pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0088510**
Facility Type	**Municipal**	APS ID	**328459**
Major / Minor	**Minor**	Authorization ID	**1423275**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Tulpehocken Township Berks County**	Facility Name	**Tulpehocken Township Mt Aetna STP**
Applicant Address	PO Box 272	Facility Address	33 East Market Street
	Rehrersburg, PA 19550-0272		Mt Aetna, PA 19544
Applicant Contact	Lester Feick, Vice Chairman	Facility Contact	Lester Feick
Applicant Phone	(717) 933-5747 tulpysewer@comcast.net	Facility Phone	(610) 587-6917
Client ID	142968	Site ID	537087 (PF ID #558100)
Ch 94 Load Status		Municipality	Tulpehocken Township
Connection Status		County	Berks
Date Application Received	January 3, 2023	EPA Waived?	YES. (No change to TMDL loads)
Date Application Accepted	January 17, 2023	If No, Reason	-
Purpose of Application	Permit renewal for treated sewage		

Summary of Review

The facility's existing permit was issued June 29, 2018 with an effective date of July 1, 2018 and an expiration date of June 30, 2023. The existing permit's limits and conditions have been administratively extended. A (paper) permit renewal application was submitted January 3, 2023.

The application represents that:
- there are no hauled-in wastes accepted and none anticipated for the next five years; and
- there is one commercial contributor, Dutch Valley Foods, which contributes 0.002 MGD on average but only domestic wastewater, no industrial wastewater

Design flow:

DEP's Standard Operating Procedure (SOP) Establishing Effluent Limitations for Individual Sewage Permits recommends basing effluent limits in sewage permits on the Annual Average Design Flow. The renewal application included an Annual Average Design Flow of 0.055 MGD, which is the same as the flow used in the existing NPDES permit for developing effluent limitations. DEP's eFacts database also shows the Annual Average Flow as 0.055 MGD for this facility.

According to DEP Sewage Planning staff, the facility's 2022 Chapter 94 Annual Municipal Wasteload Report did not project flows over their design flow of 0.055 MGD and did not project organic overloads for the next five years.

Therefore, the renewal permit effluent limits continue to be based on a design flow of 0.055 MGD.

Approve	Deny	Signatures	Date
x		*Bonnie Boylan* Bonnie Boylan / Environmental Engineering Specialist	January 11, 2024
x		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	February 1, 2024
x		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Environmental Program Manager	February 1, 2024

A review of the facility's electronic Discharge Monitoring Report (eDMR) data from January 1, 2021 through November 30, 2023 indicates that there were no months in the reviewed period where the monthly average exceeded the design flow of 0.055 MGD. The Maximum Monthly Average flow reported in these eDMRs was 0.038 MGD. (See **attached.**)

Hauled-in Wastes: None

Sludge use and disposal description and location(s):

According to their application, sewage sludge is hauled to Lehigh County Authority WWTP and to Capital Region Water AWTF.

Combined Sewers Outfalls: Not Applicable

Unresolved Violations:

There are no unresolved violations for this facility according to DEP's eFacts Clean Water Program 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). Comments received 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)	0.055
Latitude	40º 25' 3"	Longitude	76º 17' 28"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary (UNT) of Little Swatara Creek (CWF)	Stream Code	09939
NHD Com ID	56396087	River Mile Index (RMI)	0.95
Drainage Area	0.62 sq.mi. (Pa Stream Stats)	Yield (cfs/mi^2)	0.02
Q_{7-10} Flow (cfs)	0.0114	Q_{7-10} Basis	PA Stream Stats
Elevation (ft)	540	Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	Cold Water Fish (CWF) Migratory Fish (MF)
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired for Aquatic Life (assess. #23062)		
Cause(s) of Impairment	Nutrients, Organic Enrichment, Algae		
Source(s) of Impairment	Agriculture, On-Site Treatment Systems		
TMDL Status	Final, 7/4/2010 Final, 6/22/2011 Final, 12/29/2010	Name	Little Swatara Crk Phosphorus TMDL Little Swatara Crk Sediment TMDL Chesapeake Bay TMDL, nutrients
Background/Ambient Data – Not Available		Data Source – N/A	
Nearest Downstream Public Water Supply Intake		PA American – Hanover Twp	
PWS Waters	Swatara Creek	Flow at Intake (cfs)	
PWS RMI	16.4	Distance from Outfall (mi)	approx. 40 miles

Secondary Receiving Water:

09939 empties into UNT 09938 at 1.43 RMI (CWF, also impaired, same) which empties into Little Swatara Creek at 14.35 (CWF at this point but Warm Water Fish (WWF) farther downstream; not impaired at this point but impaired for pathogens farther downstream) which empties into Swatara Creek (WWF) at 38.6 RMI which empties in the Susquehanna River (WWF) at 46 RMI.
None of these waterways are shown as Class A Trout or Trout Natural Reproduction on DEP's eMapPA.

Changes Since Last Permit Issuance:

This Fact Sheet used a smaller estimated Q7-10, from PA Stream Stats online tool, and smaller LFY. Last Fact Sheet estimated the Q7-10 using gage correlation but the gage used (01573560) is located 39 miles downstream which does not yield the best estimate. (There are no upstream gages and no downstream gages located closeby.)

Other Comments:

Qs:Qd ratio = 1: 7

Treatment Facility Summary

Treatment Facility Name: Tulpehocken Township Mt Aetna STP

WQM Permit No.	Issuance Date
0604412	12/16/2004 (New)
0604408	09/08/2004 (New)

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia And Phosphorus Reduction	Extended Aeration	Ultraviolet (UV)	0.055

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.066	144		Aerobic Digestion	Other WWTP

According to the WQM permit's Internal Review and Recommendations (IRR), the system is a modified NORWECO extended aeration package plant.

