pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0020591**
Facility Type	**Municipal**	APS ID	**8474**
Major / Minor	**Minor**	Authorization ID	**1159970**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Mount Gretna Borough Authority**	Facility Name	**Mt Gretna STP**
Applicant Address	PO Box 61 101 Chautaqua Drive	Facility Address	Sr 0117
	Mount Gretna, PA 17064-0061		Mount Gretna, PA 17064
Applicant Contact	William Care	Facility Contact	William Care
Applicant Phone	(717) 964-3270	Facility Phone	(717) 964-3270
Client ID	37860	Site ID	251488
Ch 94 Load Status	Not Overloaded	Municipality	Mount Gretna Borough
Connection Status	No Limitations	County	Lebanon
Date Application Received	September 30, 2016	EPA Waived?	Yes
Date Application Accepted	November 21, 2016	If No, Reason	

Purpose of Application: NPDES Renewal for discharge of treated sewage

Summary of Review

1.0 General Discussion

This fact sheet supports the renewal of an existing NPDES permit for discharge of treated sewage from Mount Gretna Borough Authority(Borough) wastewater treatment plant. The plant serves Mount Gretna Borough and portions of South Londonderry and West Cornwall Townships. Mount Gretna Borough Authority owns, maintains, and operates the wastewater treatment plant located in Mount Gretna Borough, Lebanon County. The collection system has no combined sewers and no bypasses and overflows are authorized in the collection system. The facility is a trickling filter treatment system with a design average annual flow of 0.200 MGD and hydraulic design capacity of 0.200 MGD. The organic design capacity is 400 lbs/day. The facility discharges treated sewage to Conewago Creek which is classified for Trout Stocking(TSF). The existing NPDES permit was issued on March 20, 2012 with an effective date of April 1, 2012 and expiration date of March 31, 2017. The applicant submitted a timely permit renewal application to the Department and is currently operating under the terms and conditions in the existing permit under administrative extension provisions pending Department action on the renewal application. A topographical Map showing the discharge location is presented in attachment A

1.1 Sludge use and disposal description and location(s):

Digested sludge is hauled offsite to Manheim or Kline's facility by a license hauler as needed. Solids from Imhoff tanks are occasionally removed to landfill or to drying beds.

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	February 25, 2021
X		*Maria D. Bebenek for Daniel W. Martin* Daniel W. Martin, P.E. / Environmental Engineer Manager	March 11, 2021
X		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Program Manager	March 11, 2021

Summary of Review

1.2 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.

1.3 Changes to the existing Permit

- Monthly monitoring for Total nitrogen species has been added to collect data for the Chesapeake Bay Program.
- Ammonia nitrogen limit is more stringent than the existing permit.

1.3.1 Existing Permit Limits and Monitoring Requirements

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous Maximum		
Flow (mgd)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/Day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/Day	Grab
TSS	50	75	XXX	30	45	60	1/Week	24-hr comp
$CBOD_5$	42	67	XXX	25	40	50	1/Week	24-hr comp
NH_3-N (5/1 to 10/31)	6.7	XXX	XXX	4	XXX	8	1/Week	24-hour comp
NH_3-N (11/1 to 4/30)	20	XXX	XXX	12	XXX	24	1/Week	24-hour comp
Fecal Coliform (5/1 to 9/30)[(5)]	XXX	XXX	XXX	200	XXX	1,000	1/Week	Grab
Fecal Coliform (10/1 to 4/30)	XXX	XXX	XXX	2,000	XXX	10,000	1/Week	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/week	24-hour comp
Total Phosphorus	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	XXX	1,217 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Copper	0.050	XXX	XXX	0.030	XXX	0.075	2/month	24-hour comp

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.2
Latitude	40º 14' 21.72"	Longitude	-76º 29' 04"
Quad Name	Elizabethtown	Quad Code	1733
Wastewater Description:	Sewage Effluent		
Receiving Waters	Conewago Creek	Stream Code	09217
NHD Com ID	56401561	RMI	19.750
Drainage Area	3.0	Yield (cfs/mi^2)	0.10
Q_{7-10} Flow (cfs)	0.30	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)	590	Slope (ft/ft)	
Watershed No.	7-G	Chapter 93 Class.	TSF
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	Final	Name	Conewago Creek Watershed

