/30/21	Avg Mo	14.83	mg/L	12.5	mg/L
Ammonia	06/30/21	Avg Mo	16.52	mg/L	12.5	mg/L

Existing Effluent Limitations and Monitoring Requirements

The tables below summarize the effluent limits and monitoring requirements implemented in the existing NPDES permit.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 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	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	12.5	XXX	25	2/month	8-Hr Composite

Compliance Sampling Location: Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia-N	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Kjeldahl-N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Compliance Sampling Location: Outfall 001

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .00759
Latitude 40º 14' 11" **Longitude** 76º 2' 1"
Wastewater Description: 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

Pursuant to 40 CFR § 122.44(d)(1)(i), more stringent requirements should be considered when pollutants are discharged at the levels which have the reasonable potential to cause or contribute to excursions above water quality standards.

WQM 7.0 ver. 1.1b is a water quality model designed to assist DEP in determining appropriate water quality based effluent limits (WQBELs) for carbonaceous biochemical oxygen demand ($CBOD_5$), ammonia (NH_3-N) and dissolved oxygen (D.O.). DEP's Technical Guidance No. 391-2000-007 provides the technical methods contained in WQM 7.0 for determining wasteload allocations and for determining recommended NPDES effluent limits for point source discharges. The model was utilized for this permit renewal. The model output indicated a $CBOD_5$ average monthly limit of 25 mg/l, an NH_3-N average monthly limit of 24.02 mg/l, and a D.O. minimum limit of 5.0 mg/l were protective of water quality. The flow data used to run the model was acquired from USGS PA StreamStats, and is included as an attachment. The $CBOD_5$ limit is the same as the limit in the existing permit, which will remain. The existing NH_3-N permit limit of 12.5 mg/l is more stringent and will remain in the permit.

There are no industrial/commercial users contributing industrial wastewater to the system and Sills Family Campground does not have an EPA-approved pretreatment program. Accordingly, evaluating reasonable potential of toxic pollutants is not necessary as effluent levels of toxic pollutants are expected to be insignificant.

Best Professional Judgement (BPJ) Limitations

Dissolved Oxygen
A minimum D.O. limit of 5.0 mg/L is a D.O. water quality criterion found in 25 Pa. Code § 93.7(a). This limit is included in the existing NPDES permit. This limit will remain in the permit to ensure that the facility will achieve compliance with DEP water quality standards.

Additional Considerations

Chesapeake Bay Total Maximum Daily Load (TMDL)

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the *Pennsylvania Chesapeake Watershed Implementation Plan* (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 2 WIP. As part of the Phase 2 WIP, a *Phase 2 Watershed Implementation Plan Wastewater Supplement* (Phase 2 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. A new update to the WIP was published as the Phase 3 WIP in August 2019. As part of the Phase 3 WIP, a *Phase 3 Watershed Implementation Plan Wastewater Supplement* (Phase 3 Supplement) was developed, and was most recently revised on December 17, 2019, and is the basis for the development of any Chesapeake Bay related permit parameters. Sewage discharges have been prioritized based on their design flow to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual Cap Loads based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. These limits may be achieved through a combination of treatment technology, credits, or offsets. For Phase 4 and 5 facilities, Cap Loads are not currently being implemented for renewed or amended permits for facilities that do not increase design flow. For new Phase 4 and 5 sewage dischargers, in general DEP will issue new permits containing Cap Loads of "0" and new facilities will be expected to purchase credits and/or apply offsets to achieve compliance.

This facility is considered a Phase 5 non-significant discharger with a design flow less than 0.2 MGD but greater than 0.002 MGD. According to DEP's latest-revised Phase 3 Supplement, issuance of permits with monitoring and reporting for TN and TP is recommended for any Phase 5 non-significant sewage facilities. Furthermore, DEP's SOP No. BCW-PMT-033 states that in general, at a minimum, monitoring for TN and TP should be included in new and reissued permits for sewage discharges with design flows > 2,000 gpd. Therefore, TN and TP monitoring will be included in the renewed permit, which is consistent with the existing permit.

Fecal Coliform

PA Code § 92a.47.(a)(4) requires a monthly average limit of 200/100 mL as a geometric mean and an instantaneous maximum limit not greater than 1,000/100 mL from May through September for fecal coliform. PA Code § 92a.47.(a)(5) requires a monthly average limit of 2,000/100 mL as a geometric mean and an instantaneous maximum limit not greater than 10,000/100 mL from October through April for fecal coliform. These limits are included in the existing permit, and will remain in the permit.

