

Application Type Renewal
Facility Type Municipal
Major / Minor Minor

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application No. PA0253201
APS ID 1056314
Authorization ID 1384351

Applicant and Facility Information

Applicant Name <u>East Franklin Township</u>	Facility Name <u>Tarrtown STP</u>
Applicant Address <u>106 Cherry Orchard Avenue</u>	Facility Address <u>State Route 4023</u>
<u>Kittanning, PA 16201</u>	<u>Tarrtown, PA 16210</u>
Applicant Contact <u>Barry Peters, Chairman</u>	Facility Contact <u>Barry Peters, Chairman</u>
Applicant Phone <u>(724) 548-2310</u>	Facility Phone <u>(724) 548-2310</u>
Client ID <u>77287</u>	Site ID <u>665621</u>
Ch 94 Load Status <u>Not Overloaded</u>	Municipality <u>East Franklin Township</u>
Connection Status <u>No Limitations</u>	County <u>Armstrong County</u>
Date Application Received <u>February 9, 2022</u>	EPA Waived? <u>Yes</u>
Date Application Accepted <u>February 10, 2022</u>	If No, Reason <u>-</u>
Purpose of Application <u>Renewal of an NPDES Permit for an existing discharge of treated sanitary wastewater from a municipal STP.</u>	

Summary of Review

Act 14 - Proof of Notification was submitted and received.
A Part II Water Quality Management permit is not required at this time.
The applicant should be able to meet the limits of this permit, which will protect the uses of the receiving stream.

I. OTHER REQUIREMENTS:

- A. Stormwater into Sewers
- B. Right of Way
- C. Solids Handling
- D. Effluent Chlorine Optimization and Minimization
- E. Hauled-In Wastes

SPECIAL CONDITIONS:

- II. Solids Management

There are no open violations in efacts associated with the subject Client ID (77287) as of 2/22/2023. *3/29/2023 CWY*

Approve	Deny	Signatures	Date
X		Stephen A. McCauley	2/22/2023
		Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	
X		Chad W. Yurisc	3/29/2023
		Chad W. Yurisc, P.E. / Environmental Engineer Manager	

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.045
Latitude	40° 50' 59.00"	Longitude	-79° 31' 17.00"
Quad Name	-	Quad Code	-
Wastewater Description:		Sewage Effluent	
Receiving Waters	Allegheny River (WWF)	Stream Code	42122
NHD Com ID	123860462	RMI	48.0
Drainage Area	8970	Yield (cfs/mi ²)	0.23
Q ₇₋₁₀ Flow (cfs)	2063	Q ₇₋₁₀ Basis	calculated
Elevation (ft)	785	Slope (ft/ft)	0.000946
Watershed No.	17-E	Chapter 93 Class.	WWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	-		
Source(s) of Impairment	-		
TMDL Status	-	Name	-
Background/Ambient Data		Data Source	
pH (SU)	-		-
Temperature (°F)	-		-
Hardness (mg/L)	-		-
Other:	-		-
Nearest Downstream Public Water Supply Intake	PA American Water Company - Kittanning District		
PWS Waters	Allegheny River	Flow at Intake (cfs)	987
PWS RMI	45.6	Distance from Outfall (mi)	2.5

Sludge use and disposal description and location(s): All sludge is disposed of at an approved landfill.

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.

Narrative: This Fact Sheet details the determination of draft NPDES permit limits for an existing discharge of 0.045 MGD of treated sewage from an existing municipal STP in East Franklin Township, Armstrong County.

Treatment permitted under Water Quality Management Permit No. 0309403 consists of the following:

An equalization tank, hydrated lime addition to raise pH, an extended aeration tank, a clarifier, tablet chlorine disinfection with a contact tank, tablet dechlorination, a final clarifier, and a post clarifier tank. Solids are wasted to an aerobic digester.

1. Streamflow: Allegheny River at Kittanning, PA - USGS Stream Gage 03036500 (1967-2008):

Q ₇₋₁₀ :	<u>2070</u>	cfs	from USGS StreamStats
Drainage Area:	<u>8973</u>	sq. mi.	from USGS StreamStats
Yieldrate:	<u>0.23</u>	cfs/m	calculated

Allegheny River at Outfall 001:

Yieldrate:	<u>0.23</u>	cfs/m	from above
Drainage Area:	<u>8970</u>	sq. mi.	
% of stream allocated:	<u>100%</u>	Basis:	No nearby discharges
Q ₇₋₁₀ :	<u>2063</u>	cfs	calculated

2. Wasteflow:

Maximum discharge: 0.045 MGD = 0.069 cfs

Runoff flow period: 24 hours Basis: Runoff flow with flow equalization

The calculated stream flow (Q₇₋₁₀) is greater than 3 times the permitted discharge flow. In accordance with the SOP, the treatment requirements in document number 391-2000-014, titled, "Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers", dated April 12, 2008, do not need to be evaluated for this facility.

Flow will be required to be monitored as authorized under Chapter 92a.61, and as recommended in the SOP. Based on the SOP, weekly average flow monitoring was added with this renewal.

3. Parameters:

The following parameters were evaluated: pH, Total Suspended Solids, Fecal Coliform, E. Coli, Total Phosphorus, Total Nitrogen, NH₃-N, CBOD₅, Dissolved Oxygen, and Total Residual Chlorine.

a. pH

Between 6.0 and 9.0 at all times

Basis: Application of Chapter 93.7 technology-based limits.

