

Application Type Renewal
 Facility Type Municipal
 Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0219207
 APS ID 1109329
 Authorization ID 1476579

Applicant and Facility Information

Applicant Name	Lincoln Township Municipal Authority	Facility Name	Sipesville Quecreek STP
Applicant Address	PO Box 162 Sipesville, PA 15561-0162	Facility Address	Quecreek Road Quecreek, PA 15555
Applicant Contact	Allan Hay	Facility Contact	***same as applicant***
Applicant Phone	(814) 445-7669	Facility Phone	***same as applicant***
Applicant Email	somalhay@aol.com	Facility Email	***same as applicant***
Client ID	25722	Site ID	559183
Ch 94 Load Status	N/A	Municipality	Lincoln Township
Connection Status		County	Somerset
Date Application Received	March 6, 2024	EPA Waived?	Yes
Date Application Accepted	March 13, 2024	If No, Reason	
Purpose of Application	Renewal of a NPDES for proposed discharges of treated sewage.		

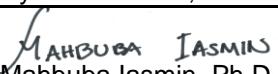
Summary of Review

On March 6, 2024, DEP received an application from the Lincoln Township Municipal Authority (LTMA) to renew the NPDES permit for discharges from the Sipesville Quecreek STP. The permit currently in effect was issued on April 19, 2019 with a May 1, 2019 effective date and an April 30, 2024 expiration date. The renewal application was due by November 2, 2023 (180 days before expiration), so the application submitted on March 6, 2024 is late.

On June 27, 2002, LTMA was issued an initial NPDES permit after receiving preliminary effluent limits from DEP for the proposed Sipesville Quecreek STP by letter dated October 5, 1999. The NPDES permit was renewed three times on October 10, 2007, October 9, 2013, and April 19, 2019. In addition, on February 11, 2011, LTMA was issued Water Quality Management Permit 5610403 for the construction and operation of the STP and associated sewage collection systems. Notwithstanding those permit issuances, the Sipesville Quecreek STP has not been constructed to date. The STP's design calls for one outfall (001) to Quehamoning Creek with a designated aquatic life use for cold water fishes.

Changes for this NPDES permit renewal include the following:

- a monthly reporting requirement for *E. Coli* is added to Outfall 001 based on new water quality criteria for *E. Coli* in 25 Pa. Code Chapter 93 (approved by U.S. EPA in March 2021) and related permitting policy updates
- water quality-based effluent limits for CBOD₅, ammonia-nitrogen, and dissolved oxygen are relaxed consistent with updated water quality modeling and applicable exceptions to anti-backsliding requirements
- the monitoring frequencies and sample types for Total Nitrogen and Total Phosphorus are changed from 1/year to 1/week and from grab sampling to 8-hour composite sampling due to the nutrient impairment of Quemahoning Creek

Approve	Return	Deny	Signatures	Date
✓			 Ryan C. Decker, P.E. / Environmental Engineer	June 7, 2024
✓			 Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	June 13, 2024

Summary of Review

- effluent limits for Total Residual Chlorine are removed from Outfall 001 and monitoring for UV transmittance is added consistent with DEP's authorization for LTMA to use ultraviolet light for disinfection under Water Quality Management Permit 5610403.

Sludge use and disposal description and location(s): not applicable. The STP has not been constructed, so no sewage sludge has been produced that requires disposal.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.1
Latitude	40° 5' 37.00"	Longitude	-79° 4' 43.00"
Quad Name	Somerset	Quad Code	1813
Wastewater Description:	Treated sewage effluent		
Receiving Waters	Quemahoning Creek (CWF)	Stream Code	45371
NHD Com ID	123722701	RMI	15.41
Drainage Area	12.6	Yield (cfs/mi ²)	0.06
Q ₇₋₁₀ Flow (cfs)	0.756	Q ₇₋₁₀ Basis	USGS StreamStats
Elevation (ft)	1,855	Slope (ft/ft)	0.00526
Watershed No.	18-E	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Metals, Nutrients, Siltation		
Source(s) of Impairment	Acid Mine Drainage, Acid Mine Drainage, On-Site Treatment Systems (Septic Systems and Similar Decentralized Systems)		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Background/Ambient Data		Data Source	
pH (SU)			
Temperature (°F)			
Hardness (mg/L)			
Other:			
Nearest Downstream Public Water Supply Intake		Buffalo Township Municipal Authority – Freeport	
PWS ID	5030019	PWS Withdrawal (MGD)	1.25 (capacity & safe yield)
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,250
PWS RMI	29.4	Distance from Outfall (mi)	112.98

Changes Since Last Permit Issuance: None; plant not constructed

Other Comments:

Waterbody Report for Quemahoning Creek

Quemahoning Creek-123722701
Assessment Unit ID: PA-SCR-123722701

Waterbody Condition: Impaired (Issues Identified)