E. Coli

PA Code § 92a.61 requires IMAX reporting of E. Coli. Per DEP's SOP No. BCW-PMT-033, sewage dischargers with a design flow of 0.002 – 0.05 mgd will include E. Coli monitoring with a frequency of 1/year. This parameter has been added to the renewal permit.

Total Residual Chlorine

The attached computer printout utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92, Section 92.2d (3) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The attached printout indicates that a water quality limit of 0.5 mg/l would be needed to prevent toxicity concerns. It is recommended that a TRC limit of 0.5 mg/l monthly average and 1.6 mg/l instantaneous maximum be applied this permit cycle, which is the same as the existing limit.

Sampling Frequency & Sample Type

The monitoring requirements were established based on the BPJ and/or Table 6-3 of DEP's technical guidance No. 362-0400-001.

Flow Monitoring

Flow monitoring is recommended by DEP's technical guidance and is also required by 25 PA Code §§ 92a.27 and 92a.61.

Anti-Degradation

The effluent limits for this discharge 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. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

303(d) Listed Streams

The discharge is located on a stream segment that is designated as attaining uses.

Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

Anti-Backsliding

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

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.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 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	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 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	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	12.5	XXX	25	2/month	8-Hr Composite
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

Compliance Sampling Location: Outfall 001

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

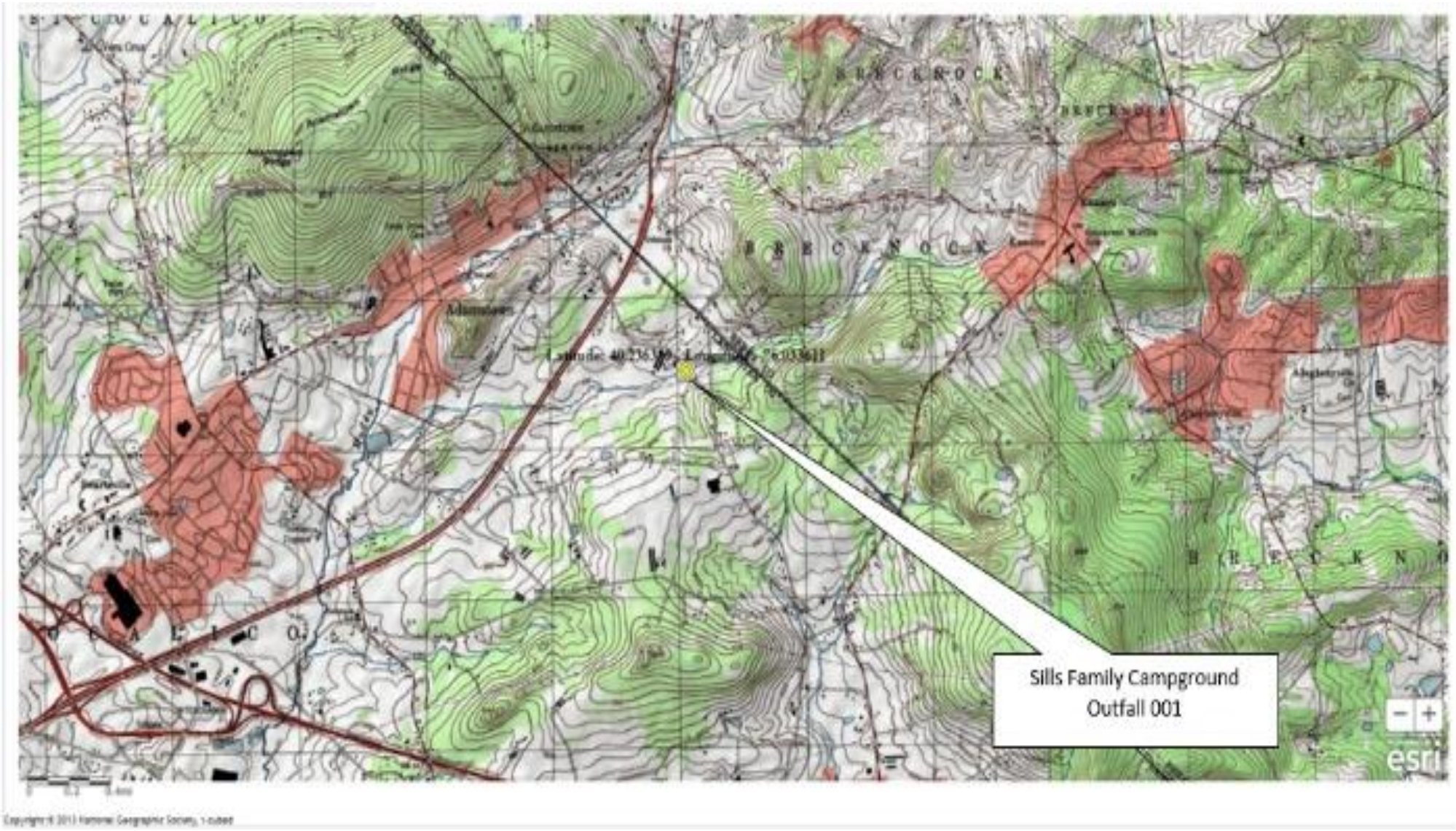
Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia-N	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Kjeldahl-N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Compliance Sampling Location: Outfall 001