The measurement frequency was previously set to 5/week, reduced from the 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001), and will be retained.

b. Total Suspended Solids

Limits are 30.0 mg/l as a monthly average and 60.0 as an instantaneous maximum.

Basis: Application of Chapter 92a.47 technology-based limits.

c. Fecal Coliform

05/01 - 09/30: 200/100ml (monthly average geometric mean)
1,000/100ml (instantaneous maximum)

10/01 - 04/30: 2,000/100ml (monthly average geometric mean)
10,000/100ml (instantaneous maximum)

Basis: Application of Chapter 92a47 technology-based limits

d. E. Coli

Monitoring was added for E. Coli at a frequency of 1/year.

Basis: Application of Chapter 92a.61 as recommended by the SOP for flows greater than 0.002 MGD but less than 0.05 MGD.

e. Phosphorus

Chapter 96.5 does not apply. However, the previous monitoring for Total Phosphorus will be retained in accordance with the SOP, based on Chapter 92a.61.

f. Total Nitrogen

The previous monitoring for Total Nitrogen will be retained in accordance with the SOP, based on Chapter 92a.61.

g. Ammonia-Nitrogen (NH₃-N)

Median discharge pH to be used: 7.2 Standard Units (S.U.)

Basis: eDMR data from previous 12 months

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: default value used in the absence of data

Stream Temperature: 25°C (default value used for WWF modeling)

Background NH₃-N concentration: 0.1 mg/l

Basis: Default value

Calculated NH₃-N Summer limits: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

Calculated NH₃-N Winter limits: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the summer limits above (see Attachment 1). The winter limits are calculated as three times the summer limits, but since the technology-based limits are more protective, they will be used. Per the SOP, monitoring for winter NH₃-N will be retained with this renewal.

h. CBOD₅

Median discharge pH to be used: 7.2 Standard Units (S.U.)

Basis: eDMR data from previous 12 months

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: default value used in the absence of data

Stream Temperature: 25°C (default value used for WWF modeling)

Background CBOD₅ concentration: 2.0 mg/l

Basis: Default value

Calculated CBOD₅ limits: 25.0 mg/l (monthly average)

50.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the calculated limits above (see Attachment 1). The limits are the same as in the previous permit and will be retained.

i. Influent Total Suspended Solids and BOD₅

Monitoring for these two parameters will be retained as recommended in the SOP for POTWs, as authorized under Chapter 92a.61.

j. Dissolved Oxygen (DO)

The Dissolved Oxygen minimum of 4.0 mg/l will be retained with this renewal. The technology-based minimum is recommended by the WQ Model (see Attachment 2) and the SOP based on Chapter 93.7, under the authority of Chapter 92a.61.

The measurement frequency was previously set to 5/day, reduced from the 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001), and will be retained.

k. Total Residual Chlorine (TRC)

☐ Ultraviolet (UV) light monitoring

☒ TRC limits: 0.5 mg/l (monthly average)
1.6 mg/l (instantaneous maximum)

Basis: The TRC limits above were calculated using the Department's TRC Calculation Spreadsheet (see Attachment 2). The limits are the same as in the previous NPDES Permit and will be retained.

The measurement frequency was previously set to 5/day, reduced from the 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001), and will be retained.

4. **Reasonable Potential Analysis for Receiving Stream:**

A Reasonable Potential Analysis was not performed in accordance with State practices for Outfall 001 using the Department's Toxics Management Spreadsheet since no sampling other than sewage-related parameters was performed for this facility with the renewal application.

5. Reasonable Potential for Downstream Public Water Supply (PWS):

The Department's Toxics Management Spreadsheet does not calculate limits for parameters that are based on PWS criteria (TDS, Chloride, Bromide, and Sulfate). Since no relevant sampling was provided, mass-balance calculations were not performed.

Nearest Downstream potable water supply (PWS): PA American Water Company - Kittanning District

Distance downstream from the point of discharge: 2.5 miles (approximate)

Result: No limits or monitoring is necessary as there is significant dilution available.

6. Anti-Backsliding:

Since all the permit limits in this renewal are the same or more restrictive than the previous NPDES Permit, anti-backsliding is not applicable.

7. Attachment List:

Attachment 1 - WQ Modeling Printouts

Attachment 2 - TRC_Calc Spreadsheet

Attachment 3 - WMS Open Violations by Client

(The Attachments above can be found at the end of this document)

Compliance History

DMR Data for Outfall 001 (from January 1, 2022 to December 31, 2022)

