

Application Type Renewal
Facility Type Municipal
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0246921
APS ID 460698
Authorization ID 1263038

Applicant and Facility Information

Applicant Name	<u>Lenhartsville Borough Berks County</u>	Facility Name	<u>Lenhartsville Borough STP</u>
Applicant Address	<u>PO Box 238, 18 Willow Street Lenhartsville, PA 19534-0238</u>	Facility Address	<u>65 Penn Street Sr 143 And Old Rt 22 Lenhartsville, PA 19534</u>
Applicant Contact	<u>Rex Peters, Chairman</u>	Facility Contact	<u>Kenneth Fulford / dolesluj@hotmail.com</u>
Applicant Phone	<u>(610) 563-2631 (per 2019 application)</u>	Facility Phone	<u>(610) 216-0150 (per 2019 application)</u>
Client ID	<u>117545</u>	Site ID	<u>459546</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Lenhartsville Borough</u>
Connection Status	<u>No Limitations</u>	County	<u>Berks</u>
Date Application Received	<u>February 1, 2019</u>	EPA Waived?	<u>Yes (TMDL & WLA but no changes)</u>
Date Application Accepted	<u>March 4, 2019</u>	If No, Reason	<u></u>
Purpose of Application	<u>Renewal of existing sewage permit</u>		

Summary of Review

The previous NPDES permit was issued July 16, 2014. It was administratively extended past its expiration date of July 31, 2019. The facility serves only Lenhartsville Borough.

According to the 2019 Chapter 94 Municipal Wasteload Report (the 2020 Chapter 94 Report has not yet been reviewed by DEP-Sewage Planning staff), a) the facility is not overloaded, b) there is one industrial user in the collection system. The permit application identified that user as a retail meat store, contributing 3300 gpd. The 2014 Fact Sheet stated that no slaughtering occurred at the butcher shop; no federal Effluent Limitation Guidelines apply.

The facility contact confirmed in a May 10, 2021 phone call that there have not been changes at the facility since the 2019 application was submitted other than their one and only industrial user closed during the Covid pandemic and may not re-open.

Design Flow:

The previous NPDES permit was based on a design flow of 0.0423 MGD. The 2019 application gives the same design flow. This renewal permit will again be based on a design flow of 0.0423 MGD.

eDMR data from January 1, 2018 through January 31, 2021 indicated a Maximum Monthly Average flow of 0.0538 MGD but the 90th percentile of the Monthly Averages was 0.032 MGD, lower than the design flow of 0.0423 MGD. The 2019 Chapter 94 Municipal Wasteload report also did not project hydraulic overloads.

Approve	Deny	Signatures	Date
x		<i>Bonnie J. Boylan</i> Bonnie J. Boylan / Environmental Engineering Specialist	May 10, 2021
x		<i>Maria D. Bebenek for Daniel W. Martin</i> Daniel W. Martin, P.E. / Environmental Engineer Manager	May 25, 2021
x		<i>Maria D. Bebenek</i> Maria D. Bebenek, P.E. / Environmental Program Manager	May 25, 2021

Summary of Review

Combined Sewer Outfalls: None, no combined sewers.

Hauled-in Waste: None accepted or expected to be accepted in next 5 years according to application and facility contact during May 10, 2021 phone call.

Sludge Use and Disposal: off-site disposal to a POTW.

Delaware River Basin Commission (DRBC)

DRBC will be copied on DEP's draft permit and the Fact Sheet in accordance with State regulations and an interagency agreement. Comments from the DRBC will be considered.

Outstanding Violations

There are no unresolved Clean Water violations for this facility per DEP's eFacts database.

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.	<u>001</u>	Design Flow (MGD)	<u>.0423</u>
Latitude	<u>40° 34' 29"</u>	Longitude	<u>-75° 53' 22"</u>
Quad Name	_____	Quad Code	_____
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Furnace Creek (TSF, MF)</u>	Stream Code	<u>2080</u>
NHD Com ID	_____	RMI	<u>0.1</u>
Drainage Area	<u>3.61</u>	Yield (cfs/mi ²)	<u>0.061</u>
Q ₇₋₁₀ Flow (cfs)	<u>0.22</u>	Q ₇₋₁₀ Basis	<u>USGS Pa StreamStats</u>
Elevation (ft)	<u>370 , estimated</u>	Slope (ft/ft)	_____
Watershed No.	<u>3-B</u>	Chapter 93 Class.	<u>TSF, MF (online Ch. 93)</u>
Existing Use	<u>- (online Existing Use table was reviewed)</u>	Existing Use Qualifier	<u>-</u>
Exceptions to Use	<u>-</u>	Exceptions to Criteria	<u>-</u>
Assessment Status	<u>Attaining at discharge location, not attaining further downstream*</u>		
Cause(s) of Impairment	_____		
Source(s) of Impairment	_____		
TMDL Status	<u>Final</u>	Name	<u>Lake Ontelaunee*</u>
Secondary Waters: Furnace Run empties into Maiden Creek RMI 15.3 which flows into Lake Ontelaunee.			
Background/Ambient Data	Data Source		
pH (SU)	_____	_____	
Temperature (°F)	_____	_____	
Hardness (mg/L)	_____	_____	
Other:	_____	_____	
Nearest Downstream Public Water Supply Intake	Reading Area Water Authority		
PWS Waters	<u>Maiden Creek</u>	Flow at Intake (cfs)	_____
PWS RMI	<u>3.2</u>	Distance from Outfall (mi)	<u>Approx.. 12 miles</u>

Upstream Furnace Creek is HQ-CWF, from the source to RMI 3.0. Upstream Furnace Creek is Class A Trout.

*Downstream Maiden Creek (designated use TSF) is impaired for Recreational Use due to pathogens, assessment ID #15369.

*Lake Ontelaunee, downstream on Maiden Creek, is impaired, and has a TMDL with Wasteload Allocations for TSS and Total Phosphorus.