Existing Plans for Restoration: Yes

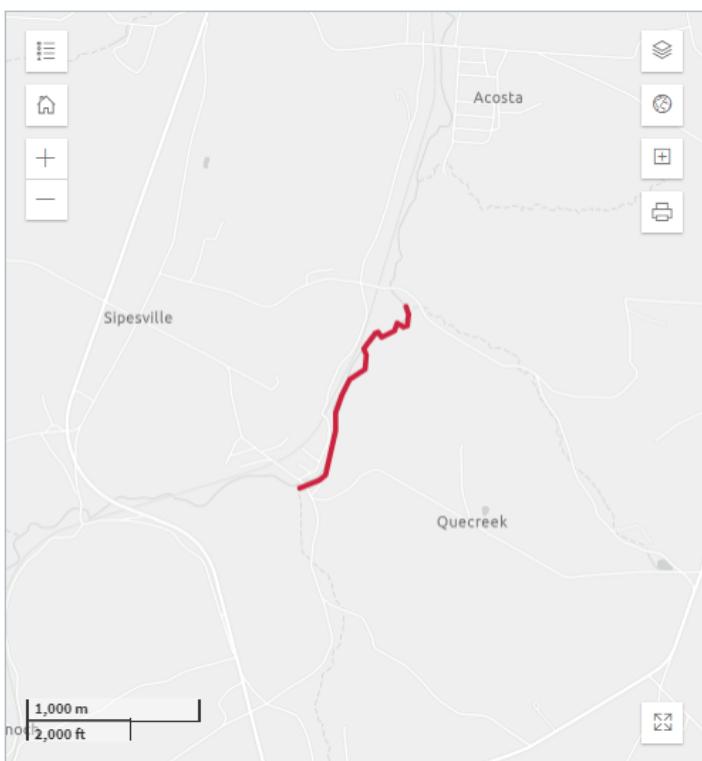
303(d) Listed: Yes

Year Reported: 2024

Organization Name (ID): Pennsylvania (21PA)

What type of water is this?
Stream/creek/river (0.8991 Miles)

Where is this water located?
LINCOLN TWP, 15501 (county: Somerset)



data.pa.gov, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, ... Powered by Esri

Assessment Information from 2024

State or Tribal Nation specific designated uses:

Information on Water Quality Standards		Expand All <input checked="" type="checkbox"/>
Cold Water Fishes		Impaired >
Water Contact Sports		Good >

Probable sources contributing to impairment from 2024:
Click a column heading to sort... [Clear Filters](#)

Source	Parameter	Confirmed
Filter...	Filter...	Filter...
Acid Mine Drainage	Metals	Yes
Acid Mine Drainage	Siltation	Yes
On-Site Treatment Systems (Septic Systems and Similar Decentralized Systems)	Nutrients	Yes

Click a column heading to sort... [Clear Filters](#)

Assessment Documents

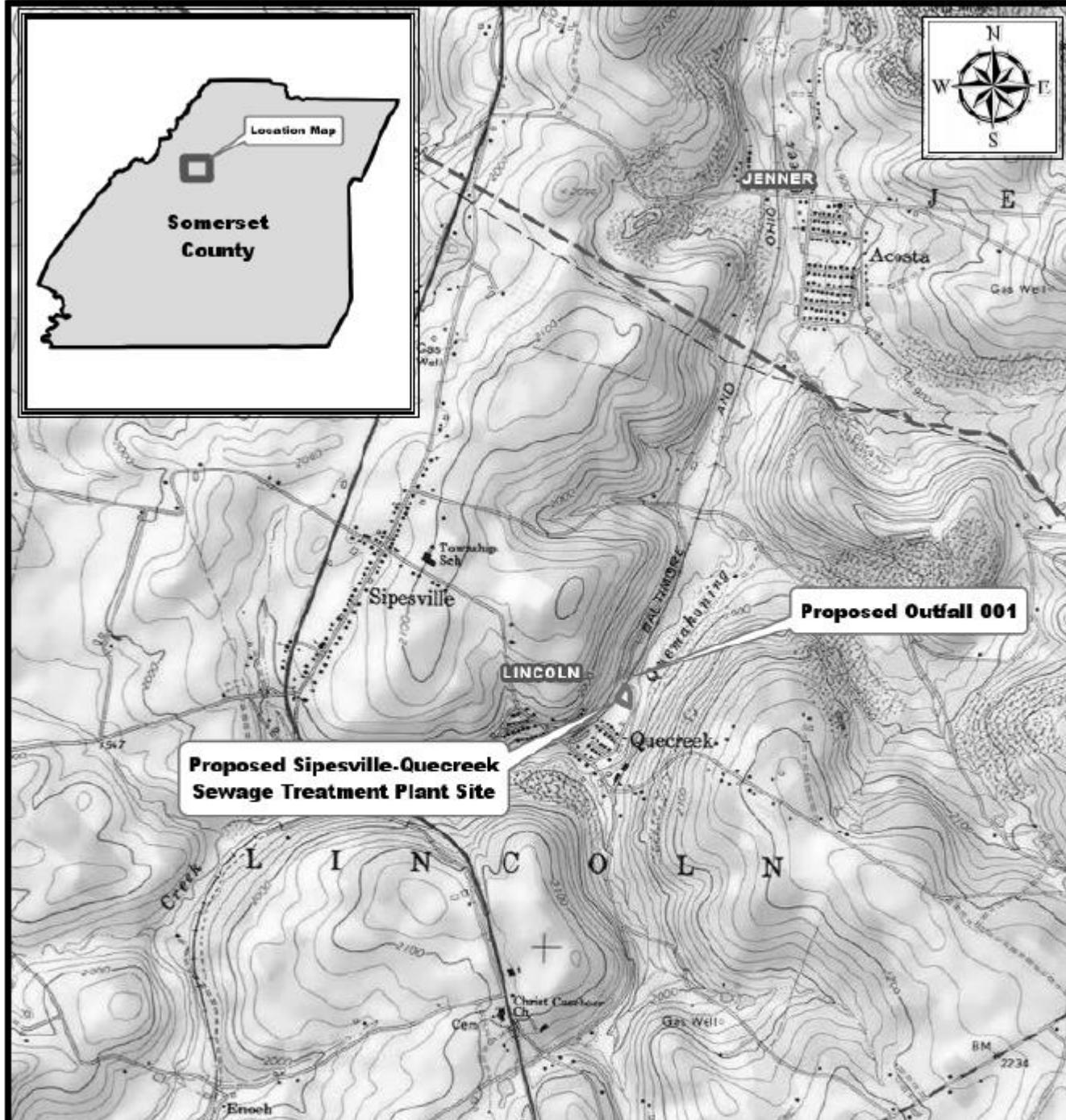
No documents are available

Plans to Restore Water Quality

What plans are in place to protect or restore water quality?
Links below open in a new browser tab.