Parameter	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22
Flow (MGD) Average Monthly	0.005	0.004	0.004	0.004	0.003	0.003	0.003	0.004	0.004	0.003	0.006	0.005
pH (S.U.) Minimum	7.10	7.07	7.20	7.14	7.32	7.34	7.11	7.23	7.31	6.73	6.63	6.45
pH (S.U.) Maximum	7.68	7.46	7.42	7.88	7.69	7.55	7.87	7.90	7.88	7.69	7.46	7.47
DO (mg/L) Minimum	10.09	10.02	10.08	10.08	9.84	9.89	9.86	9.6	10.03	10.0	10.03	10.10
TRC (mg/L) Average Monthly	0.14	0.17	0.16	0.18	0.18	0.18	0.18	0.16	0.19	0.17	0.15	0.13
TRC (mg/L) Instantaneous Maximum	0.22	0.26	0.20	0.24	0.26	0.26	0.26	0.22	0.28	0.27	0.22	0.19
CBOD5 (lbs/day) Average Monthly	< 0.18	< 0.08	< 0.07	< 0.09	< 0.09	< 0.07	< 0.08	< 0.06	0.18	0.21	< 0.48	0.65
CBOD5 (mg/L) Average Monthly	< 4.25	< 3.35	< 3.00	< 3.00	< 3.0	< 3.0	< 3.45	< 3.0	6.90	8.75	< 7.70	15.85
CBOD5 (mg/L) Weekly Average	5.50	3.70	< 3.00	< 3.00	< 3.0	< 3.0	3.90	< 3.0	8.40	11.30	12.40	17.10
CBOD5 (mg/L) Instantaneous Maximum	5.50	3.70	< 3.00	< 3.00	< 3.0	< 3.0	3.90	< 3.0	8.40	11.30	12.40	17.10
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	16.43	3.34	3.46	4.84	5.13	6.92	4.49	4.16	6.83	3.56	14.44	17.68
TSS (lbs/day) Average Monthly	1.10	0.26	< 0.15	< 0.09	< 0.09	< 0.11	0.08	0.14	0.34	0.35	0.70	2.15
TSS (lbs/day) Raw Sewage Influent Average Monthly	49.48	4.77	5.03	5.18	7.91	34.65	4.35	7.10	9.28	8.22	16.83	28.36
TSS (mg/L) Average Monthly	27.0	11.0	< 7.0	< 3.0	< 3.0	< 5.0	4.0	8.0	14.0	15.0	11.0	45.0
TSS (mg/L) Weekly Average	31.0	15.0	11.0	< 3.0	3.0	6.0	4.0	10.0	15.0	21.0	15.0	67.0
TSS (mg/L) Instantaneous Maximum	31.0	15.0	11.0	< 3.0	3.0	6.0	4.0	10.0	15.0	21.0	15.0	67.0
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 2	< 1	< 5	4	< 2	50	< 1	15	78	27	< 30
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1	2	1	23	6	2	> 2420	< 1	199	1987	65	867

**NPDES Permit Fact Sheet
Tarrtown STP**

NPDES Permit No. PA0253201

Ammonia (mg/L) Average Monthly	3.57	< 0.15	0.18	< 0.15	< 0.14	0.18	0.24	0.19	0.32	0.64	3.42	7.45
Ammonia (mg/L) Instantaneous Maximum	4.33	0.19	0.24	0.19	0.18	0.23	0.26	0.20	0.36	0.87	6.50	10.80

Threatened and Endangered Mussel Species Concerns and Considerations

The Allegheny River is known to contain state and federally listed threatened and endangered mussel species. Due to this being a direct discharge to the Allegheny River, potential impacts were evaluated.

The USFWS has indicated in comment letters and email correspondence on other NPDES permits, that to protect threatened and endangered mussel species, wastewater discharges containing ammonia-nitrogen (NH₃-N), chloride (Cl⁻) dissolved nickel, and dissolved zinc, where mussels or their habitat exist, can be no more than 1.9 mg/l, 78 mg/l, 7.3 µg/l, and 13.18 µg/l respectively.

Although the application form associated with the subject NPDES permit renewal does require sampling for ammonia-nitrogen, NPDES permits for sewage facilities of this nature do not, generally, include routine monitoring requirements for pollutants such as chloride, nickel and zinc. Therefore, the Department lacked sufficient data to support its assumption that a properly constructed, operated and maintained minor sewage facility of this size is expected to produce an effluent that would be protective of all the uses of the receiving stream including threatened and endangered mussels.

A summary of the sampling and effluent quality data for the Tarrtown STP is as follows:

Sampling and Effluent Quality Data for USFWS Parameters of Concern						
Parameter	Sample Data					
Ammonia-Nitrogen (NH ₃ -N) (mg/L)	7.45 (maximum average monthly value reported in past year of DMRs)					
	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22
	0.18	< 0.15	< 0.14	0.18	0.24	0.19
	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21
	0.32	0.64	3.42	7.45	0.32	0.25
Chloride (mg/L)	-					
Total Nickel (µg/L)	-					
Total Zinc (µg/L)	-					
NOTES:						
1. The DMR samples are all grab samples.						
2. The STP utilizes chlorine disinfection.						

The Department prepared the following calculations (included on the following pages) to determine the area of river that will be required to assimilate the maximum reported effluent concentrations of Ammonia-Nitrogen, Chloride, Nickel, and Zinc to achieve pollutant concentrations that at or below the USFWS criteria in the river.

Notes:

1. The dissolved zinc criteria of 13.18 µg/l was provided to the Department in emails from the USFWS dated October 25, 2021 and November 8, 2021. The nickel criteria has been provided in numerous comment letters and other correspondence with the USFWS. As part of the October 25, 2021 correspondence, the USFWS provided the Department with a "Hazard/Risk Assessment" for the "Evaluation of Acute and Chronic Toxicity of Nickel and Zinc to 2 Sensitive Freshwater Benthic Invertebrates Using Refined Testing Methods" as prepared by Ning Wang, James L. Kunz, Danielle M. Cleveland, Jeffery A. Steevens, Edward J. Hammer, Eric Van Genderen, Adam C. Ryan, and Christian E. Schlegel published in the Environmental Toxicology and Chemistry—Volume 39, Number 11—pp. 2256–2268, 2020, received May 11, 2020, revised June 3, 2020, and accepted July 30, 2020.
2. The Department has limited dissolved nickel data for the effluent from sewage treatment plants. However, the Department has been incorporating quarterly monitoring for total nickel in NPDES permits for publicly owned treatment plants that are discharging to waterways known to contain state and federally listed threatened and endangered mussel species. A summary of the data collected at the POTWs with nickel monitoring is as follows:

		PA0103373	PA0023931	PA0239861	PA0026271	PA0101923	PA0025470	PA0047201	PA0027367	PA0222585	PA0029467	PA0025291	PA0027120
		FOXBURG STP	CAMBRIDGE AREA JT AUTH STP	COCHRANTON BORO STP	MEADVILLE AREA STP	SAEGERTOWN AREA STP	FREDERICKSBURG STP	TIONESTA BORO WWTP	GREENVILLE SANI AUTH	BROKENSTRAW VALLEY AREA AUTH STP	NORTH WARREN MUNI STP	SOUTHWEST WARREN CNTY STP	WARREN CITY WWTP
UNITS		ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L
2017	4th QTR												0.05
2018	1st QTR		< 0.01	< 0.005	< 0.005			0.006	0.001				< 0.005
	2nd QTR		< 0.01	< 0.005	< 0.005			0.001	0.003				0.05
	3rd QTR		< 0.04	< 0.005	< 0.005			0.016	0.0001				0.01
	4th QTR		< 0.04	< 0.005	< 0.005		< 0.005	0.003	0.001		0.00518		< 0.05
2019	1st QTR		< 0.007	< 0.005	< 0.005		< 0.005	0.001	0.001		< 0.00400	< 0.02	< 0.05
	2nd QTR		< 0.007	< 0.005	< 0.005	0.007	< 0.005	0.001	0.0009	< 0.005	0.007	< 0.02	< 0.05
	3rd QTR		< 0.007	< 0.005	< 0.005	0.009	< 0.005	0.0003	0.002	< 0.005	0.04	< 0.02	< 0.05
	4th QTR	0.005	< 0.007	< 0.005	< 0.005	0.008	< 0.005	0.019	0.002	< 0.005	< 0.007	< 0.02	< 0.05
2020	1st QTR	< 0.005	< 0.007	< 0.005	< 0.005	< 0.007	< 0.005	0.001	0.0009	< 0.005	< 0.007	< 0.02	< 0.05
	2nd QTR	0.007	< 0.007	< 0.005	< 0.005	< 0.007	< 0.005	0.002	0.0007	< 0.005	< 0.007	< 0.02	< 0.05
	3rd QTR	0.006	< 0.007	< 0.005	< 0.005	0.011	< 0.005	0.004	0.001	< 0.005	0.007	< 0.02	< 0.05
	4th QTR	< 0.005	< 0.007	< 0.005	< 0.005	0.012	< 0.005	0.003	0.003	< 0.005	0.007	< 0.02	< 0.05
2021	1st QTR	< 0.005	< 0.007	< 0.005	< 0.005	< 0.007	< 0.005	0.001	0.005	< 0.005	0.007	< 0.02	< 0.05
	2nd QTR	0.005	< 0.007	< 0.005	< 0.005	0.008	< 0.005	0.006	0.004	< 0.005	0.007	< 0.02	< 0.05
	3rd QTR	< 0.005	< 0.007	< 0.005	< 0.005	0.011	< 0.005	0.003	0.001	0.005	< 0.007	0.02	< 0.05

As seen from this data, nickel is rarely above the USFWS criteria of 7.5 ug/L. The highest reported value that does not appear to be an outlier was 19 ug/L at the Tionesta Borough WWTP in the fourth quarter of 2019. Therefore, this value is used in the following calculations for the Tarrtown STP.

Facility:	Tarrtown STP		
Permit Number:	PA0253201	Effective: N/A	Expiration: N/A
Outfall No:	001		
Location:	East Franklin Township, Armstrong County		
Discharge to:	Allegheny River		
Site Specific Mussel Survey Completed:	No		
Discharge and Stream Characteristics		Comments	
Q _S	Stream Flow	1333 MGD / 2063 cfs	Fact Sheet
Q ₀	Discharge Flow	0.045 MGD / 0.06964 cfs	Fact Sheet
C _{S(Cl⁻)}	Instream chloride Concentration	15.6 mg/L	Average WQN data (2010 to 2021 - USGS-03036500)
C _{E(Cl⁻)}	Discharge chloride (existing)	0 mg/L	From renewal application - Max of 3 grab samples
C _{P(Cl⁻)}	Discharge chloride (proposed)	0 mg/L	From renewal application - Max of 3 grab samples
C _{S(Ni)}	Instream nickel Concentration	5 µg/L	Assumed - No WQN data below the criteria of 7.3 µg/L (reported at < 50)
C _{E(Ni)}	Discharge nickel (existing)	0 µg/L	From renewal application - Max of 3 grab samples
C _{P(Ni)}	Discharge nickel (proposed)	0 µg/L	From renewal application - Max of 3 grab samples
C _{S(Zn)}	Instream zinc Concentration	16.26 µg/L	Average WQN data (2010 to 2021 - USGS-03036500)
C _{E(Zn)}	Discharge zinc (existing)	0 µg/L	From renewal application - Max of 3 grab samples
C _{P(Zn)}	Discharge zinc (proposed)	0 µg/L	From renewal application - Max of 3 grab samples
C _{S(NH₃-N)}	Instream NH ₃ -N	0.03 mg/L	Average WQN data (2010 to 2021 - USGS-03036500)
C _{E(NH₃-N)}	Discharge NH ₃ -N (existing)	7.45 mg/L	From renewal application - Max of 15 grab samples
C _{P(NH₃-N)}	Discharge NH ₃ -N (proposed)	7.45 mg/L	From renewal application - Max of 15 grab samples
pH _S	Instream pH	7.6 S.U.	Average WQN data (2010 to 2021 - USGS-03036500)
T _S	Instream Temp.	25 °C	Default value for a WWF
C _{C(NH₃-N)}	Ammonia criteria	0.920 mg/L	From ammonia criteria comparison spreadsheet - using instream pH and Temp
C _{C(Cl⁻)}	Chloride criteria	78 mg/L	USFWS criteria
C _{C(Ni)}	Nickel criteria	7.3 µg/L	USFWS criteria
C _{C(Zn)}	Zinc criteria	13.18 µg/L	USFWS criteria
W _S	Stream width	307 meters	Google Earth