Treatment Facility Summary				
Treatment Facility Name: Lenhartsville STP				
WQM Permit No.		Issuance Date		
0602408 A-1		2005		
0602408		4/28/2003		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration, with Phosphorus Reduction	Hypochlorite	0.0423
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0508	157	Not Overloaded	Aerobic Digestion	Other WWTP

Planning Approval was amended in January 2005 to reflect change in outfall location from Maiden Creek to Furnace Run. Planning Approval A1-06968-ACT.

PREVIOUS PERMIT LIMITS:

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		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
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD ₅	8.8	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
BOD ₅ Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Suspended Solids	10	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Total Suspended Solids (lbs)	Report Total Monthly	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Suspended Solids (lbs)	XXX	3,862 lbs Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	3.6	XXX	XXX	10.1	XXX	20.2	2/month	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	7.0	XXX	XXX	20	XXX	40	2/month	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	2.0	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus (lbs)	Report Total Monthly	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs)	XXX	129 lbs Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen	XXX	XXX	XXX	Report Annual Avg	XXX	XXX	1/year	8-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	Report Annual Avg	XXX	XXX	1/year	8-Hr Composite

Compliance History

4/9/2020 – Administrative File Review – No violations

12/2019 – exceedance of Total Phosphorus permit limit – 2.74 mg/l as Monthly Average versus permit limit of 2.0 mg/l.

1/2018 – exceedance of Total Phosphorus permit limit – 3.16 mg/l as a Monthly Average versus permit limit of 2.0 mg/l. Equipment malfunction.

1/11/2018 – Compliance Inspection – No violations issued but composite samplers were not refrigerated – facility has switched to tablet chlorination/dechlorination and is using Aluminum Chloride. No Hauled-in wastes. Sludge disposal records were retained/available. Treatment Process Units are as follows:

- 1 Influent Lift Station
- 1 Grinder
- 1 Manual Bar Screen
- 1 EQ Tank, with timed aeration
- 2 Aeration Tanks
- 2 Clarifier Tanks
- 1 Chlorine Contact Tank
- 1 Final Clarifier
- 1 Post-Aeration Tank
- 1 Sludge Holding Tank

10/6/2016 – Compliance Inspection – violation, corrected – discharge of inadequately treated sewage to Furnace Creek, plume of solids observed extending from outfall. Plant ceased discharging for approximately 4 hours.

Compliance History

DMR Data for Outfall 001 (from April 1, 2020 to March 31, 2021)

Parameter	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20
Flow (MGD) Average Monthly	0.0450	0.0218	0.0200	0.0285	0.0173	0.0138	0.0140	0.0178	0.0162	0.0109	0.0145	0.0221
Flow (MGD) Daily Maximum	0.1078	0.0639	0.0474	0.1345	0.0387	0.0726	0.0758	0.0790	0.0593	0.0217	0.0769	0.0868
pH (S.U.) Minimum	7.38	7.38	7.52	7.40	7.19	7.48	7.47	7.41	7.32	7.38	7.33	7.32
pH (S.U.) Instantaneous Maximum	7.76	7.66	7.75	7.66	7.65	7.72	7.70	7.75	7.77	7.68	7.65	7.67
DO (mg/L) Minimum	8.3	8.7	8.0	8.2	8.0	8.0	8.1	8.0	8.0	8.0	8.4	10.0
TRC (mg/L) Average Monthly	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02
TRC (mg/L) Instantaneous Maximum	0.02	0.01	0.13	0.02	0.07	0.02	0.02	0.07	0.02	0.03	0.02	0.05
CBOD5 (lbs/day) Average Monthly	0.72	0.61	0.2	0.43	0.23	0.36	0.17	0.16	0.31	0.22	0.19	0.37
CBOD5 (mg/L) Average Monthly	2.7	2.2	2.0	3.6	2.4	4.1	2.0	2.1	2.4	4.0	3.1	2.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	24.3	36.2	17.9	24.4	15.6	17.9	17.6	9.5	19.9	11.4	11.6	34.9
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	24.7	42.0	19.6	25.6	16.8	20.5	23.7	10.1	29.7	12.0	14.3	39.3
BOD5 (mg/L) Raw Sewage Influent Average Monthly	88	131	170	200	161	223	202	122	140	202	175	277
TSS (lbs/day) Average Monthly	1.37	2.64	0.4	0.51	0.39	0.33	0.35	0.37	0.57	0.84	0.64	0.73
TSS (lbs/day) Raw Sewage Influent Average Monthly	21.5	30.2	11.2	24.8	13.7	18.5	15.1	7.1	22.5	14.4	12.4	34.2

TSS (lbs/day) Raw Sewage Influent Daily Maximum	26.7	33.5	12.7	30.4	15.9	30.1	22.5	7.2	39.3	15.8	18.4	39.6
TSS (mg/L) Average Monthly	5.0	8.2	4.0	4.2	4.0	4.0	4.0	4.8	4.0	15.4	10.6	4.0
TSS (mg/L) Raw Sewage Influent Average Monthly	75	126	112	204	141	207	172	91	131	256	180	276
Total Suspended Solids (lbs) Total Monthly	42.5	73.9	12.5	15.9	11.7	10.1	10.4	11.6	17.7	25.3	19.2	22.0
Total Suspended Solids (lbs) Total Annual				246.4								
Total Dissolved Solids (mg/L) Annual Average				618								
Fecal Coliform (CFU/100 ml) Geometric Mean	1	2	1	2	1	1	1	1	1	1	1	1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	2	5	1	3	1	1	1	1	1	1	1	1
Total Nitrogen (mg/L) Annual Average				68.0								
Ammonia (lbs/day) Average Monthly	0.03	0.03	0.01	0.02	0.01	0.24	0.02	0.02	0.34	0.20	0.01	0.02
Ammonia (mg/L) Average Monthly	0.1	0.1	0.1	0.2	0.1	2.5	0.2	0.3	4.5	3.6	0.1	0.1
Total Phosphorus (lbs/day) Average Monthly	0.13	0.10	0.02	0.03	0.01	0.04	0.03	0.04	0.12	0.02	0.10	0.21
Total Phosphorus (mg/L) Average Monthly	0.52	0.33	0.15	0.24	0.12	0.59	0.39	0.47	0.69	0.38	1.66	0.98
Total Phosphorus (lbs) Total Monthly	4.1	2.7	0.5	0.9	0.3	1.3	1.00	1.1	3.6	0.6	3.2	6.3
Total Phosphorus (lbs) Total Annual				29.3								