DEP Inspection Report:

1 Muffin Monster Grinder
2 Equalization Tanks
Splitter Box
Train 1 - 4 aeration tanks and one clarifier
Train 2 - 4 aeration tanks and one clarifier
1 UV disinfection unit, 6 lamps total
Post-UV Aerated Chamber
3 Aerobic digestors

EXISTING PERMIT LIMITS, OUTFALL 001:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instantaneous Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/day	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
Carbonaceous Biochemical Oxygen Demand (CBOD5)	11.5	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Suspended Solids	13.8	XXX	XXX	30.0	XXX	60	2/month	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	4.5	XXX	XXX	9.9	XXX	19.8	2/month	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	1.5	XXX	XXX	3.3	XXX	6.6	2/month	8-Hr Composite
Total Phosphorus	0.92	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite
Ultraviolet light dosage (mjoules/cm^2)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured

*units of mjoules/cm^2 are the equivalent of me/cm^2 for this UV system; the treatment plant's UV system displays as me/cm^2

Compliance History

DMR Data for Outfall 001 (from December 1, 2022 to November 30, 2023)

Parameter	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22
Flow (MGD) Average Monthly	0.022	0.023	0.024	0.023	0.025	0.024	0.031	0.029	0.029	0.027	0.019	0.009
Flow (MGD) Daily Maximum	0.029	0.031	0.031	0.028	0.051	0.038	0.045	0.041	0.041	0.041	0.041	0.05
pH (S.U.) Instantaneous Minimum	6.52	6.48	6.6	6.7	7.11	7.12	7.14	6.97	6.79	6.87	6.85	6.71
pH (S.U.) Instantaneous Maximum	8.0	7.92	8.06	7.97	7.97	8.26	7.71	7.64	7.39	7.43	7.39	7.32
DO (mg/L) Instantaneous Minimum	7.28	6.56	6.14	7.08	5.15	7.24	5.1	6.68	7.67	7.59	5.68	7.09
CBOD5 (lbs/day) Average Monthly	0.8	0.7	0.6	0.4	0.5	0.9	0.9	0.9	1.1	1.0	0.6	0.2
CBOD5 (mg/L) Average Monthly	4.7	3.5	3.4	2.7	2.9	3.3	3.4	3.2	4.6	3.1	3.5	3.8
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	38	58	45	28	35	85	80	92	76	110	81	15
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	50	64	64	34	46	99	100	106	76	115	153	17
BOD5 (mg/L) Raw Sewage Influent Average Monthly	247	301	223	189	210	329	318	319	325	345	402	336
TSS (lbs/day) Average Monthly	0.7	< 1.4	< 0.8	< 0.6	< 0.7	2.4	1.4	1.5	2.0	1.8	0.8	0.5
TSS (lbs/day) Raw Sewage Influent Average Monthly	44	62	73	21	37	88	65	92	61	116	51	13
TSS (lbs/day) Raw Sewage Influent Daily Maximum	61	64	86	25	56	110	94	104	61	130	94	15

TSS (mg/L) Average Monthly	4.6	< 7.8	< 4.0	< 5.0	< 4.0	8.8	5.4	5.2	8.1	5.7	5.2	10.7
TSS (mg/L) Raw Sewage Influent Average Monthly	285	323	369	147	205	335	263	319	260	365	284	289
Fecal Coliform (No./100 ml) Geometric Mean	237	37	11	37	27	79	200	14	46	4.0	1	8
Fecal Coliform (No./100 ml) Instantaneous Maximum	300	75	32	51	27	281	400	21	56	15	2	15
Total Nitrogen (lbs/day) Average Monthly	4	4	4	3.0	3	5	6	< 5	6	7.0	3	1
Total Nitrogen (mg/L) Average Monthly	25.2	22.4	21.5	18.8	17.6	19.7	23.5	< 14.4	24.6	23.0	13.15	23.5
Ammonia (lbs/day) Average Monthly	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02	< 0.03	< 0.7	< 0.03	< 0.2	< 0.03	< 0.02	< 0.005
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 2.49	< 0.1	< 0.97	< 0.1	< 0.1	< 0.1
Total Phosphorus (lbs/day) Average Monthly	0.04	0.08	0.07	0.06	0.08	0.20	0.09	0.08	0.08	0.08	0.05	0.01
Total Phosphorus (mg/L) Average Monthly	0.3	0.45	0.38	0.4	0.51	0.61	0.36	0.26	0.34	0.26	0.28	0.3
UV Dosage (mjoules/cm²) Instantaneous Minimum	1.5	6.5	7.3	7.6	0.4	00	0.0	4.9	3.6	4.1	5.3	4.8

Compliance History

From December 1, 2021 through November 30, 2023:

No permit exceedances or violations.

DEP Inspections:

8/7/2023 – No Violations noted.

9/28/2020 – Administrative File Review (during Covid pandemic when site visits were suspended). DEP inspector discussed with operator 2019 and 2020 effluent violations that had occurred for Fecal Coliform and Ammonia. Operator said UV bulbs were replaced and UV tank was cleaned after September 2019 exceedances of limits. After April 2020 exceedances, facility began to pump the UV tank quarterly and has had no exceedances since. Composite samples are collected from the small UV tank.

4/10/2020 – Administrative File Review (during Covid pandemic when site visits were suspended). No violations noted.

5/30/2018 – No violations noted. One train in operation. Sludge holding tank is decanting, to EQ tank. Ultrasonic flow meter post-UV tank, and 7-day chart. Samples were collected by inspector; analysis results were within permitted limits.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .055
Latitude 40º 25' 3" **Longitude** -76º 17' 28"
Wastewater Description: Sewage Effluent

Technology-Based Effluent Limitations (TBELs)

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 (TSS)	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)
Total Phosphorus**	2.0**	Average Monthly		96.5(c)

*applied to sewage facilities for which monitoring frequency is at least once per week

** this TBEL is applicable when the received water is impaired for Total Phosphorus. Because the receiving water is impaired for Total Phosphorus in this case, a TBEL of 2.0 mg/l as a monthly average was imposed in previous permits and has been carried forward.