Plan	Impairments	Type	Completion Date
Kiskiminetas-Conemaugh River Watersheds Tmdl	Metals, Total Suspended Solids (TSS)	TMDL	2010-01-28

<https://mywaterway.epa.gov/waterbody-report/21PA/PA-SCR-123722701/2024>



**Lincoln Township Municipal Authority
2024 NPDES Permit Application
Topographic Location Map
Somerset, PA - 7.5 min Quadrangle Map**



Altoona • Clarion • Johnstown • Lewistown • Pittsburgh • Somerset • Cumberland, MD

450 Aheideen Drive, Somerset, PA 15501 814.445.6551

Treatment Facility Summary				
Treatment Facility: Sipesville Quecreek STP				
WQM Permit No.	Issuance Date	Purpose		
5610403	February 11, 2011	Permit issued by Pennsylvania DEP to Lincoln Township Municipal Authority for the construction and operation of a 0.1 MGD average daily/0.25 MGD peak flow sewage treatment plant consisting of a mechanical bar screen with a manual bypass bar screen; two sequential batch reactors operated as an intermittent cycle extended aeration process; two aerobic digesters with a total volume of 45,508 gallons; an ultraviolet disinfection system; an as-needed meter pump for alkalinity addition for nitrification. The permit also authorized approximately 28,000 feet of 8" diameter gravity sewers; approximately 5,700 feet of 6" diameter force main; and a suction lift-type wastewater pump station consisting of two 180-gpm, 260-TDH pumps with an influent basket screen; a vent with rain cap and inset/rodent screen; a battery operated telephone dialer for high water level, power failure, or pump failure alarms; and a standby diesel fuel generator for backup power.		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended aeration	Chlorine	No flow yet
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.1	220.3	N/A	Aerobic digester	None yet

Changes Since Last Permit Issuance: None; the Sipesville-Quecreek STP has not been constructed.

Other Comments:

Development of Effluent Limitations

Outfall No.	001	Design Flow (MGD)	0.1
Latitude	40° 5' 37.00"	Longitude	-79° 4' 43.00"
Wastewater Description: Treated sewage effluent			

001.A. Technology-Based Effluent Limitations (TBELs)

25 Pa. Code § 92a.47 – Sewage Permits

Regulations at 25 Pa. Code § 92a.47 specify TBELs and effluent standards that apply to sewage discharges. Section 92a.47(a) requires that sewage be given a minimum of secondary treatment with significant biological treatment that achieves the following:

Table 1. Regulatory TBELs for Sanitary Wastewaters

Parameter	Average Monthly (mg/L)	Average Weekly (mg/L)	Instant. Max (mg/L)	Basis
CBOD ₅	25	40 [†]	50 ^{††}	25 Pa. Code § 92a.47(a)(1), (a)(2) & 40 CFR §§ 133.102(a)(4)(i) & (ii)
Total Suspended Solids	30	45	60 ^{††}	25 Pa. Code § 92a.47(a)(1), (a)(2) & 40 CFR §§ 133.102(b)(1) & (b)(2)
Fecal Coliform (No./100 mL) May 1 – September 30	200 (Geometric Mean)	N/A	1,000	25 Pa. Code § 92a.47(a)(4)
Fecal Coliform (No./100 mL) October 1 – April 30	2,000 (Geometric Mean)	N/A	10,000	25 Pa. Code § 92a.47(a)(5)
Total Residual Chlorine	0.5 (or facility-specific)	N/A	1.6 (or facility-specific)	25 Pa. Code § 92a.47(a)(8) & § 92a.48(b)(2)
pH (s.u.)	not less than 6.0 and not greater than 9.0			25 Pa. Code § 92a.47(a)(7) & § 95.2(1), & 40 CFR § 133.102(c)

[†] Outfall 001 is currently subject to a more stringent CBOD₅ weekly average limit of 37.5 mg/L.

^{††} IMAX values are calculated as two times the monthly average in accordance with Chapter 2 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" [Doc. No. 362-0400-001].

The CBOD₅, TSS, and pH limits are the same as those in EPA's secondary treatment regulation (40 CFR § 133.102). Outfall 001 is currently subject to a more stringent (non-water quality-based) average weekly CBOD₅ limit of 37.5 mg/L. That limit will be maintained in the renewed permit pursuant to EPA's anti-backsliding regulation (40 CFR § 122.44(l)).

In accordance with Section I of DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits" [SOP No. BCW-PMT-033] and under the authority of 25 Pa. Code § 92a.61(b), reporting for Total Nitrogen and Total Phosphorus is required for sewage discharges with design flows greater than 2,000 gpd to evaluate treatment effectiveness and to monitor nutrient loading to the receiving watershed. The SOP states that the monitoring frequencies for Total Nitrogen and Total Phosphorus should be equivalent to the monitoring frequencies for other conventional pollutants if the facility discharges to a nutrient-impaired water or potentially a lesser frequency if the receiving water is not nutrient-impaired. Quemahoning Creek is impaired by nutrients, so the monitoring frequencies for Total Nitrogen and Total Phosphorus will be changed to match the monitoring frequencies for conventional pollutants (1/week, 8-hour composite).