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Elizabethtown Water Company		
PWS Waters	Conewago Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	<12

Changes Since Last Permit Issuance: None

1.4.1 Water Supply Intake

The nearest water supply intake is ten miles downstream at West Donegal Township, Lancaster County on the Conewago Creek by the Elizabethtown Water Company. No impact is expected from this discharge

Treatment Facility Summary				
Treatment Facility Name: Mt Gretna Authority STP				
WQM Permit No.	**Issuance Date**			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Trickling Filter With Settling	Gas Chlorine	0.2
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.2	400	Not Overloaded	Drying	Landfill

Changes Since Last Permit Issuance: None

2.1 Treatment Facility

Treatment units are:
1 – Barscreen
2 – Grit Chambers
4 – Imhoff Tanks
1 – Trickling Filter
1 – Secondary Clarifier
1 – Sand Filter Dosing Tank
4 – Sand Filters
2 – UV Units
4 – Drying Beds
1 – Emergency generator providing power to entire plant (low electrical load since no blowers)

2.2 Chemicals

Magnesium Hydroxide and Sodium Hydroxide for pH adjustment.
Delpac for phosphorus removal.

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from January 1, 2020 to December 31, 2020)

Parameter	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20
Flow (MGD) Average Monthly	0.092	0.079	0.074	0.072	0.089	0.079	0.077	0.117	0.086	0.072	0.066	0.073
Flow (MGD) Daily Maximum	0.322	0.150	0.121	0.084	0.173	0.182	0.159	0.323	0.170	0.150	0.101	0.175
pH (S.U.) Minimum	7.45	7.45	7.32	7.22	7.14	7.33	7.36	7.14	6.81	7.08	6.92	7.45
pH (S.U.) Maximum	8.49	8.58	8.37	8.15	8.14	8.16	8.13	8.25	8.2	8.42	8.04	8.17
DO (mg/L) Minimum	9.26	9.27	9.27	8.25	8.25	8.02	7.72	8.73	9.56	9.75	10.14	9.84
CBOD5 (lbs/day) Average Monthly	5.0	4.0	6.0	10	12	9	11.0	15	6.0	4.0	3.0	6.0
CBOD5 (lbs/day) Weekly Average	12	5.0	9.0	18	17	15	19	16	8.0	6.0	5.0	11
CBOD5 (mg/L) Average Monthly	8.3	6.1	10.1	16.5	19.7	14.4	16.7	15.7	9.9	7.2	6.2	11.4
CBOD5 (mg/L) Weekly Average	12	6.9	15.4	25.2	29.9	19.1	31.1	23.2	12.4	8.9	7.7	14.6
BOD5 (lbs/day) Raw Sewage Influent Ave. Monthly	112	138	128	139	88	90	115	126	126	155	88	95
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	140	156	206	235	102	118	138	261	154	268	120	123
BOD5 (mg/L) Raw Sewage Influent Ave. Monthly	178	216	189	238	138	141	179	130	193	279	162	185
TSS (lbs/day) Average Monthly	18	8.0	7.0	11	9.0	9	13	15	8.0	10	12	7.0
TSS (lbs/day) Raw Sewage Influent Ave. Monthly	57	65	75	154	25	54	83	125	119	123	75	66.0
TSS (lbs/day) Raw Sewage Influent Daily Maximum	94	126	201	363	29	107	130	177	189	246	123	139.0
TSS (lbs/day) Weekly Average	38	12.0	15.0	15	11.0	14	19	16	11.0	13	20	11.0