Best Professional Judgment (BPJ) Limitations

Dissolved Oxygen (DO)

A minimum effluent limit of 5.0 mg/L for DO is derived from state water quality criteria found in 25 Pa. Code §93.7(a). The existing permit included a minimum effluent limit for DO of 5.0 mg/l and no change is recommended.

Intermittent and Ephemeral Streams, Drainage Channels and Swales

Although the stream low-flow to discharge flow ratio (Qs:Qd) is less than 3:1, the recommended effluent limits based on treatment standards (TBELs) provided in DEP's 'Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers' [Technical Guidance document 386-2000-013] were not imposed in their previous NDPES permits. The original NPDES permit was issued in 2004. The document 386-2000-013 was published in 2008. DEP's Standard Operating Procedure (SOP) for Establishing Effluent Limitations for Individual Sewage Permits was developed later. This SOP recommends applying the more stringent treatment requirements in document 386-2000-013 when the Qs:Qd ratio is less than 3:1. If the facility expands in the future, stricter permit limits may be imposed. The following condition has been added to Part C of the draft renewal permit:

> "The attention of the permittee is directed to the fact that effluent is discharged to a location with little or no assimilative capacity or dilution during critical periods. If the effluent creates a health hazard or nuisance, the permittee shall, upon notice from DEP, provide such additional treatment as may be required by DEP."

Water Quality-Based Effluent Limitations (WQBELs)

$CBOD_5$, Ammonia (NH_3-N), and Dissolved Oxygen (DO)

DEP uses a model, WQM 7.0, to determine appropriate permit requirements for $CBOD_5$, NH_3-N and DO. The model results will show calculated WQBELs if they are more stringent or will default to the TBELs if the TBELs are protective enough of the receiving waterway. For more explanation of the WQM 7.0 model, see Technical Reference Guide WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, document 386-2000-016. The NH3 calculations used in the model are based on the DEP's Implementation Guidance of Section 93.7 Ammonia Criteria, 391-2000-013.

The model input values and output values are **attached**. The River Mile Indices (RMI's) and elevations that were used came from DEP's eMapPA while the Drainage Areas and stream design low-flows (Q7-10) came from USGS PA Stream Stats online tool. Low Flow Yield (LFY) is calculated as stream low-flow, Q7-10, divided by Drainage Area of the stream at the outfall location. Some model input values were default values because background data was not available at this location and no site-specific data was forwarded with the application.

The model results for $CBOD_5$ and DO are the same as the existing permit limits: the model defaulted to the TBELs.

The NH3 criterion, an equation, changed in the 2020 amendments to the Pa Water Quality Standards, Pa Code Chapter 93. The model incorporates the new NH3 criterion. Also, the Q7-10 used as a model input was smaller than what was used for the previous permit (See page 3 of the Fact Sheet where this was explained.) The model calculated more stringent warm weather NH3 limits: 1.7 mg/l as a monthly average and 3.5 mg/l as a maximum for the months of May through October. As was done in the previous permit (and many other NPDES permits), the cool weather NH3 limits were allowed to be less stringent, recognizing that NH3 is less toxic in colder water. As was done in the previous permit, a multiplier of 3 was applied to the warm weather NH3 limits resulting in cool weather NH3 limits of 5.1 mg/l as a monthly average and 10.2 mg/l as a maximum for the months of November through April.

The facility's eDMRs from January 1, 2021 through November 30, 2023 indicate that they can meet the more stringent NH3 limits without the need for a compliance schedule (consistent with DEP's SOP New and Reissuance Sewage Individual NPDES Permit Applications). In the 35 months reviewed, there was one warm weather month when the effluent exceeded 1.7 mg/l as a monthly average, the proposed new NH3 limit for warm weather months. However the average concentration for the period of eDMR data reviewed was 0.26 mg/l and the 90th percentile of the monthly averages reported was 0.30 mg/l, well under the proposed limit of 1.7 mg/l. There were no cool weather months when the effluent exceeded 5.1 mg/l as a monthly average, the proposed cool weather NH3 limit. There were no months of the 35 reviewed when the monthly average NH3 mass load would have exceeded the proposed new mass load limits, either during warm or cool weather months. (A summary of NH3 results from their eDMRs is **attached**.)

DEP's SOP New and Reissuance Sewage Individual NPDES Permit Applications recommends as follows:

> *IV.G.2. For WQBELs and other TBELs in which the permittee has demonstrated its ability to comply by meeting the proposed limit at least 75% of the time considering existing performance data, no compliance schedule should be established in the draft permit.*

Total Residual Chlorine (TRC)

It was confirmed with the permittee by phone, January 10, 2024, that they have not been using chlorine for any purpose and do not plan to use chlorine in the next 5 years, the term of the NPDES permit. This permit writer cautioned them that chlorine was not recommended even for intermittent cleaning purposes because DEP's TRC model calculated low WQBELs of 0.03 mg/l as a monthly average and 0.09 mg/l as a maximum. For this reason, the Part C condition found in many STPs' NPDES permits for chlorine use was not included.

Toxics

There are no industrial contributors nor were there any sample results in the application for toxic parameters.

Little Swatara Creek Total Maximum Daily Load (TMDL)

The Little Swatara Creek TMDLs were developed as a result of the creek's impairment assessment: Sediment and nutrients were identified as problems, with phosphorus the limiting nutrient. According to the (2011) TMDL: "There are no point sources addressed in these TMDL segments." (The original NPDES permit and WQM permit for the Mt. Aetna STP were issued in 2004). The TMDL does not include any point source Waste Load Allocations (WLAs) that need to be incorporated into this permit. The necessary reductions in loadings were intended to be achieved "through reductions in current sediment and phosphorus loadings from cropland, from hay/pasture, developed areas, and streambanks" using Best Management Practices (BMPs).

Because the receiving water is impaired for Total Phosphorus (TP), a TBEL of 2.0 mg/l as a monthly average was imposed in previous permits and has been carried forward.