Development of Effluent Limitations

Outfall No. <u>001</u>	Design Flow (MGD) <u>.0423</u>
Latitude <u>40° 34' 29"</u>	Longitude <u>-75° 53' 22"</u>
Wastewater Description: <u>Sewage Effluent</u>	

Technology-Based Effluent Limitations (TBELs)

The following technology-based limitations were considered and imposed, where applicable, unless any water quality-based effluent limitations or BPJ limitations were more stringent:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation	DRBC Regulation
CBOD ₅	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)	85% Removal of BOD ₅
	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)	18 CFR 410
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)	18 CFR 410
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)	18 CFR 410
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)	
Total Phosphorus	2.0 if receiving water is impaired	Average Monthly		96.5(c)	
Ammonia	20	Average Monthly			18 CFR 410
Total Dissolved Solids	1000*	Average Monthly			18 CFR 410

*unless a TDS Determination by DRBC allows a less stringent limit

The average weekly limits shown in the above table were not imposed due to the size of this facility, same as the previous permit.

The **Total Phosphorus** limit of 2.0 mg/l was included in the previous permit because the downstream Lake Ontelaunee is impaired for nutrients and at the request of Reading Area Water Authority which relies on the lake water for a drinking source.

The DRBC **Total Dissolved Solids (TDS)** effluent limit of 1000 mg/l was not imposed in the previous permit or in this draft renewal permit because TDS sampling results have not indicated it is needed (and no hauled-in waste is expected). A monitoring requirement has been carried forward.

Changes to State Standards were published in July 2020 and now include an **E. coli** criterion that is applicable in summer [Pa Code 92a.61]. As a result, a monitoring requirement for E. Coli is being added to NPDES sewage permits consistent with DEP’s SOP for Establishing Effluent Limits for Individual Sewage Permits.

Best Professional Judgment (BPJ) Limitations

None

Water Quality-Based Effluent Limitations (WQBELs)

CBOD₅, Ammonia, and Dissolved Oxygen:

DEP's WQM 7.0 water quality model is designed to calculate permit limits for CBOD5, Ammonia, and Dissolved Oxygen. DEP's Guidance document 391-2000-007 provides the methods and calculations contained in the WQM 7.0 model for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. The model output indicated that the existing permit limits are protective of water quality. No changes are therefore recommended. (The CBOD5 permit limit, 25 mg/l as a monthly average, is a TBEL rather than a WQBEL; the model defaulted to the TBEL meaning it is protective and a WQBEL was not deemed necessary.)

DEP typically allows less stringent Ammonia limits for colder months, using a multiplier of 3, due to lowered toxicity in cold temperatures. Because the DRBC regulations do not allow greater than 20 mg/l as an Average Monthly Ammonia limit, the permit limit during colder months was set at 20 mg/l and is a TBEL, not a WQBEL.

Total Residual Chlorine (TRC):

DEP's model (Excel spreadsheet) was used for TRC evaluation, consistent with Implementation Guidance for TRC, #391-2000-015. A default value of 0.3 mg/l was used for stream demand and 0 was conservatively assumed for the discharge chlorine demand. Results are attached. The spreadsheet concluded that the TBEL was protective of the receiving water; no more stringent WQBEL was calculated. These are the same TRC limits as in the previous permit.

Toxics:

There were no other toxic parameters indicated in the application. (nor expected). DEP's Toxics Management Spreadsheet/PENTOX model, with Reasonable Potential analysis for toxics, was not used because the facility is a minor sewage treatment plant without toxic pollutants expected, consistent with DEP's Standard Operating Procedure (SOP) for Individual Sewage Permits.

Total Maximum Daily Load (TMDL):

There is a TMDL established for Lake Ontelaunee downstream on the Maiden Creek. It established an annual load for this facility of 129 lbs Total Phosphorus and an annual load of 3862 lbs Total Suspended Solids for this facility, calculated thus:

$$0.0423 \text{ MGD} \times 1.0 \text{ mg/l} \times 8.34 \text{ conversion factor} = 0.35 \text{ lb/day} \times 365 \text{ days/yr} = 129 \text{ lbs TP}$$
$$0.0423 \text{ MGD} \times 30 \text{ mg/l} \times 8.34 \text{ conversion factor} = 10.6 \text{ lb/day} \times 365 \text{ days/yr} = 3862 \text{ lbs TSS}$$

These annual load limits are continued from the existing permit. Whereas the previous permit specified using water years, October through September, DEP changed its reporting procedures to calendar years and subsequently set up the permittee's eDMRs for calendar years. This permit continues to use calendar year reporting periods.

Note: While the TMDL and the annual load limit in the permit for TP are based on a monthly average concentration of 1.0 mg/l, the concentration limit imposed in this permit (as discussed in the above TBEL section) is purposely set at 2.0 mg/l, allowing some fluctuation in month-to-month concentrations but still requiring the annual load to not exceed 129 lbs per year.

Downstream Public Water Supply (PWS):

Because there is a public potable water source downstream, Nitrates and TDS in the discharge were evaluated to be sure they would not adversely impact the intake. (DEP's Toxics Management Spreadsheet/PENTOX model could also have been used for this purpose but was not necessary as the below mass balance equations sufficed.)