Pursuant to that same SOP, a minimum dissolved oxygen limit of 4.0 mg/L is imposed on sewage discharges based on DEP's best professional judgement to ensure adequate operation and maintenance. Outfall 001 is currently subject to a more stringent dissolved oxygen limit of 5.0 mg/L based on water quality considerations. If water quality considerations do not require the 5.0 mg/L limit to be maintained, then the 4.0 mg/L limit will control in the permit.

Pursuant to that same SOP and under the authority of 25 Pa. Code § 92a.61(b), a quarterly reporting requirement for *E. coli* will be added to Outfall 001 because the design flow of the STP is greater than or equal to 0.05 and less than 1 MGD. *E. coli* was recently added to the bacteria water quality criteria in 25 Pa. Code § 93.7(a). The monitoring will be used to determine if *E. coli* concentrations require additional controls.

Average monthly and maximum daily flows must be reported pursuant to 25 Pa. Code § 92a.61(d)(1).

Under Water Quality Management Permit No. 5610403 issued on February 11, 2011, LTMA planned to use ultraviolet light for disinfection. However, the NPDES permit application lists chlorine as the method of disinfection. Consistent with the WQM permit issued for this STP, the use of chlorine for disinfection has not been approved for this facility because the WQM permit application did not include a chlorine disinfection system. Therefore, TBELs for TRC from 25 Pa. Code § 92a.47(a)(8) do not apply. TRC limits will be replaced with instantaneous minimum reporting requirement for ultraviolet light transmittance pursuant to SOP No. BCW-PMT-033 and under the authority of § 92a.61(b).

The permit will include a condition requiring both a WQM permit amendment and NPDES permit amendment to authorize the use of chlorine for disinfection and to re-impose TRC limits if LTMA opts to use chlorine for disinfection.

Mass Limits

In accordance with Table 5-3 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" and Section IV of DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits", mass limits are calculated for CBOD_5 and TSS. Average monthly and average weekly mass limits (in units of pounds per day) are calculated using the concentration limits in Table 1 (including the 37.5 mg/L average weekly CBOD_5 limit) and the STP's 0.1 MGD design flow with the following formula:

$$\text{Design flow (avg. annual) (MGD)} \times \text{concentration limit (mg/L) at design flow} \times \text{conversion factor (8.34)} = \text{mass limit (lb/day)}$$

Table 2. Mass TBELs for Sanitary Wastewaters

Parameter	Average Monthly (mg/L)	Average Weekly (mg/L)
CBOD_5	20.9	31.3
Total Suspended Solids	25.0	37.6

Influent Monitoring

Pursuant to Section IV.E.8 of DEP's "Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance Sewage Individual NPDES Permit Applications" [SOP No. BCW-PMT-002], for POTWs with design flows greater than 2,000 GPD, influent BOD_5 and TSS monitoring is established in the permit with the same sampling frequency and sample type used for the effluent. As explained in Section 001.C, below, the Sipesville Quecreek STP's effluent must be analyzed for CBOD_5 and TSS 1/week using 8-hour composite sampling. Therefore, influent samples must be analyzed for BOD and TSS 1/week using 8-hour composite sampling.

001.B. Water Quality-Based Effluent Limitations (WQBELs)

Pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020, new water quality criteria for ammonia-nitrogen apply to waters of the Commonwealth. Therefore, WQBELs for CBOD_5 and ammonia-nitrogen are re-evaluated even though the STP has not been constructed and there have been no changes proposed to the STP.

WQM 7.0 Water Quality Modeling Program

WQM 7.0 is a water quality modeling program for Windows that determines Waste Load Allocations (WLAs) and effluent limitations for carbonaceous biochemical oxygen demand (CBOD_5), ammonia-nitrogen, and dissolved oxygen (D.O.) for single and multiple point-source discharge scenarios. The model simulates two basic processes. In the ammonia-nitrogen module, the model simulates the mixing and degradation of ammonia-nitrogen in the stream and compares calculated instream ammonia-nitrogen concentrations to ammonia-nitrogen water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of CBOD_5 and ammonia-nitrogen and compares calculated instream D.O. concentrations to D.O. water quality criteria. WQM 7.0 then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

Water Quality Modeling for Outfall 001 with WQM 7.0

The WQM 7.0 model is run for Outfall 001 to determine whether WQBELs are necessary for CBOD_5 , ammonia-nitrogen, and D.O. Input values for the WQM 7.0 model are shown in Table 3.

Table 3. 001 Modeling Inputs

Discharge Characteristics	
Parameter	Value
River Mile Index	15.41
Discharge Flow (MGD)	0.1
Discharge Temp (°C) (Summer)	20.0
Discharge Temp (°C) (Winter)	15.0
Basin/Stream Characteristics	
Parameter	Value
Drainage Area (sq. mi.)	12.6
Q ₇₋₁₀ (cfs)	0.756
Low-flow yield (cfs/mi ²)	0.06
Elevation (ft)	1855
Slope (ft/ft)	0.00526
Stream Temp. (°C) (Summer)	25.0
Stream Temp. (°C) (Winter)	5.0
Stream pH (s.u.)	6.5

DEP's modeling for sewage discharges is a conditional two-step process. First, a discharge is modeled for the summer period (May through October) using warm temperatures for the discharge and the receiving stream. Modeling for the summer period is done first because allowable ammonia-nitrogen concentrations in a discharge are lower at higher temperatures (i.e., warm temperatures are more likely to result in critical loading conditions). Reduced D.O. levels also appear to increase ammonia toxicity and the maximum concentration of D.O. in water is lower at higher temperatures. The second step is to evaluate WQBELs for the winter period (November through April), but only if modeling shows that WQBELs are needed for the summer period.