The facility's eDMR data from January 1, 2021 through November 30, 2023 were summarized:
Average monthly TP load was 0.11 lbs/day and average monthly TP concentration was 0.5 mg/l;
Average monthly Total Nitrogen (TN) load was 4.0 lbs/day and average monthly TN concentration was 21.0 mg/l.
Average monthly TSS load was 1.5 lbs/day and average monthly TSS concentration was 7.5 mg/l.

Chesapeake Bay Strategy/TMDL

In the Chesapeake Bay strategy to reduce nutrient loading, prior to the TMDL being adopted, PADEP categorized facilities contributing nutrients and ranked them according to their discharge flow. Phase 5 facilities are those existing sewage plants with discharge flows > 0.002 MGD and < 0.2 MGD. They must monitor for Total Phosphorus (TP) and Total Nitrogen (TN), at a minimum, but cap loads have not been imposed. However, any Phase 5 facility that undergoes an expansion would be subject to an immediate cap load [Phase 3 Watershed Implementation Plan Wastewater Supplement, July 29, 2022]. (Cap load refers to total allowed loadings, in lbs/year, after any applicable credits and/or offsets).

Besides the regulatory standard of 2.0 mg/l for **TP** cited above and in the TBEL section of this Fact Sheet, DEP assesses the potential impact of TP on the impaired downstream Chesapeake Bay thus:

Total P @ Y = Total P x 0.99^{Y},
where Y=stream miles to the PA-MD line and Total P is the lbs/day TP loading.
(This equation was documented in the EPA's Chesapeake Bay Management Report.)
Total P (at outfall) = 2.0 mg/l x 0.055 MGD x 8.34 c.f., or 0.92 lb/day TP loading.
Y= approximately 101 miles in this case.
0.99^{Y} = 0.366
Total P @ Y = 0.92 x 0.366 = 0.34 lbs/day

The loading to the critical part of the Susquehanna River is estimated as 0.34 lbs/day. Given that 3814 lbs/day was previously identified as the Total Phosphorus loading of all discharges in the Lower Susquehanna River Basin, 0.34 lbs/day comprises <0.01% of that total. According to the DEP's phosphorus guidance [Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, document 386-2000-021, paragraph IV.B.], a stricter TP limit than the 2.0 mg/l TBEL would be appropriate if the load percentage was > 0.25%. Therefore, more stringent phosphorus limitations will not be required to protect the Lower Susquehanna River.

For this facility, the renewal permit carries forward from the previous permit their same monitoring requirement for TN. (TN for both concentration and mass loads is the sum of Total Kjeldahl-N (TKN) plus Nitrite-Nitrate as N (NO_2+NO_3-N), where TKN and NO_2+NO_3-N are measured in the same sample.)

The facility's eDMR data from January 1, 2021 through November 30, 2023 were summarized:
Average monthly TP load was 0.11 lbs/day and average monthly TP concentration was 0.5 mg/l;
Average monthly TN load was 4.0 lbs/day and average monthly TN concentration was 21.0 mg/l.
Average monthly TSS load was 1.5 lbs/day and average monthly TSS concentration was 7.5 mg/l.

Additional Considerations

Anti-Backsliding:

No permit limitations have been made less stringent.

Antidegradation Requirements:

All effluent limitations and monitoring requirements 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.

Flow Monitoring:

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

Influent BOD & TSS Monitoring:

The existing influent monitoring reporting requirement for TSS and BOD5 will be maintained in the draft permit. This requirement has been consistently assigned to all municipal wastewater treatment facilities and is necessary to verify the 85% removal permit requirement as well as to ensure process control.

Mass Loading Limitations:

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

Monitoring Frequency and Sample Type:

Monitoring frequencies have been carried forward from the existing permit consistent with DEP's SOP New and Reissuance Sewage Individual NPDES Permit Applications, except for E.Coli. For E.Coli, the monitoring frequency of once per quarter is consistent with DEP's SOP Establishing Effluent Limitations for Individual Sewage Permits.

The sample types have been carried forward from the existing permit except that '8-hour composite' was changed to '24-hour composite' after discussions with the permittee: their sampling equipment can handle 24-hour composite sampling.

Rounding of Limits

Limits were expressed with number of decimal points recommended in DEP's Technical Guidance Document (TGD) 386-04000-001 unless the DEP software introduced since the date of the TGD required differently.

Total Dissolved Solids (TDS) Baseline
In order to implement the regulations at Chapter 95.10 relevant to imposing TDS limits if increased loads trigger this requirement in the future, a TDS Baseline should be documented. A future increase of TDS loads is measured against existing mass loads, described in Chapter 95.10(a)(1) as "maximum daily discharge loads of TDS…that were authorized by the Department prior to August 21, 2010". However, the facility's previous NPDES permits did not require TDS sampling nor does the permit application for Minor Sewage facilities of this size. There is not enough information to calculate a TDS baseline.

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, BPJ, and water quality as needed. Instantaneous Maximum (IMAX) limits are generally 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)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instantaneous Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/day	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
UV Light Intensity (mW/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
CBOD5	11.5	XXX	XXX	25.0	XXX	50	2/month	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS	13.8	XXX	XXX	30.0	XXX	60	2/month	24-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	24-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/quarter	Grab
Ammonia Nov 1 - Apr 30	2.3	XXX	XXX	5.1	XXX	10.2	2/month	24-Hr Composite
Ammonia May 1 - Oct 31	0.8	XXX	XXX	1.7	XXX	3.5	2/month	24-Hr Composite
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Phosphorus	0.9	XXX	XXX	2.0	XXX	4	2/month	24-Hr Composite

Compliance Sampling Location: at discharge from facility

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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☒	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☒	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☒	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☒	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☒	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP New and Reissuance Sewage Individual NPDES Permit Applications, BCW-PMT-002, Version 2.0
☒	SOP: Establishing Effluent Limitations for Individual Sewage Permits, BCW-PMT-033, Version 1.9.
☐	SOP: Establishing WQBELs and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers, BCW-PMT-037, Version 1.5.
☒	Other: Phase 3 Watershed Implementation Plan Wastewater Supplement for Chesapeake Bay , revised July 29, 2022