TSS (mg/L) Average Monthly	27	12.0	10.0	18	6.0	14	20	15	12.0	18	21	14
TSS (mg/L) Raw Sewage Influent Ave. Monthly	91	100	111	266	40	86	130	150	181	218	139	124.0
TSS (mg/L) Weekly Average	54	19.0	19.0	22	7.0	19	32	23	18	23	35	20
Fecal Coliform (CFU/100 ml) Geometric Mean	6	> 5	6	78	5	8	52	125	> 4	13	121	102
Fecal Coliform (CFU/100 ml) Instant. Maximum	25	138	26	4500	10	16	591	19500	14	234	320	945
Ammonia (lbs/day) Average Monthly	9	6.0	6.0	4.0	5.0	7.0	7.0	16.0	7	2.0	4	6.0
Ammonia (mg/L) Average Monthly	13.7	9.96	8.78	7.59	8.34	11.5	11.51	15.1	9.65	3.23	7.89	12.51
Total Phosphorus (mg/L) Ave. Monthly	1.05	0.77	0.60	1.6	1.6	2.3	2.0	1.8	1.7	2.5	2.8	2.0
Total Phosphorus (lbs) Total Monthly	21	15	20	29	32	47	39	56	33	42	45	65
Total Phosphorus (lbs) Total Annual				580								
Total Copper (lbs/day) Average Monthly	0.020	0.009	0.020	0.010	0.020	0.020	0.030	0.065	0.050	0.020	0.030	0.050
Total Copper (mg/L) Average Monthly	0.025	0.015	0.032	0.026	0.030	0.035	0.044	0.040	0.081	0.040	0.059	0.089

3.2 Effluent Violations for Outfall 001, from: February 1, 2020 to: December 31, 2020

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	12/31/20	Wkly Avg	54	mg/L	45	mg/L
Fecal Coliform	09/30/20	IMAX	4500	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	05/31/20	IMAX	19500	CFU/100 ml	1000	CFU/100 ml
Ammonia	06/30/20	Avg Mo	7.0	lbs/day	6.7	lbs/day
Ammonia	05/31/20	Avg Mo	16.0	lbs/day	6.7	lbs/day
Ammonia	07/31/20	Avg Mo	7.0	lbs/day	6.7	lbs/day

Ammonia	12/31/20	Avg Mo	13.7	mg/L	12	mg/L
Ammonia	07/31/20	Avg Mo	11.5	mg/L	4.0	mg/L
Ammonia	10/31/20	Avg Mo	8.78	mg/L	4.0	mg/L
Ammonia	08/31/20	Avg Mo	8.34	mg/L	4.0	mg/L
Ammonia	09/30/20	Avg Mo	7.59	mg/L	4.0	mg/L
Ammonia	06/30/20	Avg Mo	11.51	mg/L	4.0	mg/L
Ammonia	05/31/20	Avg Mo	15.1	mg/L	4.0	mg/L
Total Copper	05/31/20	Avg Mo	0.065	lbs/day	0.050	lbs/day
Total Copper	05/31/20	Avg Mo	0.040	mg/L	0.030	mg/L
Total Copper	10/31/20	Avg Mo	0.032	mg/L	0.030	mg/L
Total Copper	04/30/20	Avg Mo	0.081	mg/L	0.030	mg/L
Total Copper	06/30/20	Avg Mo	0.044	mg/L	0.030	mg/L
Total Copper	07/31/20	Avg Mo	0.035	mg/L	0.030	mg/L
Total Copper	03/31/20	Avg Mo	0.040	mg/L	0.030	mg/L
Total Copper	02/29/20	Avg Mo	0.059	mg/L	0.030	mg/L

DMR summary for the past 12 months of operation are shown in section 3.1 above. Numerous effluent violations occurred during the period as listed in section 3.2 above as well. The facility is paying civil penalties for the effluent violations under a Consent Order and Agreement(COA) signed on February 26, 2020. The COA also included condition to upgrade the facility to address these effluent violations.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .2
Latitude 40º 14' 22.06" **Longitude** -76º 29' 0.20"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

In general, the Clean Water Act(AWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits

4.1.1 Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: TRC is not applicable because the facility utilizes UV for disinfection.