For the summer period, pursuant to DEP's "Implementation Guidance of Section 93.7 Ammonia Criteria" [Doc. No. 386-2000-022] (Ammonia Guidance) and in the absence of site-specific data, the discharge temperature is assumed to be 20°C and the design stream temperature and pH are assumed to be 20°C and 6.5 s.u., respectively, based on the recommendations for free stone cold water streams in DEP's Ammonia Guidance (Quemahoning Creek is designated for cold water fishes). The flow used for modeling is the average design flow (0.1 MGD). The input discharge concentrations are the model's defaults: 25 mg/L for both CBOD₅ and ammonia-nitrogen. The input discharge concentration for D.O. is 4.0 mg/L. The background D.O. concentration of

Quemahoning Creek at 20°C is assumed to be 9.17 mg/L based on theoretical D.O. saturation at that temperature. The width to depth ratio of the stream is five based on data from a stream survey in 1999.

The results of the modeling indicate that less stringent limits for CBOD₅, ammonia-nitrogen, and D.O. apply to Outfall 001 including the default average monthly CBOD₅ limit of 25.0 mg/L (i.e., the CBOD₅ TBELs), less stringent average and maximum WQBELs for ammonia-nitrogen, and a minimum D.O. limit of 4.0 mg/L. Less stringent limits are calculated by WQM 7.0 because the Q₇₋₁₀ used for this renewal (0.756 cfs) is about 2.5 times higher than the Q₇₋₁₀ used to calculate the existing limits (0.294 cfs). The Q₇₋₁₀ previously used was based on outdated data from USGS Gage 03039700 on Dark Shade Creek at Central City, PA (used as a surrogate for Quemahoning Creek) summarized in the Pennsylvania Department of Environmental Resources' Water Resources Bulletin 12 – Low-flow Characteristics of Pennsylvania Streams, which was published most recently in 1977. The Q₇₋₁₀ for this renewal is based on a point delineation using USGS's StreamStats web application, which estimates low-flow statistics for ungaged streams using regression equations, land use data, and data from gaged streams. StreamStats uses recent gaging station data, which is new information that justifies the application of less stringent limits in accordance with the exception to anti-backsliding given by Section 402(o)(2)(B)(i) of the Clean Water Act (33 U.S.C. § 1342(o)(2)(B)(i)).

Since WQBELs are calculated for the summer period (only for ammonia-nitrogen), WQBELs for the winter period also are evaluated. Pursuant to DEP's Ammonia Guidance, WQBELs for the winter period are set by multiplying the summer limits by three, unless modeling indicates that more stringent WQBELs are needed for winter.

For winter period modeling, the low-flow yield (representing Q₇₋₁₀ flow) is doubled to 0.12 cfs/mi² consistent with DEP's Ammonia Guidance. Default stream and discharge temperatures of 5°C and 15°C, respectively, also are assumed based on the Ammonia Guidance. The results of the modeling (see **Attachment A**) indicate that default ammonia-nitrogen limits of 25 mg/L average monthly and 50 mg/L instantaneous maximum limits apply for the winter period. The CBOD₅ and D.O. limits calculated for the winter period are the same as those for the summer period.

The WQBELs are summarized in the table below (after rounding down to the nearest whole number in accordance with DEP's rounding guidelines). As with the TBELs for CBOD₅ and TSS, average monthly mass limits for ammonia-nitrogen (in units of pounds per day) are calculated using the seasonal ammonia-nitrogen concentration limits and the STP's 0.1 MGD design flow with the following formula:

Design flow (average annual) (MGD) × concentration limit (mg/L) at design flow × conversion factor (8.34) = mass limit (lb/day)

Table 4. Ammonia-Nitrogen Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass Limits (lbs/day)	Concentration Limits (mg/L)	
	Average Monthly	Average Monthly	Instant. Maximum
Ammonia-Nitrogen May 1 – October 31	13.3	16.0	32.0
Ammonia-Nitrogen November 1 – April 30	20.8	25.0	50.0

Pursuant to Chapter 5, Section C.2 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" concentration limits for conventional pollutants with a magnitude greater than 1.0 and less than 10.0 are rounded down to the nearest 0.5. Ammonia-nitrogen is a non-conventional pollutant, but ammonia-nitrogen is considered a conventional pollutant for the purpose of implementing the rounding guidelines.¹ In accordance with Section IV of DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits", only average monthly mass limits are imposed for ammonia-nitrogen.

The IMAX concentration limits for ammonia-nitrogen will appear in the permit, but since 8-hour composite sampling is required for ammonia-nitrogen and IMAX limits only apply when grab sampling is specified, the permittee does not need to report results on DMRs for compliance with the ammonia-nitrogen IMAX limits. The IMAX limits may be used by DEP to spot-check compliance by collecting a grab sample during a site inspection.

Modeling for toxics is not performed because the STP has not been constructed and there are no reportable effluent data upon which to base a reasonable potential evaluation.

Total Residual Chlorine

As explained in Section 001.A of this Fact Sheet, effluent limits for TRC will not be imposed at Outfall 001 because the STP was not permitted to use chlorine for disinfection by WQM Permit 5610403. Consistent with the exception to anti-backsliding in CWA § 402(o)(2)(B)(ii) regarding technical mistakes, the existing TRC WQBELs will be removed from Outfall 001.