PERMIT	MONITORIN	MONITORIN	VERSION	PARAM	UNITS	LOAD_1_V	LOAD_1_	LOAD_1_SBC	LOAD_2_V	LOAD_2_	LOAD_2_SBC
PA0088510	1/1/2021	1/31/2021	1	Flow	MGD	0.017	Monitor	Average Mo	0.028	Monitor	Daily Max
PA0088510	2/1/2021	2/28/2021	1	Flow	MGD	0.017	Monitor	Average Mo	0.029	Monitor	Daily Max
PA0088510	3/1/2021	3/31/2021	1	Flow	MGD	0.02	Monitor	Average Mo	0.035	Monitor	Daily Max
PA0088510	4/1/2021	4/30/2021	2	Flow	MGD	0.018	Monitor	Average Mo	0.029	Monitor	Daily Max
PA0088510	5/1/2021	5/31/2021	1	Flow	MGD	0.02	Monitor	Average Mo	0.035	Monitor	Daily Max
PA0088510	6/1/2021	6/30/2021	2	Flow	MGD	0.021	Monitor	Average Mo	0.036	Monitor	Daily Max
PA0088510	7/1/2021	7/31/2021	1	Flow	MGD	0.032	Monitor	Average Mo	0.078	Monitor	Daily Max
PA0088510	8/1/2021	8/31/2021	1	Flow	MGD	0.023	Monitor	Average Mo	0.04	Monitor	Daily Max
PA0088510	9/1/2021	9/30/2021	1	Flow	MGD	0.038	Monitor	Average Mo	0.179	Monitor	Daily Max
PA0088510	10/1/2021	10/31/2021	1	Flow	MGD	0.022	Monitor	Average Mo	0.035	Monitor	Daily Max
PA0088510	11/1/2021	11/30/2021	1	Flow	MGD	0.019	Monitor	Average Mo	0.032	Monitor	Daily Max
PA0088510	12/1/2021	12/31/2021	1	Flow	MGD	0.019	Monitor	Average Mo	0.029	Monitor	Daily Max
PA0088510	1/1/2022	1/31/2022	1	Flow	MGD	0.019	Monitor	Average Mo	0.029	Monitor	Daily Max
PA0088510	2/1/2022	2/28/2022	1	Flow	MGD	0.021	Monitor	Average Mo	0.042	Monitor	Daily Max
PA0088510	3/1/2022	3/31/2022	1	Flow	MGD	0.011	Monitor	Average Mo	0.022	Monitor	Daily Max
PA0088510	4/1/2022	4/30/2022	1	Flow	MGD	0.014	Monitor	Average Mo	0.032	Monitor	Daily Max
PA0088510	5/1/2022	5/31/2022	1	Flow	MGD	0.013	Monitor	Average Mo	0.027	Monitor	Daily Max
PA0088510	6/1/2022	6/30/2022	1	Flow	MGD	0.011	Monitor	Average Mo	0.02	Monitor	Daily Max
PA0088510	7/1/2022	7/31/2022	1	Flow	MGD	0.017	Monitor	Average Mo	0.033	Monitor	Daily Max
PA0088510	8/1/2022	8/31/2022	1	Flow	MGD	0.007	Monitor	Average Mo	0.014	Monitor	Daily Max
PA0088510	9/1/2022	9/30/2022	1	Flow	MGD	0.007	Monitor	Average Mo	0.018	Monitor	Daily Max
PA0088510	10/1/2022	10/31/2022	1	Flow	MGD	0.008	Monitor	Average Mo	0.021	Monitor	Daily Max
PA0088510	11/1/2022	11/30/2022	1	Flow	MGD	0.03	Monitor	Average Mo	0.09	Monitor	Daily Max
PA0088510	12/1/2022	12/31/2022	2	Flow	MGD	0.009	Monitor	Average Mo	0.05	Monitor	Daily Max
PA0088510	1/1/2023	1/31/2023	1	Flow	MGD	0.019	Monitor	Average Mo	0.041	Monitor	Daily Max
PA0088510	2/1/2023	2/28/2023	1	Flow	MGD	0.027	Monitor	Average Mo	0.041	Monitor	Daily Max
PA0088510	3/1/2023	3/31/2023	1	Flow	MGD	0.029	Monitor	Average Mo	0.041	Monitor	Daily Max
PA0088510	4/1/2023	4/30/2023	1	Flow	MGD	0.029	Monitor	Average Mo	0.041	Monitor	Daily Max
PA0088510	5/1/2023	5/31/2023	1	Flow	MGD	0.031	Monitor	Average Mo	0.045	Monitor	Daily Max
PA0088510	6/1/2023	6/30/2023	1	Flow	MGD	0.024	Monitor	Average Mo	0.038	Monitor	Daily Max
PA0088510	7/1/2023	7/31/2023	1	Flow	MGD	0.025	Monitor	Average Mo	0.051	Monitor	Daily Max
PA0088510	8/1/2023	8/31/2023	1	Flow	MGD	0.023	Monitor	Average Mo	0.028	Monitor	Daily Max
PA0088510	9/1/2023	9/30/2023	1	Flow	MGD	0.024	Monitor	Average Mo	0.031	Monitor	Daily Max
PA0088510	10/1/2023	10/31/2023	1	Flow	MGD	0.023	Monitor	Average Mo	0.031	Monitor	Daily Max
PA0088510	11/1/2023	11/30/2023	1	Flow	MGD	0.022	Monitor	Average Mo	0.029	Monitor	Daily Max
						0.020	Avg		0.040	Avg	
						0.038	MMA		0.179	Max	
									0.0506	90th percentile	