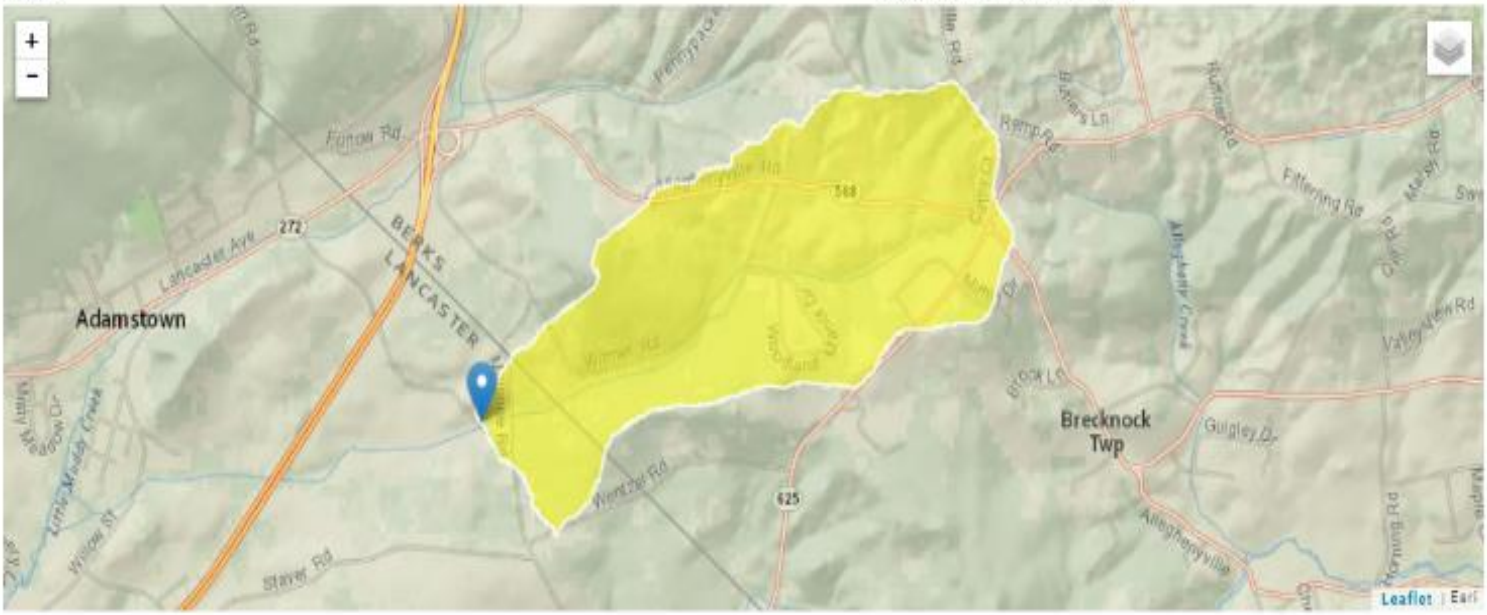
Other Comments: None

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, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP: BCW-PMT-002, No. BCW-PMT-033
☐	Other:


Sills Family Campground
Outfall 001
esri

Sills Family Campground PA0085367 Outfall 001

Region ID: PA
Workspace ID: PA20211119214039798000
Clicked Point (Latitude, Longitude): 40.23641, -76.03359
Time: 2021-11-19 16:40:59 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.26	square miles
BSLOPD	Mean basin slope measured in degrees	6.3782	degrees
ROCKDEP	Depth to rock	4.3	feet
URBAN	Percentage of basin with urban development	0.455	percent