Kiskiminetas-Conemaugh River Watershed TMDL

A TMDL for the Kiskiminetas-Conemaugh River Watershed ("Kiski-Conemaugh TMDL")—of which Quemahoning Creek is a part—was completed on January 29, 2010 to control of acid mine drainage pollutants: aluminum, iron, manganese, sediment and pH. The TMDL regulates sediment and pH, but it does not establish wasteload allocations for sediment or pH. The TMDL used a surrogate approach for both of those constituents by which reductions of in-stream concentrations of aluminum, iron, and manganese would result in acceptable reductions of sediment and mitigation of acidic pH.

In accordance with 40 CFR § 122.44(d)(1)(vii)(B), when developing WQBELs, the permitting authority shall ensure that effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation (WLA) for the discharge prepared by the State and approved by EPA pursuant to 40 CFR § 130.7.

In the draft version of the Kiski-Conemaugh TMDL, Outfall 001 was assigned WLAs based on the premise that no reductions from "existing" loadings were necessary. The TMDL conservatively set existing loadings at levels equal to Pennsylvania's most stringent water quality criteria. In other words, Outfall 001's discharge loadings were not projected to contribute to criteria excursions, but the TMDL still needed to account for Outfall 001's "negligible" contributions and conservatively assumed those contributions are equal to water quality criteria. In the final TMDL, the negligible discharge WLAs for each discharger were combined with the negligible discharge WLAs for facilities in the same sub-watershed (SWS) and specified as "Negligible Discharge Gross WLAs" for the entirety of each SWS. In the case of the Sipesville Quecreek STP, the WLAs for its SWS (4199) are equal to Outfall 001's WLAs because the STP is the only discharger in its sub-watershed. Tables 5 and 6 summarize the draft and final TMDL WLAs for SWS 4199.

¹ Section IV.D of DEP's Ammonia Guidance provides a general note on precision for concentration limits with rounding guidelines for concentration limits (not specific to any parameter) equivalent to the rounding guidelines for conventional pollutants in DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits". Therefore, the rounding guidelines for conventional pollutants are followed for concentration limits for ammonia-nitrogen.

Table 5. Draft Kiski-Conemaugh TMDL WLAs for PA0219207 (Minor Non-Mining WLAs)

SWS	PERMIT	Metal	Baseline Load (lbs/yr)	Baseline Concentration (mg/L)	Allocated Load (lbs/yr)	Allocated Concentration (mg/L)	% Reduction
4199	PA0219207	Aluminum	228	0.75	228	0.75	0
4199	PA0219207	Iron	457	1.50	457	1.50	0
4199	PA0219207	Manganese	305	1.00	305	1.00	0

Table 6. Final Kiski-Conemaugh TMDL WLAs for SWS 4199 (Negligible Discharge Gross WLAs)

SWS	Metal	Baseline Load (lbs/yr)	Baseline Concentration (mg/L)	Allocated Load (lbs/yr)	Allocated Concentration (mg/L)	% Reduction
4199	Aluminum	228	0.75	228	0.75	0
4199	Iron	457	1.50	457	1.50	0
4199	Manganese	305	1.00	305	1.00	0

As shown in Tables 5 and 6, the Kiski-Conemaugh TMDL does not require load reductions for Outfall 001 based on the assumption that Outfall 001's baseline (existing) effluent concentrations are equal to (or less than) the allocated effluent concentrations. Sewage discharges generally do not contain high concentrations of metals, but the Sipesville Quecreek STP has not been constructed, so there are no effluent data to confirm that the STP complies with the TMDL's assumptions. Additionally, the aquatic life use of Quemahoning Creek is listed as impaired. Therefore, despite the assumed negligibility of metals loadings from the STP, WQBELs will be imposed at Outfall 001 based on the TMDL's allocated concentrations for SWS 4199 in accordance with 40 CFR § 122.44(d)(1)(vii)(B).

The TMDL's allocated concentrations for aluminum, iron, and manganese are equivalent to the most stringent water quality criteria for those pollutants and those criteria will be imposed as end-of-pipe limits at Outfall 001. The methods used to implement water quality criteria are described in 25 Pa. Code §§ 96.3 and 96.4. Also, DEP's "Water Quality Toxics Management Strategy" [Doc. No. 361-2000-003] addresses design conditions in detail (Table 1 in that document), including the appropriate durations to assign to water quality criteria. The design duration for Criteria Maximum Concentration (CMC) criteria is 1 hour (acute). The design duration for Criteria Continuous Concentration (CCC) criteria is 4 days (chronic). The design duration for Threshold Human Health (THH) criteria is 30 days (chronic). The design duration for Cancer Risk Level (CRL) criteria is 70 years (chronic).

The 750 µg/L aluminum criterion in 25 Pa. Code § 93.8c is a CMC (acute) criterion. Therefore, 750 µg/L is imposed as a maximum daily limit. There is no CCC criterion for aluminum necessitating the imposition of a more stringent average monthly limit. Imposing 750 µg/L as both a maximum daily and average monthly limit is protective of water quality uses.

The 1.5 mg/L iron criterion is given as a 30-day average in 25 Pa. Code § 93.7(a). Therefore, 1.5 mg/L is imposed as an average monthly limit and the maximum daily effluent limit is calculated using a multiplier of two times the average monthly limit based on DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" [Doc. No. 362-0400-001, Chapter 3, pp. 15, 16].