StreamStats Output Report-MtAetna STP 001					
State/Region ID	PA				
Workspace ID	PA20240107014104855000				
Latitude	40.41791				
Longitude	-76.2911				
Low-Flow Statistics Para	100.0 Percent Low Flow Region 2				
Parameter Code	Paramete	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage A	0.62	square mi	4.93	1280
PRECIP	Mean Ann	43	inches	35	50.4
STRDEN	Stream De	0.98	miles per	0.51	3.1
ROCKDEP	Depth to R	3	feet	3.32	5.65
CARBON	Percent Ca	0	percent	0	99
Low-Flow Statistics Flow	100.0 Percent Low Flow Region 2				
Statistic	Value	Unit			
7 Day 2 Year Low Flow	0.0464	ft^3/s			
30 Day 2 Year Low Flow	0.0756	ft^3/s			
7 Day 10 Year Low Flow	0.0114	ft^3/s			
30 Day 10 Year Low Flow	0.0204	ft^3/s			
90 Day 10 Year Low Flow	0.0459	ft^3/s			
USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related					
USGS Software Disclaimer: This software has been approved for release by the					
USGS Product Names Disclaimer: Any use of trade, firm, or product names is fo					
Application Version: 4.19.3					
StreamStats Services Version: 1.2.22					
NSS Services Version: 2.2.1					

Low Flow Yield = 0.0114 cfs / 0.62 sq.mi. = 0.018

StreamStats Output Report-at confl w/ 09938					
State/Region ID	PA				
Workspace ID	PA20240107014549124000				
Latitude	40.42777				
Longitude	-76.28241				
Low-Flow Statistics Parar	100.0 Percent Low Flow Region 2				
Parameter Code	Parameter Na	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.31	square mi	4.93	1280
PRECIP	Mean Annual	43	inches	35	50.4
STRDEN	Stream Densit	1.15	miles per	0.51	3.1
ROCKDEP	Depth to Rock	3.3	feet	3.32	5.65
CARBON	Percent Carbo	0.19	percent	0	99
Low-Flow Statistics Flow	100.0 Percent Low Flow Region 2				
Statistic	Value	Unit			
7 Day 2 Year Low Flow	0.109	ft^3/s			
30 Day 2 Year Low Flow	0.171	ft^3/s			
7 Day 10 Year Low Flow	0.0313	ft^3/s			
30 Day 10 Year Low Flow	0.0523	ft^3/s			
90 Day 10 Year Low Flow	0.108	ft^3/s			
USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related mater					
USGS Software Disclaimer: This software has been approved for release by the U.S. G					
USGS Product Names Disclaimer: Any use of trade, firm, or product names is for desc					
Application Version: 4.19.3					
StreamStats Services Version: 1.2.22					
NSS Services Version: 2.2.1					

Low Flow Yield = 0.0313 cfs / 1.31 sq. mi. = 0.024

Analysis Results WQM 7.0

Hydrodynamics | NH3-N Allocations | D.O. Allocations | D.O. Simulation | Effluent Limitations

RMI	Discharge Name	Permit Number	Disc Flow (mgd)
0.95	MtAetnaSTP	PA0088510	0.0000

Parameter	Effluent Limit 30 Day Average (mg/L)	Effluent Limit Maximum (mg/L)	Effluent Limit Minimum (mg/L)
CBOD5	25		
NH3-N	1.73	3.46	
Dissolved Oxygen			5

Record: 1 of 1 | No Filter | Search

Input Data WQM 7.0

General Data

General | Stream | Discharge and Parameters

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	LFY (cfsm)	Slope (ft/ft)	PWS With (mgd)	Apply FC
9939	0.950	545	0.62	0.02	0	0	☑
9939	0.000	485	1.31	0.02	0	0	☑