Low-Flow Statistics Parameters [99.9 Percent (1.25 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.26	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	6.3782	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.3	feet	4.13	5.21
URBAN	Percent Urban	0.455	percent	0	89

Low-Flow Statistics Disclaimers [99.9 Percent (1.25 square miles) Low Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [99.9 Percent (1.25 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.242	ft^3/s
30 Day 2 Year Low Flow	0.314	ft^3/s
7 Day 10 Year Low Flow	0.104	ft^3/s
30 Day 10 Year Low Flow	0.143	ft^3/s
90 Day 10 Year Low Flow	0.212	ft^3/s

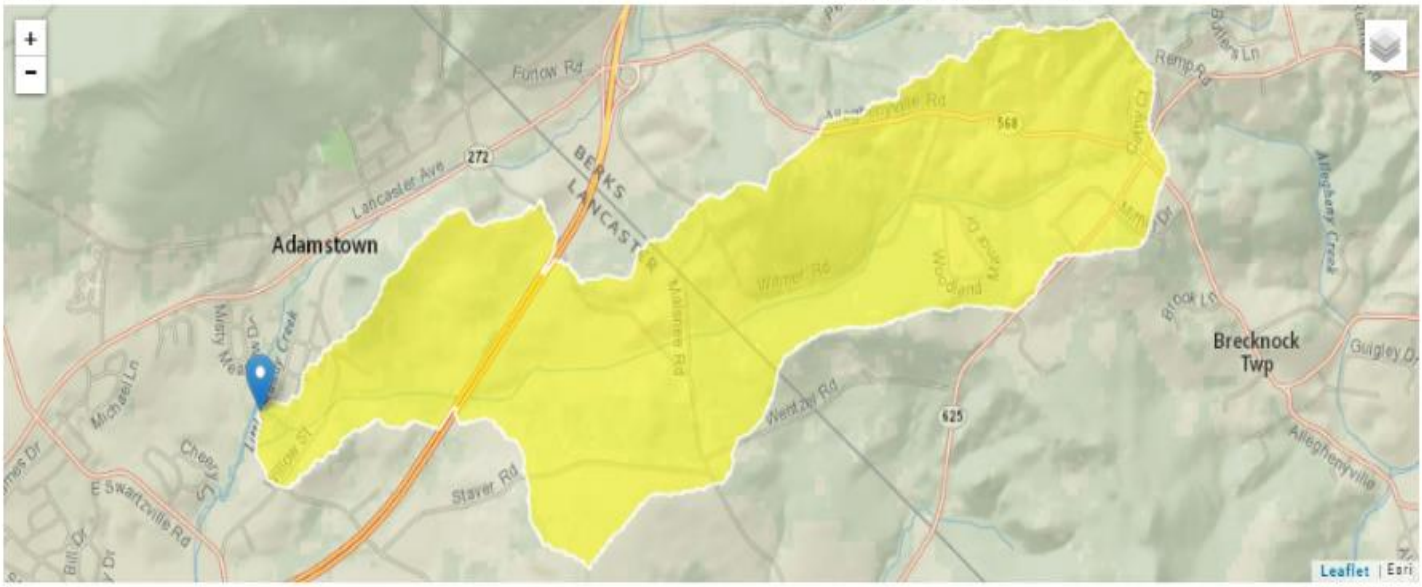
Low-Flow Statistics Citations

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.

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Sills Family Campground PA0085367 Downstream Pt. RMI = 0.0

Region ID:	PA
Workspace ID:	PA20211119215409063000
Clicked Point (Latitude, Longitude):	40.23338, -76.06232
Time:	2021-11-19 16:54:28 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.33	square miles
BSLOPD	Mean basin slope measured in degrees	5.247	degrees
ROCKDEP	Depth to rock	4.2	feet
URBAN	Percentage of basin with urban development	0.825	percent

Low-Flow Statistics Parameters [100.0 Percent (2.33 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.33	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	5.247	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.2	feet	4.13	5.21
URBAN	Percent Urban	0.825	percent	0	89

Low-Flow Statistics Disclaimers [100.0 Percent (2.33 square miles) Low Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [100.0 Percent (2.33 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.32	ft^3/s
30 Day 2 Year Low Flow	0.438	ft^3/s
7 Day 10 Year Low Flow	0.129	ft^3/s
30 Day 10 Year Low Flow	0.187	ft^3/s
90 Day 10 Year Low Flow	0.307	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.