Ammonia Criteria Calculations:

pH _S	7.6	S.U.	(Default value is 7.0)
T _S	25	°C	(Default value is 20 °)
Acute Criteria			
	METHOD and UNITS	CRITERIA	Comments
	Old CMC (mg TAN/L) =	3.577	
	EPA 2013 CMC (mg TAN/L) =	5.226	Oncorhynchus present * formula on pg. 41 (plateaus at 15.7 C)
		5.226	Oncorhynchus absent * formula on pg. 42 (plateaus at 10.2 C)
Chronic Criteria			
	METHOD and UNITS	CRITERIA	COMMENTS
	Old CMC (mg TAN/L) =	0.952	
C _{C(NH₃-N)}	EPA 2013 CMC (mg TAN/L) =	0.920	* formula on pg. 46 (plateaus at 7 C)

Endangered Mussel Species Impact Area Calculations:

Existing Area of Impact

☒ N/A - No Site Specific Mussel Survey Completed for this Discharger

Approximate Area of Impact Determined from Survey =	N/A m ²	(Enter N/A if no site specific survey has been completed)
Existing Mussel Density within Area of Impact =		
Rabbitsfoot (<i>Quadrula cylindrica</i>)	N/A per m ²	
Northern Riffleshell (<i>Epioblasma torulosa rangiana</i>)	N/A per m ²	
Rayed Bean (<i>Villosa fabalis</i>)	N/A per m ²	
Clubshell (<i>Pleurobema clava</i>)	N/A per m ²	
Sheepnose (<i>Plethobasus cyphus</i>)	N/A per m ²	
Snuffbox (<i>Epioblasma triquetra</i>)	N/A per m ²	
TOTAL	0 per m ²	

Method 1 - Utilizing Site Specific Mussel Survey Information

☒ N/A - No Site Specific Mussel Survey Completed for this Discharger

This method utilizes a simple comparison of the size of the existing area of impact as determined from a site specific mussel survey and the chlorides in the existing discharge compared to the chlorides in the proposed discharge after the facility upgrades treatment technologies. This method is only applicable to where the stream impairment is caused by TDS and/or chlorides as the plume has been delineated through conductivity measurements.

A. Area of Impact Determined from Survey:	N/A	m ²
B. Chlorides in Existing Discharge:		0 mg/L
C. Chlorides in Proposed Discharge after Treatment Facility Upgrades:		0 mg/L
D. Approximate Area of Impact after Treatment Facility Upgrades:		N/A m ²

$$A/B = D/C$$

$$\text{Therefore, } D = (A \cdot C)/B$$

Endangered Mussel Species Impact Area Calculations: (continued...)

Method 2 - Mass Balance Relationship of Loading and Assimilative Capacity of Stream