4.2 Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:
Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34

4.3 Water Quality-Based Limitations

4.3.1 Receiving Stream

The receiving stream is Conewago Creek. According to 25 PA § 93.9o, this stream is protected for Trout Stocking (TSF) and Migratory Fishes (MF). It is located in Drainage List O and State Watershed 7-G. It has been assigned stream code 09217. According to the Department's *Integrated Water Quality Monitoring and Assessment Report*, this segment of the stream is not attaining its designated uses. A Total Maximum Daily Load (TMDL) was developed for Conewago Watershed for Total phosphorus and was approved by EPA in 2001. See further discussion in section 4.3.6 in the report for wasteload allocations to this discharge.

4.3.2 Stream flows

The Technical Support Document for Water Quality-Based Toxics Control (TSD) (EPA, 1991) and the Pennsylvania Water Quality Standards PA WQS) recommend the flow conditions to use in calculating water quality-based effluent limits (WQBELs) using steady-state modeling. The TSD and the PA WQS state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years ($Q_{7\text{-}10}$) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years ($Q_{1\text{-}10}$) for acute criteria. However, because the chronic criterion for ammonia is a 30-day average concentration not to be exceeded more than once every three years, EPA has used the $Q_{30\text{-}10}$ for the chronic ammonia criterion instead of the $Q_{7\text{-}10}$. The $Q_{30\text{-}10}$ is a biologically based design flow intended to ensure an excursion frequency of once every three years for a 30-day average flow rate. These flows were determined by correlating with the yield of USGS gage station No. 01571500 on Susquehanna River at Harrisburg. The $Q_{7\text{-}10}$ and drainage area at the gage is 2610ft^3/s and 24100mi^2 respectively. The resulting yields are as follows:

- $Q_{7\text{-}10}$ = (2610ft^3/s)/24100 mi^2 = 0.11 $ft^3/s/ mi^2$
- $Q_{30\text{-}10}$ / $Q_{7\text{-}10}$ = 1.17
- $Q_{1\text{-}10}$ / $Q_{7\text{-}10}$ = 0.95
- $Q_{7\text{-}10}$ (winter) / $Q_{7\text{-}10}$ =1.18

The drainage area at discharge taken from the previous permit= 3.0 mi^2

The $Q_{7\text{-}10}$ at discharge = 3.0 mi^2 x 0.110 $ft^3/s/mi^2$ = 0.33 ft^3/s.

4.3.3 NH_3N Calculations

NH_3N calculations will be based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH_3N criteria used in the attached computer model of the stream:

STP pH	=	7.14 (DMR median)
STP Temp	=	25°C (Default)
Stream pH	=	7.0 (Default)
Stream Temp	=	20°C (Default)
Background NH_3N	=	0 mg/l (Assumed)

4.3.4 $CBOD_5$ & NH_3-N

Water quality analysis was conducted utilizing WQM7.0 which is a steady state model that simplifies many natural processes into a reach-by-reach simulation. The model was run with the inclusion of Colebrook STP 7,900 feet downstream and the Lawn STP about 14,000 feet downstream due to their proximity to each other. The model predicts that there is some interaction between these discharges, however, DO recovers prior to Colebrook discharge. The attached result of the WQM 7.0 stream model (attachment B) indicates an average monthly limit(AML) of 25 mg/l for $CBOD_5$ is adequate to protect the water quality of the stream. This limit is consistent with the existing permit and the facility has been consistently achieving below this limitation. Therefore, a limit of 25mg/l average monthly limit(AML), 40mg/l weekly average and 50 mg/l IMAX is recommended for this permit cycle. Mass limit calculation follows the equation presented in section 4.2.

The attached result of the WQM 7.0 stream model (attachment B) also indicates that a summer limitation of mg/l 3 NH_3-N as a monthly average is necessary to protect the aquatic life from toxicity effects. This limit is slightly more stringent than the existing limit of 4.0 mg/l, however past DMR and inspection report indicate the facility is capable of meeting the new limitation. Therefore, a summer average monthly limit of 3.0 NH_3-N will be written in the permit. Limit for winter months is 3 times the summer limit. Mass limits were calculated using the equation presented in section 4.2.

4.3.5 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit. Since

the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement per DEP guidance.