The 1 mg/L potable water supply criterion for manganese in 25 Pa. Code § 93.7(a) is a human health criterion (chronic). Per Table 1 of DEP's "Water Quality Toxics Management Strategy", the duration for a THH criterion is 30 days. Therefore, an average monthly effluent limit of 1 mg/L is imposed, and the maximum daily effluent limit is calculated using a multiplier of two times the average monthly limit consistent with the technical guidance cited above for iron.

Since the allocated concentrations are equivalent to water quality criteria, the STP's compliance with concentration limits for aluminum, iron, and manganese will not result in excursions above water quality criteria and the permit will be consistent with the TMDL's WLAs. Consequently, load limits are not required. The TMDL WQBELs are summarized in the table below.

Table 7. TMDL WQBELs for Outfall 001

Parameter	Annual Average (mg/L)	Maximum Daily (mg/L)
Aluminum, Total	0.75	0.75
Iron, Total	1.5	3.0
Manganese, Total	1.0	2.0

The previous permit required 1/year reporting for aluminum, iron, and manganese. The renewed permit will require 2/year reporting to determine compliance with the annual average limit. Infrequent annual reporting to determine compliance with the TMDL WQBELs is consistent with the expected “negligible” effect of the discharge on aquatic life impairments in the Kiskiminetas-Conemaugh River Watershed by acid mine drainage.

001.C. Effluent Limits and Monitoring Requirements for Outfall 001

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under 40 CFR § 122.44(l)² (incorporated by reference in Pennsylvania regulations at 25 Pa. Code § 92a.44), effluent limits applicable at Outfall 001 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal; and effluent limits and monitoring requirements from the previous permit, subject to any exceptions to anti-backsliding discussed previously in this Fact Sheet. Applicable effluent limits and monitoring requirements are summarized in the table on the following page.

Monitoring frequencies and sample types are established pursuant to Table 6-3 in DEP's “Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits” and DEP's “Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits”. Dissolved oxygen, UV transmittance, and pH must be sampled 1/day using grab sampling. CBOD₅, TSS, and ammonia-nitrogen must be sampled 1/week using 8-hour composite sampling. As discussed in Section 001.A of this Fact Sheet, influent BOD₅ and TSS have the same sample frequency and sample type as effluent CBOD and TSS—1/week, 8-hour composite. Fecal coliform must be sampled 1/week using grab sampling. *E. coli* must be sampled 1/quarter using grab sampling. Total nitrogen and total phosphorus must be sampled 1/week using 8-hour composite sampling. Flow must be recorded continuously using a flow meter.

² *Reissued permits.* (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under § 122.62.)

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instant. Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
CBOD ₅	20.9	31.3	XXX	25.0	37.5	50.0	1/week	8-Hr Composite
BOD ₅ Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids	25.0	37.6	XXX	30.0	45.0	60.0	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab
UV Light Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Total Nitrogen	XXX	XXX	XXX	Report	Report Daily Max	XXX	1/week	8-Hr Composite
Ammonia Nov 1 - Apr 30	20.8	XXX	XXX	25.0	XXX	50.0	1/week	8-Hr Composite
Ammonia May 1 - Oct 31	13.3	XXX	XXX	16.0	XXX	32.0	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	Report Daily Max	XXX	1/week	8-Hr Composite
Total Aluminum	XXX	XXX	XXX	0.75 Annl Avg	0.75 Daily Max	XXX	2/year	Grab

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instant. Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Iron	XXX	XXX	XXX	1.5 Annl Avg	3.0 Daily Max	XXX	2/year	Grab
Total Manganese	XXX	XXX	XXX	1.0 Annl Avg	2.0 Daily Max	XXX	2/year	Grab

Compliance Sampling Location: 

Other Comments: 

Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment A)
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment)
<input type="checkbox"/>	TRC Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 386-2000-002, 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, 386-2000-008, 4/97.
<input type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
<input type="checkbox"/>	Design Stream Flows, 386-2000-003, 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, 386-2000-006, 10/98.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	Standard Operating Procedure (SOP) for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits, SOP No. BCW-PMT-033, Version 2.0, February 5, 2024
<input checked="" type="checkbox"/>	Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance Sewage Individual NPDES Permit Applications, SOP No. BCW-PMT-002, Version 2.0, February 3, 2022
<input type="checkbox"/>	Other:

ATTACHMENT A

WQM 7.0 Modeling Results

SUMMER PERIOD

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						
									18E	45371 QUEMAHONING CREEK	15.410	1855.00	12.60	0.00526	0.00
Stream Data															
Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	pH	Stream Temp (°C)	Stream pH			
Q7-10	0.060	0.00	0.00	0.000	0.000	5.0	0.00	0.00	20.00	6.50	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							
	Outfall 001	PA0219207	0.1000	0.0000	0.0000	0.000	20.00	7.00							
Parameter Data															
	Parameter Name	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	9.17	0.00	0.00									
	NH3-N		25.00	0.00	0.00	0.70									

SUMMER PERIOD

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name			RMI	Elevation	Drainage Area	Slope	PWS Withdrawal	Apply FC		
					(ft)	(sq mi)	(ft/ft)	(mgd)				
18E		45371 QUEMAHONING CREEK			14.910	1841.00	12.80	0.00526	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 Temp (°C)	Stream Temp (°C)		
Q7-10	0.060	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	6.50		
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)		
						0.0000	0.0000	0.0000	0.000	25.00		
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			

SUMMER PERIOD

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		

SUMMER PERIOD**WQM 7.0 Hydrodynamic Outputs**

<u>SWP Basin</u>			<u>Stream Code</u>			<u>Stream Name</u>						
18E			45371			QUEMAHONING CREEK						
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)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
Q7-10 Flow												
15.410	0.76	0.00	0.76	.1547	0.00526	.512	15.5	30.25	0.11	0.266	20.00	6.55
Q1-10 Flow												
15.410	0.48	0.00	0.48	.1547	0.00526	NA	NA	NA	0.09	0.325	20.00	6.58
Q30-10 Flow												
15.410	1.03	0.00	1.03	.1547	0.00526	NA	NA	NA	0.13	0.230	20.00	6.54