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

1	1A	B	C	D	E	F	G
2	2	**TRC EVALUATION**					
3	3	Input appropriate values in B4:B8 and E4:E7					
4	4	0.104	- Q stream (cfs)		0.5	- CV Daily	
5	5	0.00759	- Q discharge (MGD)		0.5	- CV Hourly	
6	6	30	- no. samples		1	- AFC_Partial Mix Factor	
7	7	0.3	- Chlorine Demand of Stre		1	- CFC_Partial Mix Factor	
8	8	0	- Chlorine Demand of Disc		15	- AFC_Criteria Compliance Time (min)	
9	9	0.5	- BAT/BPJ Value		720	- CFC_Criteria Compliance Time (min)	
10		0	- % Factor of Safety (FOS)			-Decay Coefficient (K)	
11	#	Source	Reference	AFC Calculations		Reference	CFC Calculations
12	11	TRC	1.3.2.iii	WLA afc = 2.844		1.3.2.iii	WLA cfc = 2.766
13	#	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
14	#	PENTOXSD TRG	5.1b	LTA_afc = 1.060		5.1d	LTA_cfc = 1.608
15	#						
16	#	Source		Effluent Limit Calculations			
17	#	PENTOXSD TRG	5.1f	AML MULT = 1.231			
18	#	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
19	#			INST MAX LIMIT (mg/l) = 1.635			
20							
21							
22							
23		WLA_afc		(.019/e(-k*AFC_tc)) + [(AFC_Tc*Qr*.019/Qd*e(-k*AFC_tc))...			
24				...+ Xd + (AFC_Tc*Qr*Xr/Qd)]*(1-FOS/100)			
25		LTAMULT_afc		EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)			
26		LTA_afc		wla_afc*LTAMULT_afc			
27							
28		WLA_cfc		(.011/e(-k*CFC_tc) + [(CFC_Tc*Qr*.011/Qd*e(-k*CFC_tc))...			
29				...+ Xd + (CFC_Tc*Qr*Xr/Qd)]*(1-FOS/100)			
30		LTAMULT_cfc		EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)			
31		LTA_cfc		wla_cfc*LTAMULT_cfc			
32							
33		AML MULT		EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))			
34		AVG MON LIMIT		MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)			
35		INST MAX LIMIT		1.5*((ave_mon_limit/AML_MULT)/LTAMULT_afc)			
36							
37							
38							
39							
40							
41							
42		(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Tc*Qr*0.011)/(1.547*Qd)....					
43		....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Tc*Qr*Xr/1.547*Qd))*(1-FOS/100)					
44							

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
07J	7769	Trib 07769 to Little Muddy Creek	1.720	530.00	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	0.100	0.00	0.10	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
Sills Family	PA0085367	0.0076	0.0076	0.0076	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

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
07J	7769	Trib 07769 to Little Muddy Creek	0.000	445.00	2.33	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	0.100	0.00	0.13	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
07J	7769	Trib 07769 to Little Muddy 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												
1.720	0.10	0.00	0.10	.0117	0.00936	.357	5.16	14.46	0.06	1.672	20.51	7.00
Q1-10 Flow												
1.720	0.07	0.00	0.07	.0117	0.00936	NA	NA	NA	0.05	2.081	20.75	7.00
Q30-10 Flow												
1.720	0.14	0.00	0.14	.0117	0.00936	NA	NA	NA	0.07	1.429	20.38	7.00

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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07J	7769	Trib 07769 to Little Muddy 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
1.720	Sills Family	15.75	50	15.75	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
1.720	Sills Family	1.84	24.02	1.84	24.02	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)		
1.72	Sills Family	25	25	24.02	24.02	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07J	7769	Trib 07769 to Little Muddy Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.720	0.008	20.507	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
5.159	0.357	14.459	0.063
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.33	0.452	2.44	0.728
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.914	23.156	Owens	5
Reach Travel Time (days)			
1.672			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.167	4.01	2.16	8.17
0.334	3.71	1.91	8.17
0.502	3.44	1.69	8.17
0.669	3.18	1.50	8.17
0.836	2.94	1.33	8.17
1.003	2.72	1.17	8.17
1.170	2.52	1.04	8.17
1.337	2.33	0.92	8.17
1.505	2.16	0.82	8.17
1.672	2.00	0.72	8.17

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07J	7769	Trib 07769 to Little Muddy 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)
1.720	Sills Family	PA0085367	0.008	CBOD5	25		
				NH3-N	24.02	48.04	
				Dissolved Oxygen			5