4.3.6 Phosphorus

An average monthly limit of 2 mg/l was established in the previous permits prior to TMDL development. A TMDL for the Conewago Creek basin was completed and approved on March 2, 2001 and revised on June 27, 2006. The TMDL allocates Phosphorus annual load of 1,217 lbs/yr based on the design flow of 0.2 MGD and a concentration of 2 mg/l. This allocation was incorporated into the NPDES permit during previous permit cycles and will be continued in the permit. Due to anti-backsliding restrictions, the existing average monthly phosphorus limitation of 2mg/l will remain in the permit. The facility is complying with the TMDL load requirement.

4.3.7 Total Residual Chlorine:

The discharge does not have any reasonable potential to cause or contribute to a water quality standards violation for total residual chlorine since the permittee utilizes UV instead of chlorine for wastewater disinfection. Therefore, the proposed permit does not contain effluent limits for total residual chlorine. The permittee may use chlorine-based chemicals for cleaning and is required to optimize chlorine usage to prevent negative impacts on receiving stream. Daily UV intensity monitoring in mW/cm^2 will be required in the permit to ensure efficiency of the UV unit.

4.3.8 Total Suspended Solids(TSS):

There is no water quality criterion for TSS. A limit of 30 mg/l AML will be required based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1) and an AWL of 45mg/l per 40CFR 133.102(b)(2) and 25 PA § 92a.47(a)(2). Mass limits were calculated using the equation presented in section 4.2

4.3.9 Toxics

A reasonable potential (RP) was done for pollutants submitted with the application. All pollutants that were presented in the application sampling data and all pollutants in the existing permit were entered into the Toxics Management Spreadsheet(TMS) which combines the functionality DEP's previous Toxics Screening Analysis Spreadsheet and PENTOXSD Model to calculate WQBELs. The most stringent WQBELs recommended by the TMS are presented in attachment C. A limit of 0.03mg/l rounded was recommended for Total Copper. This limit is consistent with the limitation in the permit that became effective in 2015. The facility is unable to meet the limit. The facility tried a lot of pilot studies but none of the studies could meet the limit consistently. The permittee had an opportunity during the previous permit renewal to conduct TRE and site-specific study but did not select that option because the previous engineer misled them. The facility signed a Consent Order and Agreement (COA) on February 26, 2020 with DEP that included a corrective action plan to bring the plant into compliance. Under the terms of the COA, the facility is required to conduct alternative treatment analysis and upgrade the treatment system to comply with the limit. The COA included civil penalties for past permit violations and stipulations for any for future violations. The permit will include a condition for collecting site specific data and for conducting Toxic Reduction Evaluation (TRE) and a site-specific study to develop a site-specific criteria for copper using Biotic Ligand Model (BLM) if needed.

The recommended limitations follow the logic presented in DEPs SOP, to establish limits in the permit where the maximum reported concentration exceeds 50% of the WQBEL, or for non-conservative pollutants to establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL, or to establish monitoring requirements for conservative pollutants where the maximum reported concentration is between 10% - 50% of the WQBEL.

4.3.10 Chesapeake Bay Strategy

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay Foundation requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) will be required to monitor and report TN and TP during permit renewal and any facility in Phases 4 and 5 that undergoes expansion is subjected to

cap load right away. EPA published Chesapeake Bay TMDL in December of 2010. In order to address the TMDL, Pennsylvania developed Chesapeake Watershed Implementation Plan (WIP) Phase 1, Phase 2 and currently Phase 3 WIP and a supplement to the WIPs in addition to the original Chesapeake Bay Strategy.

As outlined in the current Phase 3 WIP and supplement to the WIP, re-issuing permits for significant dischargers would follow the same phased approach formulated in the original Bay strategy whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewal. This facility is, classified as a phase 4, and will be required to monitor and report Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen monthly throughout the next permit cycle. No monitoring is required for Total Phosphorus since there is a Total phosphorus limit in the permit.

4.3.11 Influent BOD and TSS Monitoring

The permit will include influent BOD5 and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements, per DEP policy.

4.3.12 Industrial Users

Mt. Gretna STP does not receive wastewater from any significant industrial users.