SUMMER PERIOD

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
18E	45371	QUEMAHONING 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
15.410 Outfall 001		21.96	50	21.96	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
15.410 Outfall 001		2.12	16.18	2.12	16.18	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)		
15.41 Outfall 001		25	25	16.18	16.18	4	4	0	0

SUMMER PERIOD

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
18E	45371	QUEMAHONING CREEK		
<u>RMI</u> 15.410	<u>Total Discharge Flow (mgd)</u> 0.100	<u>Analysis Temperature (°C)</u> 20.000	<u>Analysis pH</u> 6.554	
<u>Reach Width (ft)</u> 15.499	<u>Reach Depth (ft)</u> 0.512	<u>Reach WDRatio</u> 30.245	<u>Reach Velocity (fps)</u> 0.115	
<u>Reach CBOD5 (mg/L)</u> 5.91	<u>Reach Kc (1/days)</u> 1.014	<u>Reach NH3-N (mg/L)</u> 2.75	<u>Reach Kn (1/days)</u> 0.700	
<u>Reach DO (mg/L)</u> 8.292	<u>Reach Kr (1/days)</u> 17.515	<u>Kr Equation</u> Owens	<u>Reach DO Goal (mg/L)</u> 5	
<u>Reach Travel Time (days)</u> 0.266	<u>Subreach Results</u>			
	TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
	0.027	5.75	2.70	8.24
	0.053	5.60	2.65	8.22
	0.080	5.45	2.60	8.21
	0.107	5.30	2.55	8.22
	0.133	5.16	2.50	8.23
	0.160	5.02	2.46	8.24
	0.187	4.89	2.41	8.24
	0.213	4.76	2.37	8.24
	0.240	4.63	2.32	8.24
	0.266	4.51	2.28	8.24

SUMMER PERIOD

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name					
		18E	45371	QUEMAHONING 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)
15.410	Outfall 001	PA0219207	0.100	CBOD5	25		
				NH3-N	16.18	32.36	
				Dissolved Oxygen			4

WINTER PERIOD

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				
18E	45371	QUEMAHONING CREEK	15.410	1855.00	12.60	0.00526	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 Temp (°C)	pH	Stream Temp (°C)	pH
Q7-10	0.120	0.00	0.00	0.000	0.000	5.0	0.00	0.00	5.00	6.50	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									Disc Temp (°C)	Disc pH		
	Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor						
	Outfall 001	PA0219207	0.1000	0.0000	0.0000	0.000			15.00	7.00		
Parameter Data									Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
	Parameter Name											
	CBOD5		25.00	2.00	0.00	1.50						
	Dissolved Oxygen		4.00	12.80	0.00	0.00						
	NH3-N		25.00	0.00	0.00	0.70						

WINTER PERIOD

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		

WINTER PERIOD

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>			<u>Stream Code</u>			<u>Stream Name</u>						
18E			45371			QUEMAHONING CREEK						
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												
15.410	1.51	0.00	1.51	.1547	0.00526	.556	18.65	33.56	0.16	0.190	5.93	6.53
Q1-10 Flow												
15.410	0.97	0.00	0.97	.1547	0.00526	NA	NA	NA	0.13	0.237	6.38	6.54
Q30-10 Flow												
15.410	2.06	0.00	2.06	.1547	0.00526	NA	NA	NA	0.19	0.162	5.70	6.52

WINTER PERIOD

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
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18E	45371	QUEMAHONING CREEK
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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
15.410	Outfall 001	32.06	50	32.06	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
15.410	Outfall 001	4.91	25	4.91	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
15.41	Outfall 001	25	25	25	25	4	4	0	0

WINTER PERIOD

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
18E	45371	QUEMAHONING CREEK		
<u>RMI</u> 15.410	<u>Total Discharge Flow (mgd)</u> 0.100	<u>Analysis Temperature (°C)</u> 5.928	<u>Analysis pH</u> 6.528	
<u>Reach Width (ft)</u> 18.648	<u>Reach Depth (ft)</u> 0.556	<u>Reach WDRatio</u> 33.560	<u>Reach Velocity (fps)</u> 0.161	
<u>Reach CBOD5 (mg/L)</u> 4.13	<u>Reach Kc (1/days)</u> 0.814	<u>Reach NH3-N (mg/L)</u> 2.32	<u>Reach Kn (1/days)</u> 0.237	
<u>Reach DO (mg/L)</u> 11.983	<u>Reach Kr (1/days)</u> 5.758	<u>Kr Equation</u> Tsivoglou	<u>Reach DO Goal (mg/L)</u> 5	
<u>Reach Travel Time (days)</u> 0.190	<u>Subreach Results</u>			
	TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
	0.019	4.10	2.31	11.18
	0.038	4.07	2.30	11.18
	0.057	4.04	2.29	11.18
	0.076	4.00	2.28	11.18
	0.095	3.97	2.27	11.18
	0.114	3.94	2.26	11.18
	0.133	3.91	2.25	11.18
	0.152	3.88	2.24	11.18
	0.171	3.84	2.23	11.18
	0.190	3.81	2.22	11.18

WINTER PERIOD

WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
18E		45371		QUEMAHONING 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)
15.410	Outfall 001	PA0219207	0.100	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4