Chloride (Cl ⁻)	$L_{S(Cl^-)} = \text{Available Chloride Loading in Stream} = C_{Cl(Cl^-)} - C_{S(Cl^-)} \times Q_S(\text{MGD}) \times 8.34 =$	693,715 lbs/Day
	$L_{D-MAX(Cl^-)} = \text{Current Maximum Discharge Chloride Loading exceeding criteria} = (C_{E(Cl^-)} - C_{E(Cl^-)}) \times Q_D(\text{MGD}) \times 8.34 =$	-29 lbs/Day
	$\%E_{Cl^-} = \text{Percent of Stream Capacity for Current Loading} = L_{D-MAX(Cl^-)} / L_{S(Cl^-)} =$	0% of Stream Capacity
	$L_{D(Cl^-)} = \text{Proposed Discharge Cl}^- \text{ Loading exceeding criteria after Treatment Facility Upgrades} = (C_{P(Cl^-)} - C_{H(Cl^-)}) \times Q_D(\text{MGD}) \times 8.34 =$	-29.2734 lbs/Day
	$\%P_{Cl^-} = \text{Percent of Stream Capacity for Proposed Loading} = L_{D(Cl^-)} / L_{S(Cl^-)} =$	0.00% of Stream Capacity
	Proposed Area of Impact due to Chloride * = $(\%P_{Cl^-}) \times W_S^2 \times 0.5 =$ * assuming equal flow across transect and 90° spread at discharge	0.0001 m ²
Nickel (Ni)	$L_{S(Ni)} = \text{Available Nickel Loading in Stream} = C_{Cl(Ni)} - C_{S(Ni)} \times Q_S(\text{MGD}) \times 8.34 =$	25,570 lbs/Day
	$L_{D-MAX(Ni)} = \text{Current Maximum Discharge Nickel Loading exceeding criteria} = (C_{E(Ni)} - C_{E(Ni)}) \times Q_D(\text{MGD}) \times 8.34 =$	-3 lbs/Day
	$\%E_{Ni} = \text{Percent of Stream Capacity for Current Loading} = L_{D-MAX(Ni)} / L_{S(Ni)} =$	0% of Stream Capacity
	$L_{D(Ni)} = \text{Proposed Discharge Ni Loading exceeding criteria after Treatment Facility Upgrades} = (C_{P(Ni)} - C_{H(Ni)}) \times Q_D(\text{MGD}) \times 8.34 =$	-2.73969 lbs/Day
	$\%P_{Ni} = \text{Percent of Stream Capacity for Proposed Loading} = L_{D(Ni)} / L_{S(Ni)} =$	-0.01% of Stream Capacity
	Proposed Area of Impact due to Nickel * = $(\%P_{Ni}) \times W_S^2 \times 0.5 =$ * assuming equal flow across transect and 90° spread at discharge	0.0005 m ²
Zinc (Zn)	$L_{S(Zn)} = \text{Available Zinc Loading in Stream} = C_{Cl(Zn)} - C_{S(Zn)} \times Q_S(\text{MGD}) \times 8.34 =$	-34,241 lbs/Day
	$L_{D-MAX(Zn)} = \text{Current Maximum Discharge Zinc Loading exceeding criteria} = (C_{E(Zn)} - C_{E(Zn)}) \times Q_D(\text{MGD}) \times 8.34 =$	-5 lbs/Day
	$\%E_{Zn} = \text{Percent of Stream Capacity for Current Loading} = L_{D-MAX(Zn)} / L_{S(Zn)} =$	0% of Stream Capacity
	$L_{D(Zn)} = \text{Proposed Discharge Zn Loading exceeding criteria after Treatment Facility Upgrades} = (C_{P(Zn)} - C_{H(Zn)}) \times Q_D(\text{MGD}) \times 8.34 =$	-4.946454 lbs/Day
	$\%P_{Zn} = \text{Percent of Stream Capacity for Proposed Loading} = L_{D(Zn)} / L_{S(Zn)} =$	0.01% of Stream Capacity
	Proposed Area of Impact due to Zinc * = $(\%P_{Zn}) \times W_S^2 \times 0.5 =$ * assuming equal flow across transect and 90° spread at discharge	0.0010 m ²
Ammonia-Nitrogen (NH ₃ -N)	$L_{S(NH_3-N)} = \text{Available NH}_3\text{-N Loading in Stream} = C_{Cl(NH_3-N)} - C_{S(NH_3-N)} \times Q_S(\text{MGD}) \times 8.34 =$	9,894 lbs/Day
	$L_{D-MAX(NH_3-N)} = \text{Current Maximum Discharge NH}_3\text{-N Loading} = C_{E(NH_3-N)} \times Q_D(\text{MGD}) \times 8.34 =$	3 lbs/Day
	$\%E_{NH_3-N} = \text{Percent of Stream Capacity for Current Loading} = L_{D-MAX(NH_3-N)} / L_{S(NH_3-N)} =$	0% of Stream Capacity
	$L_{D(NH_3-N)} = \text{Proposed Discharge NH}_3\text{-N Loading after Treatment Facility Upgrades} = C_{P(NH_3-N)} - C_{H(NH_3-N)} \times Q_D(\text{MGD}) \times 8.34 =$	2 lbs/Day
	$\%P_{NH_3-N} = \text{Percent of Stream Capacity for Proposed Loading} = L_{D(NH_3-N)} / L_{S(NH_3-N)} =$	0.02% of Stream Capacity
	Proposed Area of Impact due to NH ₃ -N * = $(\%P_{NH_3-N}) \times W_S^2 \times 0.5 =$ * assuming equal flow across transect and 90° spread at discharge	0.0019 m ²

Endangered Mussel Species Impact Area Calculations: (continued...)

Method 3 - Mass Balance Relationship of Stream Flow, Proposed Effluent Quality, and Mussel Protection Criteria