4.3.13 Pretreatment Requirements

The design annual average flow of the treatment plant is 0.2MGD and the facility receives no flow from significant Industrial users. EPA does not require development of pretreatment program for facilities with design flow less than 5MGD. However, the permit contains standard conditions requiring the permittee to monitor and control industrial users if applicable

5.0 Other Requirements

5.1 The permit contains the following special conditions:

Stormwater Prohibition, Approval Contingencies, Solids Management, Restriction on receipt of hauled in waste under certain conditions and condition for site specific data collection for toxics.

5.2 Stormwater

There is no stormwater outfall associated with this facility.

5.3 Anti-backsliding

Not applicable to this permit. In accordance with 40 CFR 122.44(l)(1) and (2), this draft permit does not propose to relax any existing effluent limitation.

5.4 Antidegradation (93.4):

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

5.5 Class A Wild Trout Fisheries:

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

5.6 303d listed stream

The discharge is located on a 303d listed stream segment. A TMDL for the Conewago Watershed basin was completed and approved on March 2, 2001 and revised on June 27, 2006 as discussed in section 4.3.6 in the report. The facility is complying with the wasteload allocation, no further action is warranted at this time.

5.7 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

5.8 Effluent Monitoring Frequency

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

6.0 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	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5	42	67	XXX	25	40	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	50	75	XXX	30	45	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
UV Intensity (mW/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	15	XXX	XXX	9.0	XXX	18	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	5.0	XXX	XXX	3.0	XXX	6	1/week	24-Hr Composite

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

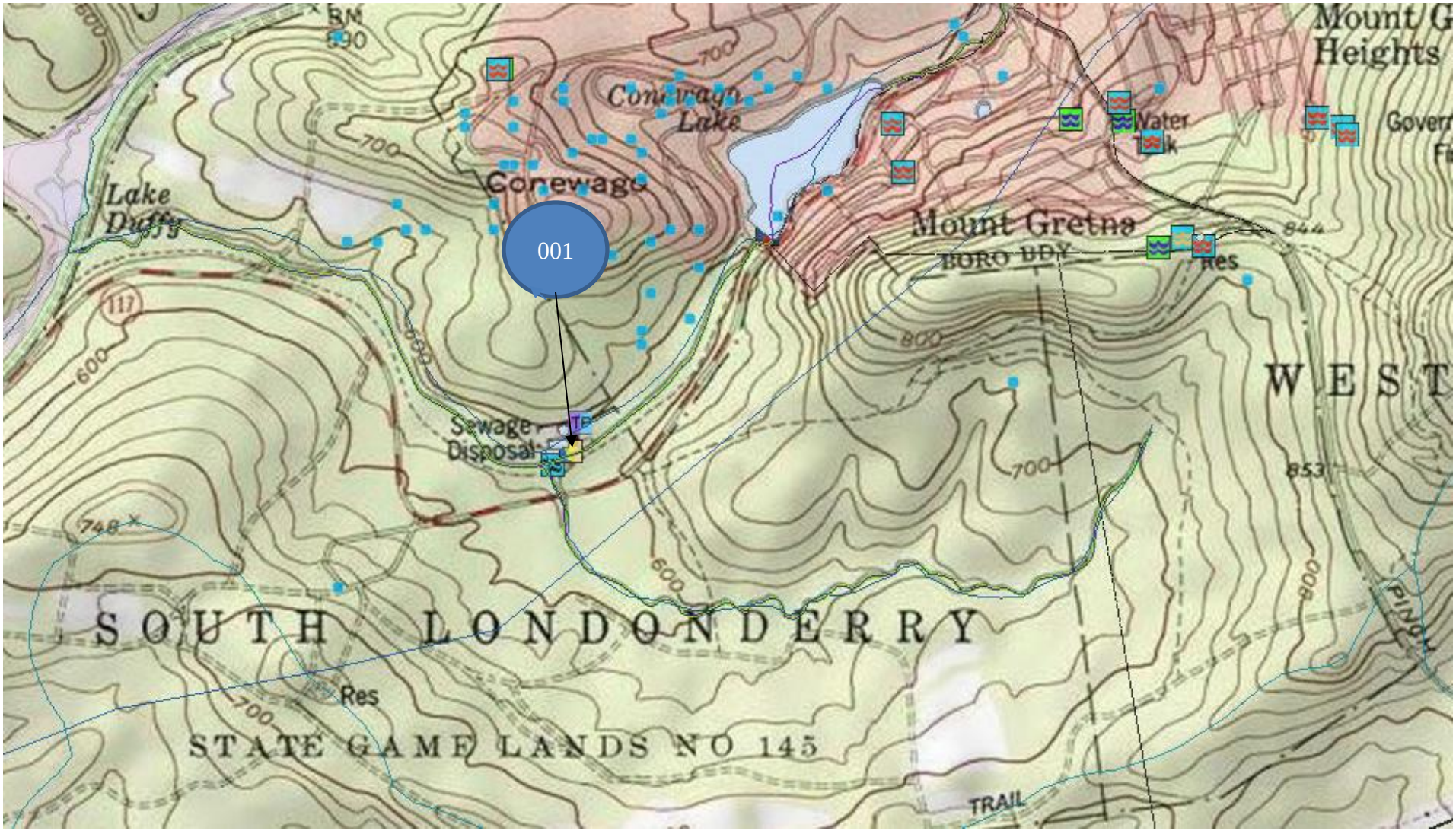
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
TKN	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Phosphorus (lbs)	XXX	1,217 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Copper	0.050	XXX	XXX	0.030	XXX	0.075	2/month	24-Hr Composite