Nitrate:

In accordance with the DEP's Implementation Guidance for Application of Section 93.5e for Potable Water Supply Protection 391-2000-019, the impact of Nitrate-Nitrite from this discharge on the downstream PWS needs to be considered. The permit application included a maximum concentration of 50.2 mg/l of Nitrate-Nitrite in the effluent. A Water Quality Network station does not exist close enough to this discharge point to be used for background

concentrations. Assuming 0 mg/l as the ambient concentration for Nitrate, no impact to the PWS from Nitrates in the facility's effluent is expected:

$$[(C_s * Q_s) + (C_d * Q_d)] / (Q_s + Q_d) < 10 \text{ mg/l (drinking water MCL for Nitrates and DRBC requirement)}$$

Where,

C_s = background concentration of Nitrates in stream = 0 mg/l , assumption

Q_s = Q7-10 of Maiden Creek = 16.7 cfs per gage on Maiden Creek

C_d = concentration in effluent = 50.2 mg/l of Nitrates

Q_d = design flow of facility = 0.0423 MGD = 0.065 cfs

$$[(0 * 16.7 \text{ cfs}) + (50.2 \text{ mg/l} * 0.065 \text{ cfs})] / (16.7 + 0.065 \text{ cfs}) = 0.2 \text{ mg/l (< 10 mg/l Nitrates)}$$

The mass balance equation was used a second time assuming 6 mg/l as the background concentration of Nitrate instead of 0 mg/l. Again, the resultant in-stream Nitrate concentration after the discharge was less than 10 mg/l and is not indicated as a threat.

Therefore, no monitoring or limits are considered necessary for Nitrates.

TDS:

The eDMRs showed a maximum concentration of 618 mg/l in the effluent. A Water Quality Network station does not exist close enough to this discharge point to be used for background concentrations. TDS has been measured as high as 300 mg/l at DEP Water Quality Network Stations in Berks county on different waterways. Assuming 300 mg/l as the background concentration for TDS, no impact to the PWS from TDS in the facility's effluent is expected:

$$[(C_s * Q_s) + (C_d * Q_d)] / (Q_s + Q_d) < 500 \text{ mg/l (drinking water MCL and DRBC requirement)}$$

Where,

C_s = background concentration in stream = 300 mg/l as conservative assumption

Q_s = Q7-10 of Maiden Creek = 16.7 cfs per gage on Maiden Creek

C_d = concentration in effluent = 618 mg/l

Q_d = design flow of facility = 0.0423 MGD = 0.065 cfs

$$[(300 * 16.7 \text{ cfs}) + (618 \text{ mg/l} * 0.065 \text{ cfs})] / (16.7 + 0.065 \text{ cfs}) = 301 \text{ mg/l (< 500 mg/l TDS)}$$

A TDS monitoring requirement has been continued from the previous permit, due to the DRBC regulations.

ADDITIONAL CONSIDERATIONS

Total Nitrogen (TN):

In accordance with the SOP for Establishing Effluent Limitations for Individual Sewage Permits, a monitoring requirement has been included for Total Nitrogen. The minimum monitoring frequency of once per year was carried forward from the previous permit.

TDS Baseline:

DEP often documents TDS loading in Fact Sheets in order to be able to apply the requirements of Pa Code Chapter 95.10 if an expansion of a facility that existed before August 21, 2010 occurs in the future. For this facility, the design flow in their 2008 NPDES permit was 0.0423 MGD but the TDS discharge concentration as of August 2010 was not documented. The 2012 renewal permit application also did not include TDS sample results. Assuming the TDS concentration in the discharge prior to August 2010 was the same as the TDS concentrations from the eDMRs reviewed for this renewal permit, from January 2018 through December 2020, the baseline would be as follows:

$$618 \text{ mg/l} \times 0.0423 \text{ MGD} \times 8.34 = 218 \text{ lbs/day}$$

(Note: State regulations relevant to TDS are in addition to applicable DRBC regulations)

Flow Monitoring:

The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR §122.44(i)(1)(ii).

Mass Loading Limitations:

All effluent mass loading limits are based on the formula: design flow x concentration limit x conversion factor of 8.34.

Anti-Backsliding:

No limits have been made less stringent than the previous permit.

Anti-degradation:

The effluent limits for this discharge have been developed to ensure that existing in-stream 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.

Class A Trout Waters:

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

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 if needed and BPJ. Instantaneous Maximum (IMAX) limits are may be determined by models or by 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)		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 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	8.8	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	10	XXX	XXX	30.0	XXX	60	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Suspended Solids (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Suspended Solids (lbs)	XXX	3862 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Dissolved Solids	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

Outfall001 , Continued (from 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		
TKN	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
NO3-NO2	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Calculation
Ammonia Nov 1 - Apr 30	7.0	XXX	XXX	20.0	XXX	40	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	3.6	XXX	XXX	10.1	XXX	20.2	2/month	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	2.0	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus (lbs)	XXX	129 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: at discharge from facility

Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment)
<input checked="" type="checkbox"/>	Toxics Management Spreadsheet (see Attachment)
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment)
<input checked="" type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input checked="" type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input checked="" type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input checked="" type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input checked="" type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Design Stream Flows, 391-2000-023, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input type="checkbox"/>	SOP: Establishing Effluent Limitations for Individual Sewage Permits
<input type="checkbox"/>	Other:

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.22	= Q stream (cfs)	0.5	= CV Daily
0.0423	= 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 = 1.091	1.3.2.iii	WLA_cfc = 1.057
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373	5.1c	LTAMULT_cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc = 0.407	5.1d	LTA_cfc = 0.614

Source	Effluent Limit Calculations
PENTOXSD TRG	5.1f AML_MULT = 1.231
PENTOXSD TRG	5.1g AVG_MON_LIMIT (mg/l) = 0.500 INST_MAX_LIMIT (mg/l) = 1.635