Add Record

Delete Record

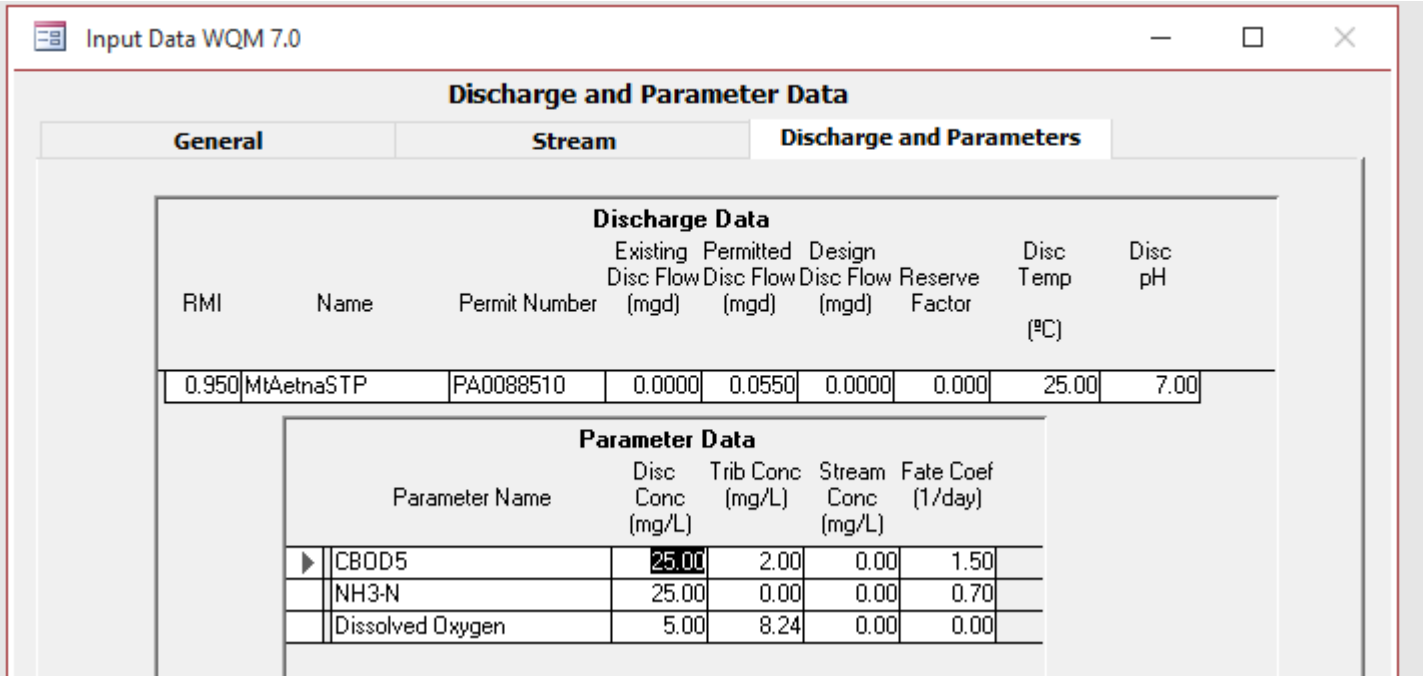
Input Data WQM 7.0

Stream Data

General | Stream | Discharge and Parameters

Design Condition ◉ Q7-10 ○ Q1-10 ○ Q30-10

RMI	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
0.950	0.00	0.00	0.000	0.00	0	0.00	0.00	20.00	7.00	0.000	0.00
0.000	0.00	0.00	0.000	0.00	0	0.00	0.00	20.00	7.00	0.000	0.00



Input Data WQM 7.0

Discharge and Parameter Data

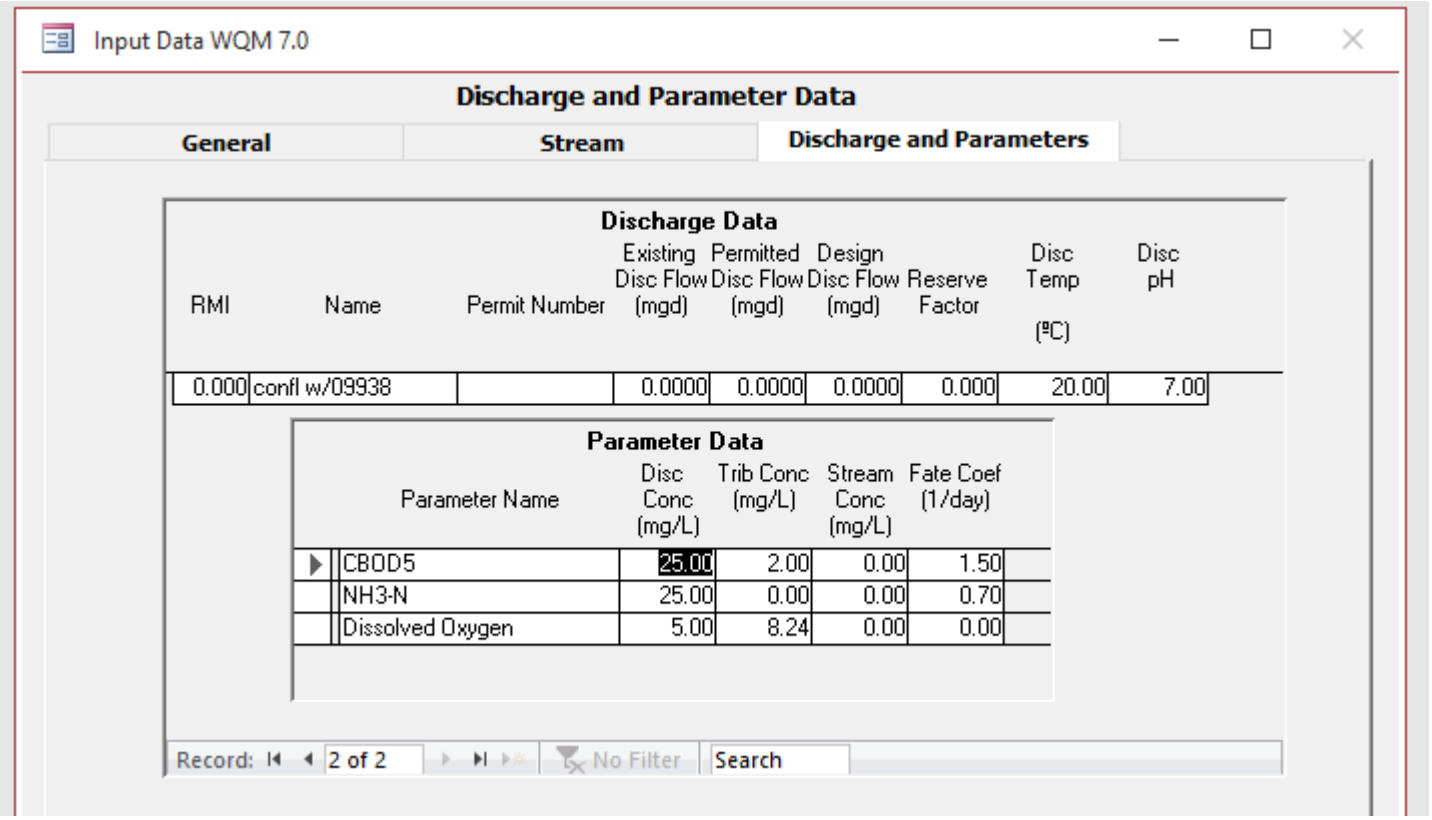
General | Stream | Discharge and Parameters

Discharge Data

RMI	Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (ºC)	Disc pH
0.950	MtAetnaSTP	PA0088510	0.0000	0.0550	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/day)
CBOD5	25.00	2.00	0.00	1.50
NH3-N	25.00	0.00	0.00	0.70
Dissolved Oxygen	5.00	8.24	0.00	0.00



Input Data WQM 7.0

Discharge and Parameter Data

General | Stream | Discharge and Parameters

Discharge Data

RMI	Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (ºC)	Disc pH
0.000	confl w/09938		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/day)
CBOD5	25.00	2.00	0.00	1.50
NH3-N	25.00	0.00	0.00	0.70
Dissolved Oxygen	5.00	8.24	0.00	0.00