Compliance Sampling Location: At Outfall 001

7.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☒	PENTOXSD for Windows Model (see Attachment **C**)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Toxics Screening Analysis Spreadsheet (see Attachment **D**)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☒	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☒	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing effluent limitation for individual sewage permit
☐	Other:

8. Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07G	9217	CONEWAGO 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)
19.750	Mt Gretna	PA0020591	0.200	CBOD5	25		
				NH3-N	3.03	6.06	
				Dissolved Oxygen			5

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)
18.250	Colebrook	PA0081311	0.044	CBOD5	25		
				NH3-N	15.94	31.88	
				Dissolved Oxygen			5

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)
15.640	Lawn	PA0081329	0.023	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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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
07G	9217	CONEWAGO CREEK	**19.750**	590.00	3.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Mt Gretna	PA0020591	0.2000	0.2000	0.2000	0.000	25.00	7.14

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0020591

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
07G	9217	CONEWAGO CREEK	**18.250**	510.00	4.80	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Colebrook	PA0081311	0.0440	0.0440	0.0440	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0020591

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
07G	9217	CONEWAGO CREEK	**15.640**	455.00	9.50	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Lawn	PA0081329	0.0225	0.0225	0.0225	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0020591

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
07G	9217	CONEWAGO CREEK	**14.640**	440.00	9.60	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		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	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0020591

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07G	9217	CONEWAGO 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
19.750	Mt Gretna	7.72	15.55	7.72	15.55	0	0
18.250	Colebrook	9.26	50	8.03	50	0	0
15.640	Lawn	9.55	50	8.54	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
19.750	Mt Gretna	1.58	3.57	1.58	3.03	2	15
18.250	Colebrook	1.85	18.78	1.64	15.94	2	15
15.640	Lawn	1.9	25	1.73	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)		
19.75	Mt Gretna	25	25	3.03	3.03	5	5	0	0
18.25	Colebrook	25	25	15.94	15.94	5	5	0	0
15.64	Lawn	25	25	25	25	5	5	0	0

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07G	9217	CONEWAGO CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
19.750	0.200	22.419	7.062
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
10.043	0.468	21.476	0.136
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
13.13	1.298	1.47	0.843
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.674	24.653	Owens	5
Reach Travel Time (days)			
0.673			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.067	11.91	1.39	7.30
0.135	10.80	1.31	7.52
0.202	9.80	1.24	7.64
0.269	8.88	1.17	7.74
0.337	8.06	1.10	7.83
0.404	7.31	1.04	7.89
0.471	6.63	0.99	7.89
0.539	6.01	0.93	7.89
0.606	5.45	0.88	7.89
0.673	4.95	0.83	7.89