WLA_afc	$(.019/e^{-k \cdot AFC_tc}) + [(AFC_Yc \cdot Qs \cdot .019 / Qd \cdot e^{-k \cdot AFC_tc}) \dots + Xd + (AFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$
LTAMULT_afc	$EXP((0.5 \cdot LN(cvh^2 + 1)) - 2.326 \cdot LN(cvh^2 + 1)^{0.5})$
LTA_afc	wla_afc * LTAMULT_afc
WLA_cfc	$(.011/e^{-k \cdot CFC_tc}) + [(CFC_Yc \cdot Qs \cdot .011 / Qd \cdot e^{-k \cdot CFC_tc}) \dots + Xd + (CFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$
LTAMULT_cfc	$EXP((0.5 \cdot LN(cvd^2 / no_samples + 1)) - 2.326 \cdot LN(cvd^2 / no_samples + 1)^{0.5})$
LTA_cfc	wla_cfc * LTAMULT_cfc
AML_MULT	$EXP(2.326 \cdot LN((cvd^2 / no_samples + 1)^{0.5}) - 0.5 \cdot LN(cvd^2 / no_samples + 1))$
AVG_MON_LIMIT	MIN(BAT_BPJ, MIN(LTA_afc, LTA_cfc) * AML_MULT)
INST_MAX_LIMIT	$1.5 \cdot ((av_mon_limit / AML_MULT) / LTAMULT_afc)$

$$(0.011 / EXP(-K \cdot CFC_tc / 1440)) + (((CFC_Yc \cdot Qs \cdot 0.011) / (1.547 \cdot Qd)) \dots \dots \cdot EXP(-K \cdot CFC_tc / 1440)) + Xd + (CFC_Yc \cdot Qs \cdot Xs / 1.547 \cdot Qd) \cdot (1 - FOS / 100)$$

MONITORING_	MONITORING_	OUTFA	PARAMETER	L_UNITS	VALUE	LIMIT	LOAD_SBC	LOAD_2_VA	LOAD_2_LIN	LOAD_2_SBC
1/1/2018	1/31/2018	1	Flow	MGD	0.027	Monit	Average Mo	0.0664	Monitor a	Daily Maxi
2/1/2018	2/28/2018	1	Flow	MGD	0.042	Monit	Average Mo	0.061	Monitor a	Daily Maxi
3/1/2018	3/31/2018	1	Flow	MGD	0.024	Monit	Average Mo	0.0558	Monitor a	Daily Maxi
4/1/2018	4/30/2018	1	Flow	MGD	0.032	Monit	Average Mo	0.0577	Monitor a	Daily Maxi
5/1/2018	5/31/2018	1	Flow	MGD	0.03	Monit	Average Mo	0.0825	Monitor a	Daily Maxi
6/1/2018	6/30/2018	1	Flow	MGD	0.016	Monit	Average Mo	0.0632	Monitor a	Daily Maxi
7/1/2018	7/31/2018	1	Flow	MGD	0.019	Monit	Average Mo	0.0875	Monitor a	Daily Maxi
8/1/2018	8/31/2018	1	Flow	MGD	0.039	Monit	Average Mo	0.1231	Monitor a	Daily Maxi
9/1/2018	9/30/2018	1	Flow	MGD	0.029	Monit	Average Mo	0.0906	Monitor a	Daily Maxi
10/1/2018	10/31/2018	1	Flow	MGD	0.02	Monit	Average Mo	0.0814	Monitor a	Daily Maxi
11/1/2018	11/30/2018	1	Flow	MGD	0.054	Monit	Average Mo	0.1011	Monitor a	Daily Maxi
12/1/2018	12/31/2018	1	Flow	MGD	0.029	Monit	Average Mo	0.0913	Monitor a	Daily Maxi
1/1/2019	1/31/2019	1	Flow	MGD	0.033	Monit	Average Mo	0.0931	Monitor a	Daily Maxi
2/1/2019	2/28/2019	1	Flow	MGD	0.021	Monit	Average Mo	0.0513	Monitor a	Daily Maxi
3/1/2019	3/31/2019	1	Flow	MGD	0.025	Monit	Average Mo	0.0959	Monitor a	Daily Maxi
4/1/2019	4/30/2019	1	Flow	MGD	0.022	Monit	Average Mo	0.088	Monitor a	Daily Maxi
5/1/2019	5/31/2019	1	Flow	MGD	0.027	Monit	Average Mo	0.0709	Monitor a	Daily Maxi
6/1/2019	6/30/2019	1	Flow	MGD	0.019	Monit	Average Mo	0.0656	Monitor a	Daily Maxi
7/1/2019	7/31/2019	1	Flow	MGD	0.016	Monit	Average Mo	0.056	Monitor a	Daily Maxi
8/1/2019	8/31/2019	1	Flow	MGD	0.015	Monit	Average Mo	0.0406	Monitor a	Daily Maxi
9/1/2019	9/30/2019	1	Flow	MGD	0.011	Monit	Average Mo	0.0181	Monitor a	Daily Maxi
10/1/2019	10/31/2019	1	Flow	MGD	0.018	Monit	Average Mo	0.0655	Monitor a	Daily Maxi
11/1/2019	11/30/2019	1	Flow	MGD	0.014	Monit	Average Mo	0.0381	Monitor a	Daily Maxi
12/1/2019	12/31/2019	1	Flow	MGD	0.019	Monit	Average Mo	0.0387	Monitor a	Daily Maxi
1/1/2020	1/31/2020	1	Flow	MGD	0.017	Monit	Average Mo	0.0669	Monitor a	Daily Maxi
2/1/2020	2/29/2020	1	Flow	MGD	0.019	Monit	Average Mo	0.0533	Monitor a	Daily Maxi
3/1/2020	3/31/2020	1	Flow	MGD	0.019	Monit	Average Mo	0.0716	Monitor a	Daily Maxi
4/1/2020	4/30/2020	1	Flow	MGD	0.022	Monit	Average Mo	0.0868	Monitor a	Daily Maxi
5/1/2020	5/31/2020	1	Flow	MGD	0.015	Monit	Average Mo	0.0769	Monitor a	Daily Maxi
6/1/2020	6/30/2020	1	Flow	MGD	0.011	Monit	Average Mo	0.0217	Monitor a	Daily Maxi
7/1/2020	7/31/2020	1	Flow	MGD	0.016	Monit	Average Mo	0.0593	Monitor a	Daily Maxi
8/1/2020	8/31/2020	1	Flow	MGD	0.018	Monit	Average Mo	0.079	Monitor a	Daily Maxi
9/1/2020	9/30/2020	1	Flow	MGD	0.014	Monit	Average Mo	0.0758	Monitor a	Daily Maxi
10/1/2020	10/31/2020	1	Flow	MGD	0.014	Monit	Average Mo	0.0726	Monitor a	Daily Maxi
11/1/2020	11/30/2020	1	Flow	MGD	0.017	Monit	Average Mo	0.0387	Monitor a	Daily Maxi
12/1/2020	12/31/2020	1	Flow	MGD	0.029	Monit	Average Mo	0.1345	Monitor a	Daily Maxi
1/1/2021	1/31/2021	1	Flow	MGD	0.02	Monit	Average Mo	0.0474	Monitor a	Daily Maxi
					0.022	Avg		0.1345	Max	
					0.054	Max		0.09422	90th Percentile	
					0.032	90th Percentile				

WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
03B		1985		MAIDEN CREEK			
<u>RMI</u>	<u>Name</u>	<u>Permit Number</u>	<u>Disc Flow (mgd)</u>	<u>Parameter</u>	<u>Effl. Limit 30-day Ave. (mg/L)</u>	<u>Effl. Limit Maximum (mg/L)</u>	<u>Effl. Limit Minimum (mg/L)</u>
15.270	LenhartsvillSTP	PA0246921	0.000	CBOD5	25		
				NH3-N	10.07	20.14	
				Dissolved Oxygen			5

Permit No. PA0246921

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
03B	1985	MAIDEN CREEK	15.270	365.00	3.63	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.061	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
LenhartsvillSTP	PA0246921	0.0000	0.0423	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	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0246921

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
03B	1985	MAIDEN CREEK	15.260	350.00	83.40	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	pH	Stream Temp	pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.105	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
confl MaidenCk		0.0000	0.0000	0.0000	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	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0246921

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
03B	1985	MAIDEN CREEK	14.830	340.00	83.70	0.00000	0.00	<input checked="" type="checkbox"/>

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		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.105	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
confi	02078	0.0000	0.0000	0.0000	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	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0246921

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
03B		1985				MAIDEN 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												
15.270	0.22	0.00	0.22	.0654	0.28408	.802	3.25	4.05	0.11	0.006	21.14	7.00
15.260	8.60	0.00	8.60	.0654	0.00440	.748	44.02	58.88	0.26	0.100	20.04	7.00
Q1-10 Flow												
15.270	0.14	0.00	0.14	.0654	0.28408	NA	NA	NA	0.09	0.007	21.58	7.00
15.260	5.50	0.00	5.50	.0654	0.00440	NA	NA	NA	0.21	0.128	20.06	7.00
Q30-10 Flow												
15.270	0.30	0.00	0.30	.0654	0.28408	NA	NA	NA	0.13	0.005	20.89	7.00
15.260	11.69	0.00	11.69	.0654	0.00440	NA	NA	NA	0.31	0.084	20.03	7.00

Permit No. PA0246921

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
03B	1985	MAIDEN 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
15.270	LenhartsvillSTP	8.63	27.31	8.63	27.31	0	0
15.260	confl MaidenCk	NA	NA	9.63	NA	NA	NA

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
15.270	LenhartsvillSTP	1.8	10.07	1.8	10.07	0	0
15.260	confl MaidenCk	NA	NA	1.91	NA	NA	NA

Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
15.27	LenhartsvillSTP	25	25	10.07	10.07	5	5	0	0
15.26	confl MaidenCk	NA	NA	NA	NA	NA	NA	NA	NA