Record: 2 of 2 | No Filter | Search

MONITORING	MONITORING	PARAMETE	UNITS	1_VALUE	1_LIMIT	1_SBC	UNITS	2_VALUE	2_LIMIT	2_SBC	winter			summer	
1/1/2021	1/31/2021	Ammonia-I	lbs/day	0.1	4.5	Avg.Mo.	mg/L	0.65	9.9	Avg.Mo.	0.65				
2/1/2021	2/28/2021	Ammonia-I	lbs/day	0.8	4.5	Avg.Mo.	mg/L	4.69	9.9	Avg.Mo.	4.69				
3/1/2021	3/31/2021	Ammonia-I	lbs/day	< 0.02	4.5	Avg.Mo.	mg/L	< 0.14	9.9	Avg.Mo.	0.14				
4/1/2021	4/30/2021	Ammonia-I	lbs/day	< 0.008	4.5	Avg.Mo.	mg/L	< 0.1	9.9	Avg.Mo.	0.1				
5/1/2021	5/31/2021	Ammonia-I	lbs/day	< 0.01	1.5	Avg.Mo.	mg/L	< 0.27	3.3	Avg.Mo.				0.27	
6/1/2021	6/30/2021	Ammonia-I	lbs/day	< 0.03	1.5	Avg.Mo.	mg/L	< 0.15	3.3	Avg.Mo.				0.15	
7/1/2021	7/31/2021	Ammonia-I	lbs/day	< 0.03	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
8/1/2021	8/31/2021	Ammonia-I	lbs/day	< 0.02	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
9/1/2021	9/30/2021	Ammonia-I	lbs/day	< 0.4	1.5	Avg.Mo.	mg/L	< 0.36	3.3	Avg.Mo.				0.36	
10/1/2021	10/31/2021	Ammonia-I	lbs/day	< 0.02	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
11/1/2021	11/30/2021	Ammonia-I	lbs/day	< 0.04	4.5	Avg.Mo.	mg/L	< 0.27	9.9	Avg.Mo.	0.27				
12/1/2021	12/31/2021	Ammonia-I	lbs/day	< 0.03	4.5	Avg.Mo.	mg/L	< 0.14	9.9	Avg.Mo.	0.14				
1/1/2022	1/31/2022	Ammonia-I	lbs/day	< 0.02	4.5	Avg.Mo.	mg/L	< 0.1	9.9	Avg.Mo.	0.1				
2/1/2022	2/28/2022	Ammonia-I	lbs/day	0.3	4.5	Avg.Mo.	mg/L	0.85	9.9	Avg.Mo.	0.85				
3/1/2022	3/31/2022	Ammonia-I	lbs/day	< 0.03	4.5	Avg.Mo.	mg/L	< 0.27	9.9	Avg.Mo.	0.27				
4/1/2022	4/30/2022	Ammonia-I	lbs/day	< 0.02	4.5	Avg.Mo.	mg/L	< 0.1	9.9	Avg.Mo.	0.1				
5/1/2022	5/31/2022	Ammonia-I	lbs/day	< 0.01	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
6/1/2022	6/30/2022	Ammonia-I	lbs/day	< 0.01	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
7/1/2022	7/31/2022	Ammonia-I	lbs/day	< 0.02	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
8/1/2022	8/31/2022	Ammonia-I	lbs/day	< 0.007	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
9/1/2022	9/30/2022	Ammonia-I	lbs/day	< 0.01	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
10/1/2022	10/31/2022	Ammonia-I	lbs/day	< 0.01	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
11/1/2022	11/30/2022	Ammonia-I	lbs/day	0.01	4.5	Avg.Mo.	mg/L	0.1	9.9	Avg.Mo.	0.1				
12/1/2022	12/31/2022	Ammonia-I	lbs/day	< 0.005	4.5	Avg.Mo.	mg/L	< 0.1	9.9	Avg.Mo.	0.1				
1/1/2023	1/31/2023	Ammonia-I	lbs/day	< 0.02	4.5	Avg.Mo.	mg/L	< 0.1	9.9	Avg.Mo.	0.1				
2/1/2023	2/28/2023	Ammonia-I	lbs/day	< 0.03	4.5	Avg.Mo.	mg/L	< 0.1	9.9	Avg.Mo.	0.1				
3/1/2023	3/31/2023	Ammonia-I	lbs/day	< 0.2	4.5	Avg.Mo.	mg/L	< 0.97	9.9	Avg.Mo.	0.97				
4/1/2023	4/30/2023	Ammonia-I	lbs/day	< 0.03	4.5	Avg.Mo.	mg/L	< 0.1	9.9	Avg.Mo.	0.1				
5/1/2023	5/31/2023	Ammonia-I	lbs/day	< 0.7	1.5	Avg.Mo.	mg/L	< 2.49	3.3	Avg.Mo.				2.49	
6/1/2023	6/30/2023	Ammonia-I	lbs/day	< 0.03	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
7/1/2023	7/31/2023	Ammonia-I	lbs/day	< 0.02	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
8/1/2023	8/31/2023	Ammonia-I	lbs/day	< 0.01	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
9/1/2023	9/30/2023	Ammonia-I	lbs/day	< 0.02	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
10/1/2023	10/31/2023	Ammonia-I	lbs/day	< 0.02	1.5	Avg.Mo.	mg/L	< 0.1	3.3	Avg.Mo.				0.1	
11/1/2023	11/30/2023	Ammonia-I	lbs/day	< 0.02	4.5	Avg.Mo.	mg/L	< 0.1	9.9	Avg.Mo.	0.1				
				0.8	MAX,winter						0.52	Avg		0.26	Avg
				<0.7	MAX, summer						4.69	Max		2.49	Max
											0.90	90th percentile		0.297	90th percentile

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0114	= Q stream (cfs)	0.5	= CV Daily
0.055	= 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 =	0.062	1.3.2.iii	WLA cfc =	0.053
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.023	5.1d	LTA_cfc =	0.031

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.028	AFC
		INST MAX LIMIT (mg/l) =	0.093	

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)**

(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....
....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)