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
18.250	0.244	22.084	7.043
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
13.120	0.500	26.257	0.138
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.81	0.790	1.79	0.822
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.747	21.845	Owens	5
Reach Travel Time (days)			
1.155			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.115	5.25	1.62	7.93
0.231	4.75	1.48	7.93
0.346	4.30	1.34	7.93
0.462	3.89	1.22	7.93
0.577	3.52	1.11	7.93
0.693	3.18	1.01	7.93
0.808	2.88	0.92	7.93
0.924	2.60	0.84	7.93
1.039	2.35	0.76	7.93
1.155	2.13	0.69	7.93

Permit No. PA0020591

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07G	9217	CONEWAGO CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
15.640	0.266	21.415	7.026
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
17.670	0.547	32.319	0.151
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.63	0.346	1.03	0.781
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.973	4.211	Tsivoglou	5
Reach Travel Time (days)			
0.405			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.041	2.59	0.99	7.93
0.081	2.55	0.96	7.91
0.122	2.51	0.93	7.89
0.162	2.48	0.90	7.88
0.203	2.44	0.88	7.87
0.243	2.40	0.85	7.87
0.284	2.37	0.82	7.88
0.324	2.33	0.80	7.88
0.365	2.30	0.77	7.90
0.405	2.26	0.75	7.91

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WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.95	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.18	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

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WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07G	9217	CONEWAGO CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
19.750	0.33	0.00	0.33	.3094	0.01010	.468	10.04	21.48	0.14	0.673	22.42	7.06
18.250	0.53	0.00	0.53	.3775	0.00399	.5	13.12	26.26	0.14	1.155	22.08	7.04
15.640	1.04	0.00	1.04	.4123	0.00284	.547	17.67	32.32	0.15	0.405	21.41	7.03
Q1-10 Flow												
19.750	0.31	0.00	0.31	.3094	0.01010	NA	NA	NA	0.13	0.683	22.48	7.06
18.250	0.50	0.00	0.50	.3775	0.00399	NA	NA	NA	0.14	1.174	22.15	7.04
15.640	0.99	0.00	0.99	.4123	0.00284	NA	NA	NA	0.15	0.414	21.47	7.03
Q30-10 Flow												
19.750	0.39	0.00	0.39	.3094	0.01010	NA	NA	NA	0.14	0.641	22.21	7.06
18.250	0.62	0.00	0.62	.3775	0.00399	NA	NA	NA	0.15	1.092	21.89	7.04
15.640	1.23	0.00	1.23	.4123	0.00284	NA	NA	NA	0.16	0.379	21.25	7.02

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Permit No. PA0020591

C. Toxic Management System

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.2, February 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Mt Gretna Borough** NPDES Permit No.: **PA0020591** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Sewage**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.2	201	7.14						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L		71									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L											
	Total Manganese	µg/L											
	Total Mercury	µg/L											
	Total Nickel	µg/L											

Permit No. PA0020591

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.2, February 2021

Stream / Surface Water Information

Mt Gretna Borough, NPDES Permit No. PA0020591, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Conewago Creek

No. Reaches to Model: 1

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	009217	19.75	590	3			Yes
End of Reach 1	009217	18.25	510	4.8			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	19.75	0.11										100	7		
End of Reach 1	18.25	0.11													

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	19.75														
End of Reach 1	18.25														

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Model Results

Mt Gretna Borough, NPDES Permit No. PA0020591, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ ***AFC*** CCT (min): 1.146 PMF: 1 Analysis Hardness (mg/l): 148.87 Analysis pH: 7.06

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	19.552	20.4	42.1	Chem Translator of 0.96 applied

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	12.583	13.1	27.1	Chem Translator of 0.96 applied

☑ ***THH*** CCT (min): 1.146 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 1.225 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

Pollutants	Mass Limits AML (lbs/day)	Mass Limits MDL (lbs/day)	Concentration Limits AML	Concentration Limits MDL	Concentration Limits IMAX	Concentration Limits Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	0.045	0.07	27.0	42.1	67.4	µg/L	27.0	AFC	Discharge Conc ≥ 50% WQBEL (RP)