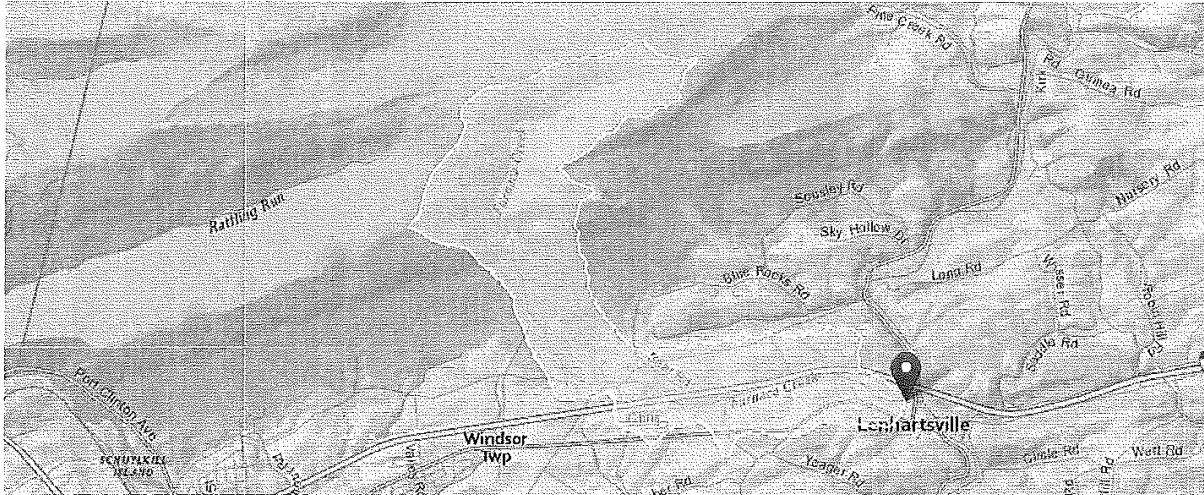
Permit No. PA0246921

WQM 7.0 D.O. Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
03B	1985	MAIDEN CREEK		
<hr/>				
<u>RM</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>		<u>Analysis pH</u>
15.270	0.042	21.141		7.000
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
3.252	0.802	4.052	0.110	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>		<u>Reach Kn (1/days)</u>
7.25	1.179	2.30		0.764
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>		<u>Reach DO Goal (mg/L)</u>
7.503	7.428	Owens		6
<u>Reach Travel Time (days)</u>				
0.006				
	<u>Subreach Results</u>			
	<u>TravTime</u>	<u>CBOD5</u>	<u>NH3-N</u>	<u>D.O.</u>
	(days)	(mg/L)	(mg/L)	(mg/L)
	0.001	7.24	2.30	7.50
	0.001	7.24	2.29	7.49
	0.002	7.23	2.29	7.49
	0.002	7.23	2.29	7.48
	0.003	7.22	2.29	7.47
	0.003	7.22	2.29	7.47
	0.004	7.21	2.29	7.46
	0.004	7.21	2.29	7.46
	0.005	7.20	2.29	7.45
	0.006	7.20	2.29	7.45
<hr/>				
<u>RM</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>		<u>Analysis pH</u>
15.260	0.042	20.038		7.000
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>		<u>Reach Velocity (fps)</u>
44.023	0.748	58.881		0.263
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>		<u>Reach Kn (1/days)</u>
2.17	0.121	0.08		0.702
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>		<u>Reach DO Goal (mg/L)</u>
8.217	11.015	Tsivoglou		6
<u>Reach Travel Time (days)</u>				
0.100				
	<u>Subreach Results</u>			
	<u>TravTime</u>	<u>CBOD5</u>	<u>NH3-N</u>	<u>D.O.</u>
	(days)	(mg/L)	(mg/L)	(mg/L)
	0.010	2.17	0.08	8.24
	0.020	2.17	0.07	8.24
	0.030	2.16	0.07	8.24
	0.040	2.16	0.07	8.24
	0.050	2.16	0.07	8.24
	0.060	2.16	0.07	8.24
	0.070	2.15	0.07	8.24
	0.080	2.15	0.07	8.24
	0.090	2.15	0.07	8.24
	0.100	2.15	0.07	8.24

StreamStats Report - Lenhartsville STP - Furnace Creek

Region ID: PA
 Workspace ID: PA20210508035954317000
 Clicked Point (Latitude, Longitude): 40.57509, -75.88928
 Time: 2021-05-08 00:00:10 -0400



Basin Characteristics			
Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	3.61	square miles
PRECIP	Mean Annual Precipitation	48	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.62	miles per square mile
ROCKDEP	Depth to rock	4.1	feet
CARBON	Percentage of area of carbonate rock	0	percent

Low-Flow Statistics Parameters [Low Flow Region 2]						
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit	
DRNAREA	Drainage Area	3.61	square miles	4.93	1280	
PRECIP	Mean Annual Precipitation	48	inches	35	50.4	
STRDEN	Stream Density	1.62	miles per square mile	0.51	3.1	
ROCKDEP	Depth to Rock	4.1	feet	3.32	5.65	
CARBON	Percent Carbonate	0	percent	0	99	

Low-Flow Statistics Disclaimers [Low Flow Region 2]

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 2]		
Statistic	Value	Unit
7 Day 2 Year Low Flow	0.552	ft ³ /s

StreamStats

Statistic	Value	Unit
30 Day 2 Year Low Flow	0.771	ft ³ /s
7 Day 10 Year Low Flow	0.218	ft ³ /s
30 Day 10 Year Low Flow	0.308	ft ³ /s
90 Day 10 Year Low Flow	0.5	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/>)

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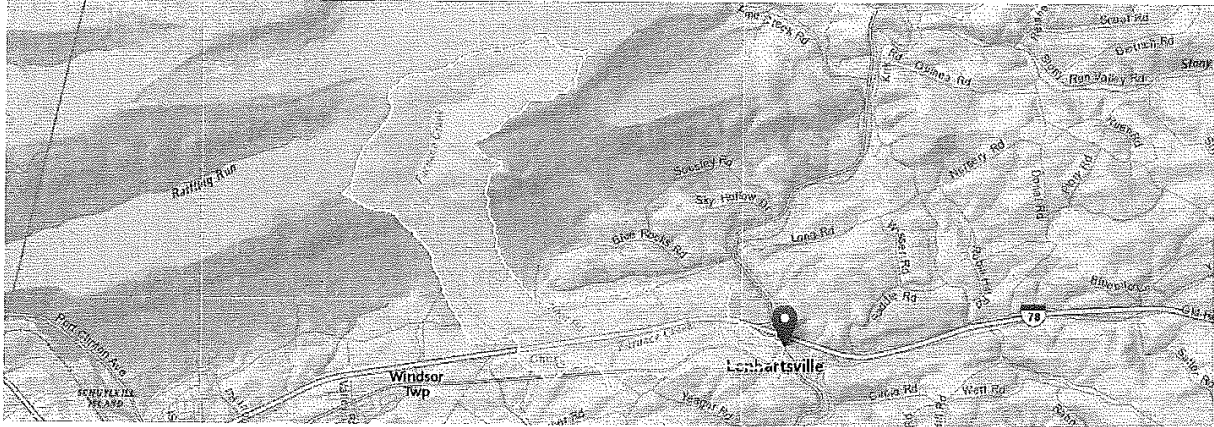
Application Version: 4.5.3

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2

StreamStats Report - confluence of Maiden Creek and Furnace Creek

Region ID: PA
 Workspace ID: PA20210508040312336000
 Clicked Point (Latitude, Longitude): 40.57478, -75.88671
 Time: 2021-05-08 00:03:28 -0400



Basin Characteristics			
Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	3.63	square miles
PRECIP	Mean Annual Precipitation	48	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.65	miles per square mile
ROCKDEP	Depth to rock	4.1	feet
CARBON	Percentage of area of carbonate rock	0	percent

Low-Flow Statistics Parameters [Low Flow Region 2]					
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.63	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	48	inches	35	50.4
STRDEN	Stream Density	1.65	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.1	feet	3.32	5.65
CARBON	Percent Carbonate	0	percent	0	99

Low-Flow Statistics Disclaimers [Low Flow Region 2]

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 2]		
Statistic	Value	Unit
7 Day 2 Year Low Flow	0.546	ft ³ /s
30 Day 2 Year Low Flow	0.763	ft ³ /s
7 Day 10 Year Low Flow	0.215	ft ³ /s
30 Day 10 Year Low Flow	0.304	ft ³ /s
90 Day 10 Year Low Flow	0.494	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/>)