Chloride (Cl ⁻)	$Q_{A(Cl^-)} C_{S(Cl^-)} + Q_D C_{P(Cl^-)} = Q_T C_{Cl(Cl^-)}$	
	$Q_{A(Cl^-)} = \text{Assimilative Stream Flow Required to Achieve Criteria (cfs)}$	
	$Q_T = Q_S + Q_D \text{ (cfs)}$	
	$Q_{A(Cl^-)} C_{S(Cl^-)} + Q_D C_{P(Cl^-)} = (Q_D + Q_S) C_{Cl(Cl^-)}$	
	SOLVING FOR $Q_{A(Cl^-)} = [(Q_D C_{P(Cl^-)} / C_{Cl(Cl^-)}) - Q_D] / (1 - C_{S(Cl^-)} / C_{Cl(Cl^-)}) =$	-0.08705 cfs
	$\%P_{Cl^-} = \text{Percent of Stream Width Required to Assimilate Chlorides to Criteria}$	
	Concentration = $Q_{A(Cl^-)} / Q_S \text{ (cfs)} =$	-0.0042%
	$W_{I(Cl^-)} = \text{Proposed Width of Stream required to Assimilate Chlorides to Criteria}$	
Nickel (Ni)	Concentration = $W_S \times \%P_{Cl^-}$	-0.012954 meters
	Proposed Area of Impact due to Chloride * = $(W_{I(Cl^-)})^2 \times 0.5 =$ * assuming equal flow across transect and 90° spread at discharge	0.0001 m ²
	$Q_{A(Ni)} C_{S(Ni)} + Q_D C_{P(Ni)} = Q_T C_{Cl(Ni)}$	
	$Q_{A(Ni)} = \text{Assimilative Stream Flow Required to Achieve Criteria (cfs)}$	
	$Q_T = Q_S + Q_D \text{ (cfs)}$	
	$Q_{A(Ni)} C_{S(Ni)} + Q_D C_{P(Ni)} = (Q_D + Q_S) C_{Cl(Ni)}$	
	SOLVING FOR $Q_{A(Ni)} = [(Q_D C_{P(Ni)} / C_{Cl(Ni)}) - Q_D] / (1 - C_{S(Ni)} / C_{Cl(Ni)}) =$	-0.2210313 cfs
	$\%P_{Ni} = \text{Percent of Stream Width Required to Assimilate Nickel to Criteria}$	
Zinc (Zn)	Concentration = $Q_{A(Ni)} / Q_S \text{ (cfs)} =$	-0.0107%
	$W_{I(Ni)} = \text{Proposed Width of Stream required to Assimilate Nickel to Criteria}$	
	Concentration = $W_S \times \%P_{Ni}$	-0.032892 meters
	Proposed Area of Impact due to Nickel * = $(W_{I(Ni)})^2 \times 0.5 =$ * assuming equal flow across transect and 90° spread at discharge	0.0005 m ²
	$Q_{A(Zn)} C_{S(Zn)} + Q_D C_{P(Zn)} = Q_T C_{Cl(Zn)}$	
	$Q_{A(Zn)} = \text{Assimilative Stream Flow Required to Achieve Criteria (cfs)}$	
	$Q_T = Q_S + Q_D \text{ (cfs)}$	
	$Q_{A(Zn)} C_{S(Zn)} + Q_D C_{P(Zn)} = (Q_D + Q_S) C_{Cl(Zn)}$	
	SOLVING FOR $Q_{A(Zn)} = [(Q_D C_{P(Zn)} / C_{Cl(Zn)}) - Q_D] / (1 - C_{S(Zn)} / C_{Cl(Zn)}) =$	0.29800494 cfs

Zinc	$\%P_{(Cl)} = \text{Percent of Stream Width Required to Assimilate Zinc to Criteria}$	
	Concentration = $Q_{A(Zn)} / Q_s \text{ (cfs)} =$	0.0144%
	$W_{(Zn)} = \text{Proposed Width of Stream required to Assimilate Zinc to Criteria}$	
	Concentration = $W_s \times \%P_{(Zn)}$	0.044347 meters
	Proposed Area of Impact due to Chloride * = $(W_{(Cl)})^2 \times 0.5 =$ * assuming equal flow across transect and 90° spread at discharge	0.0010 m ²
Ammonia-Nitrogen (NH3-N)	$Q_{A(NH3-N)} C_{S(NH3-N)} + Q_D C_{P(NH3-N)} = Q_T C_{C(NH3-N)}$	
	$Q_{A(NH3-N)} = \text{Assimilative Stream Flow Required to Achieve Criteria (cfs)}$	
	$Q_T = Q_s + Q_D \text{ (cfs)}$	
	$Q_{A(NH3-N)} C_{S(NH3-N)} + Q_D C_{P(NH3-N)} = (Q_D + Q_s) C_{C(NH3-N)}$	
	SOLVING FOR $Q_{A(NH3-N)} = [(Q_D C_{P(NH3-N)} / C_{C(NH3-N)}) - Q_D] / (1 - C_{S(NH3-N)} / C_{C(NH3-N)}) =$	0.510954 cfs
	$\%P_{(NH3-N)} = \text{Percent of Stream Width Required to Assimilate NH3-N to Criteria}$	
	Concentration = $Q_{A(NH3-N)} / Q_s \text{ (cfs)} =$	0.0248%
	$W_{(NH3-N)} = \text{Proposed Width of Stream required to Assimilate NH3-N to Criteria}$	
	Concentration = $W_s \times \%P_{(NH3-N)}$	0.076036 meters
	Proposed Area of Impact due to NH3-N * = $(W_{(NH3-N)})^2 \times 0.5 =$ * assuming equal flow across transect and 90° spread at discharge	0.0029 m ²

Based on this sampling data, the existing discharge from the Tarrtown STP is not believed to be having any adverse effects on threatened or endangered mussel species in the Allegheny River considering that the discharge appears to generally be meeting the criteria established by the USFWS at the end of pipe. Additionally, the Department did consider what impacts, if any, the reported slight exceedances of the USFWS criteria in the discharge effluent will have on threatened and endangered mussel species. The Department determined that the discharge is not expected to have any adverse effects on threatened or endangered mussel species in the Allegheny River considering the size of the proposed discharge and the instantaneous assimilative capacity of the river. This existing discharge (0.045 MGD), and its associated pollutants of concern, are not expected to be measurable at levels that would impact mussels once it mixes with the river. As shown on the "impact area" calculations, the subject discharge is expected to almost instantaneously dilute with the river for Chlorides, Nickel, Zinc, and Ammonia-Nitrogen.

Please note that the nickel impact area is based on assumptions and a worst-case scenario for both the in-stream concentration as well as the effluent concentration. All of the "impact area" calculations are based on the worst-case scenario of the stream being at low flow (Q_{7-10}) flow conditions and the discharge from the treatment plant being at the design capacity. The likelihood of all of these conditions being at the "worst-case" scenario is not anticipated. Please also note that as discussed below, the Department will be able to further evaluate nickel concentrations in the effluent through proposed effluent monitoring. The Department may also collect in-stream nickel data over the course of the upcoming permit cycle at various facilities to be able to better evaluate the associated "impact areas".