StreamStats Report - immediately after confl Furnace Ck & Maiden Ck

Region ID: PA
 Workspace ID: PA20210508040722419000
 Clicked Point (Latitude, Longitude): 40.57454, -75.88634
 Time: 2021-05-08 00:07:39 -0400



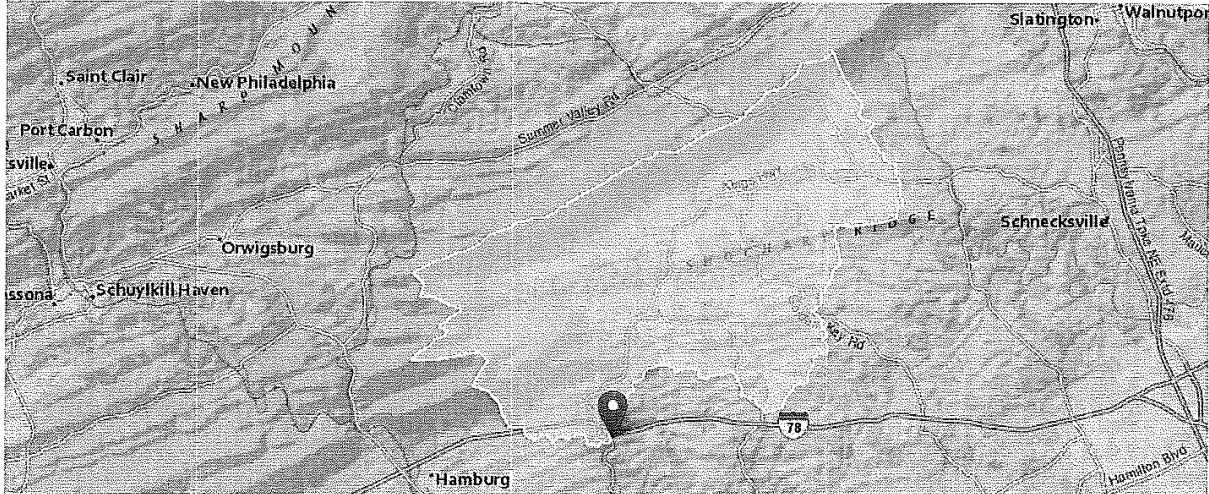
Basin Characteristics			
Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	83.3	square miles
PRECIP	Mean Annual Precipitation	47	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.41	miles per square mile
ROCKDEP	Depth to rock	3.8	feet
CARBON	Percentage of area of carbonate rock	0	percent

Low-Flow Statistics Parameters [Low Flow Region 2]						
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit	
DRNAREA	Drainage Area	83.3	square miles	4.93	1280	
PRECIP	Mean Annual Precipitation	47	inches	35	50.4	
STRDEN	Stream Density	1.41	miles per square mile	0.51	3.1	
ROCKDEP	Depth to Rock	3.8	feet	3.32	5.65	
CARBON	Percent Carbonate	0	percent	0	99	

Low-Flow Statistics Flow Report [Low Flow Region 2]					
PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)					
Statistic	Value	Unit	SE	SEp	
7 Day 2 Year Low Flow	16	ft ³ /s	38	38	
30 Day 2 Year Low Flow	21.7	ft ³ /s	33	33	
7 Day 10 Year Low Flow	6.97	ft ³ /s	51	51	
30 Day 10 Year Low Flow	9.79	ft ³ /s	46	46	

StreamStats Report - Maiden Creek and UNT 02078 confluence

Region ID: PA
 Workspace ID: PA20210508035504749000
 Clicked Point (Latitude, Longitude): 40.57056, -75.88145
 Time: 2021-05-07 23:55:23 -0400



Basin Characteristics			
Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	83.6	square miles
PRECIP	Mean Annual Precipitation	47	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.41	miles per square mile
ROCKDEP	Depth to rock	3.8	feet
CARBON	Percentage of area of carbonate rock	0	percent

Low-Flow Statistics Parameters [Low Flow Region 2]						
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit	
DRNAREA	Drainage Area	83.6	square miles	4.93	1280	
PRECIP	Mean Annual Precipitation	47	Inches	35	50.4	
STRDEN	Stream Density	1.41	miles per square mile	0.51	3.1	
ROCKDEP	Depth to Rock	3.8	feet	3.32	5.65	
CARBON	Percent Carbonate	0	percent	0	99	

Low-Flow Statistics Flow Report [Low Flow Region 2]				
PI: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)				
Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	16	ft ³ /s	38	38
30 Day 2 Year Low Flow	21.8	ft ³ /s	33	33
7 Day 10 Year Low Flow	7	ft ³ /s	51	51
30 Day 10 Year Low Flow	9.83	ft ³ /s	46	46

*Wait
Maiden Creek
dilution*

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
03B	2080	FURNACE CREEK	0.140	370.00	3.61	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.061	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
LenhartsvilleST	PA0246921	0.0000	0.0423	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	5.00	8.24	0.00	0.00
NH3-N	20.00	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
03B	2080	FURNACE CREEK	0.000	360.00	3.63	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.060	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
confl w/ Maiden		0.0000	0.0000	0.0000	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	5.00	8.24	0.00	0.00
NH3-N	20.00	0.00	0.00	0.70

WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
03B		2080		FURNACE 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)
0.140	LenhartsvilleST	PA0246921	0.000	CBOD5	25		
				NH3-N	9.93	19.86	
				Dissolved Oxygen			5

*with Maiden Creek
dilution*

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
03B	2089	Trib 02089 to Pine Creek	15.450	370.00	79.70	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.084	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
LenSTP	PA0246921	0.0000	0.0423	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	5.00	8.24	0.00	0.00
NH3-N	20.00	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
03B	2089	Trib 02089 to Pine Creek	15.300	360.00	83.30	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.084	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
confl		0.0000	0.0000	0.0000	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	5.00	8.24	0.00	0.00	
NH3-N	20.00	0.00	0.00	0.70	

WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
03B		2089		Trib 02089 to Pine 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)
15.450	LenSTP	PA0246921	0.000	CBOD5	25		
				NH3-N	20	40	
				Dissolved Oxygen			5