However, the Department will consider the following in the Tarrtown STP draft NPDES permit:

- 2/month effluent monitoring for Ammonia-Nitrogen
- 1/quarter effluent monitoring for Chloride.
- 1/quarter effluent monitoring for Nickel.
- 1/quarter effluent monitoring for Zinc.

This monitoring will provide a dataset as a means of further evaluating potential impacts in the upcoming permit term. This data will also allow the Department to evaluate the need for pollutant reduction evaluations in future NPDES permit renewals for some or all of these pollutants.

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Average Monthly	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	5/week	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	5/week	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	5/week	Grab
CBOD5	9.4	XXX	25.0	38.0 Wkly Avg	XXX	50.0	2/month	Grab
BOD5	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Raw Sewage Influent								
TSS	11.3	XXX	30.0	45.0 Wkly Avg	XXX	60.0	2/month	Grab
TSS	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Raw Sewage Influent								
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Ammonia-Nitrogen	XXX	XXX	Report	XXX	XXX	Report	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Average Monthly	Average Monthly	Maximum	Instant. Maximum		
Total Nickel	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
Total Zinc	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
Chloride	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab

Compliance Sampling Location: at Outfall 001, after disinfection.

Flow is monitor only based on Chapter 92a.61. The limits for pH and Dissolved Oxygen are technology-based on Chapter 93.7. The Total Residual Chlorine (TRC) limits are technology-based on Chapter 92a.48. The limits for CBOD₅, Total Suspended Solids (TSS), and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for E. Coli, Total Nitrogen, Ammonia-Nitrogen, Total Phosphorus, and Chloride is based on Chapter 92a.61.

Attachment 1

WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>	<u>Stream Name</u>				
18A		42122	ALLEGHENY RIVER				
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)
48.000	Tarrtown STP	PA0253201	0.045	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
18A	42122	ALLEGHENY RIVER		
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
48.000	0.045	25.000	7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
1116.238	0.921	1212.292	2.007	
<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>	
2.00	0.001	0.00	1.029	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
7.540	9.983	Tsivoglou	5	
<u>Reach Travel Time (days)</u>	Subreach Results			
0.030	TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
	0.003	2.00	0.00	7.54
	0.006	2.00	0.00	7.54
	0.009	2.00	0.00	7.54
	0.012	2.00	0.00	7.54
	0.015	2.00	0.00	7.54
	0.018	2.00	0.00	7.54
	0.021	2.00	0.00	7.54
	0.024	2.00	0.00	7.54
	0.027	2.00	0.00	7.54
	0.030	2.00	0.00	7.54

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 checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

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
18A	42122	ALLEGHENY RIVER	48.000	785.00	8970.00	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)						Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.230	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Tarrtown STP	PA0253201	0.0450	0.0000	0.0000	0.000	25.00	7.20

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	7.54	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
18A	42122	ALLEGHENY RIVER	47.000	780.00	8971.00	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)						Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.230	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
18A		42122		ALLEGHENY RIVER			

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
48.000	Tarrtown STP	11.07	50	11.07	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
48.000	Tarrtown STP	1.37	25	1.37	25	0	0

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)		
48.00	Tarrtown STP	25	25	25	25	4	4	0	0

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
18A		42122				ALLEGHENY RIVER						
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
Q7-10 Flow												
48.000	2063.10	0.00	2063.10	.0696	0.00095	.921	1116.24	1212.29	2.01	0.030	25.00	7.00
Q1-10 Flow												
48.000	1320.38	0.00	1320.38	.0696	0.00095	NA	NA	NA	1.56	0.039	25.00	7.00
Q30-10 Flow												
48.000	2805.82	0.00	2805.82	.0696	0.00095	NA	NA	NA	2.38	0.026	25.00	7.00

Attachment 2

TRC EVALUATION					
Input appropriate values in A3:A9 and D3:D9					
865	= Q stream (cfs)	0.5	= CV Daily		
0.045	= 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)	0	=Decay Coefficient (K)		
Source	Reference	AFC Calculations		Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 3963.748		1.3.2.iii	WLA cfc = 3864.336
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 1476.987		5.1d	LTA_cfc = 2246.544
Source	Effluent Limit Calculations				
PENTOXSD TRG	5.1f	AML MULT = 1.231			
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
		INST MAX LIMIT (mg/l) = 1.635			
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)				

Attachment 3



WATER MANAGEMENT SYSTEM
OPEN VIOLATIONS BY CLIENT

Client ID: 77287

Client: All

Open Violations: 2

CLIENT ID	CLIENT	PF ID	FACILITY	PF KIND	PF STATUS	INSP PROGRAM	PROGRAM SPECIFIC ID
77287	EAST FRANKLIN TWP ARMSTRONG CNTY	490537	FOX HOLLOW ESTS STP	Sewage Publicly Owned (Muni)	Active	WPC NPDES	PA0217476
77287	EAST FRANKLIN TWP ARMSTRONG CNTY	490537	FOX HOLLOW ESTS STP	Sewage Publicly Owned (Muni)	Active	WPC NPDES	PA0217476

INSP ID	VIOLATION ID	INSPECTION CATEGORY	VIOLATION DATE	VIOLATION CODE	VIOLATION	PF INSPECTOR	INSP REGION
3205962	920555	PF	06/14/2021	92A.44	NPDES - Violation of effluent limits in Part A of permit	STONESIFER,CLINTON	NWRO
3205962	937813	PF	06/14/2021	CSL611	CSL - Failure to comply with terms and conditions of a WQM permit	STONESIFER,CLINTON	NWRO