pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0026280**
Facility Type	**Municipal**	APS ID	**276233**
Major / Minor	**Major**	Authorization ID	**1404605**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Lewistown Borough Mifflin County**	Facility Name	**Lewistown STP**
Applicant Address	2 E 3rd Street	Facility Address	293 Washington Avenue
	Lewistown, PA 17044-1701		Lewistown, PA 17044
Applicant Contact	Kim Zimmerman	Facility Contact	Don Dippery
Applicant Phone	(717) 994-5360	Facility Phone	(717) 242-2823
Client ID	132967	Site ID	252086
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	Lewistown Borough
Connection Status	Dept. Imposed Connection Prohibitions	County	Mifflin
Date Application Received	July 28, 2022	EPA Waived?	No
Date Application Accepted	August 10, 2022	If No, Reason	Major Facility, Significant CB Discharge

Purpose of Application: NPDES Permit 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 domestic wastewater from Borough of Lewistown STP. Borough of Lewistown owns, operates, and maintains the wastewater treatment plant. The facility is located in Lewistown Borough, Mifflin County and services Lewistown Borough (60%), Derry Township (39%) and Granville Township (1%). There is no combined sewers in the collection system and no bypasses or overflows are approved in the collection system. The treatment plant has annual average design capacity of 2.818 MGD and hydraulic design capacity of 3.945 MGD and organic design capacity of 7,529 lbs/day-BOD5. The discharge goes to Juniata River which is classified for Warm Water Fishes (WWF) and Migratory Fishes (MF). The existing NPDES permit was issued on January 05, 2018 with an expiration date of January 31, 2023. The applicant submitted a timely permit renewal application to the Department and is currently operating under the terms and conditions in the existing permit pending Department action on the renewal application. A topographic map showing the discharge location is presented in attachment A .and Process flow diagram for the facility is presented in attachment E

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

Anaerobically digested sludge is dewatered and hauled to Wayne Township Landfill located in Wayne Township, Clinton County

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	June 1, 2023
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	June 5, 2023
X		*Maria D. Bebenek* Maria D. Bebenek, P.E., / Program Manager	June 5, 2023

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 E. Coli monitoring has been added.

1.4 Existing Permit and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	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 Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	585	940	XXX	25.0	40.0	50	2/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Suspended Solids	705	1055	XXX	30.0	45.0	60	2/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Dissolved Solids	Report	Report	XXX	Report	Report	XXX	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/week	Grab
Ultraviolet light intensity (mW/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded

Summary of Review

1.4.1 Chesapeake Bay Limitation and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Net Total Nitrogen	Report	51,964	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	6,942	XXX	XXX	XXX	XXX	1/month	Calculation

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	2.818
Latitude	40º 35' 9.73"	Longitude	-77º 34'13.56'
Quad Name		Quad Code	
Wastewater Description:	Effluent		
Receiving Waters	Juniata River (WWF)	Stream Code	11414
NHD Com ID	66205371	RMI	46.01
Drainage Area	2,710.01 mi^2	Yield (cfs/mi^2)	0.204
Q_{7-10} Flow (cfs)	552.84	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)	419	Slope (ft/ft)	
Watershed No.	12-A	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

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

Nearest Downstream Public Water Supply Intake	Mifflintown Water System Juniata County		
PWS Waters	RMI	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	8.75

Changes Since Last Permit Issuance: None

Public Water Supply Intake:

The nearest downstream public water supply is in Mifflintown Borough Municipal Authority Water System Juniata County on Juniata River. Due to the distance, dilution, and effluent limits the discharge is not expected to impact the water supply

2.0 Treatment Facility Summary

Treatment Facility Name: Lewistown STP

WQM Permit No.	Issuance Date	
4473404 10-1	February 25, 2011	Plant upgrade to meet CB requirements
4473404 05-1	August 29, 2005	Upgrades to anaerobic sludge digestion system
4473404 98-1	March 29, 1999	Hydraulic re-rating

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Activated Sludge	Ultraviolet	2.818

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
3.945	7529	Existing Hydraulic Overload	Combination	Landfill

Changes Since Last Permit Issuance: None

2.1 Treatment System.

Raw influent sewage is pumped by two Archimedes screw pumps to the headworks of the plant where rags, grease and grit are moved via a rotating fine screening unit with bar screen bypass, one grit/ grease removal system. Screened influent then flows into three primary clarifiers prior to Two parallel 4-stage bardenpho bioreactors with 6 partitioned tanks to provide biological nutrient removal (BNR) process (using anoxic-oxic-anoxic -oxic tanks with nitrate recycle). Effluent from the BNR process flow to three final clarifiers for clarification and then flows to the Ultraviolet system for disinfection. Disinfected effluent flows to re-aeration tanks prior to discharge to Outfall 001 on Juniata River. Alum, Polymer and Magnesium Hydroxide are chemicals typically used at the plant. Sodium Hypochlorite is available to control filamentous bacteria if needed. Sludge digestion is provided utilizing three anaerobic digesters and dewatered by two centrifuges prior to hauling offsite to land fill. Once a year sludge is sent to the four sludge drying beds. Grit and screenings are collected in roll-off containers. Removed grease is collected in grease container and dumped in the roll-off containers and hauled off to landfill.

3. 0 Compliance History

3.1 DMR Data for Outfall 001 (from April 1, 2022 to March 31, 2023)

Parameter	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22
Flow (MGD) Average Monthly	1.50	1.23	2.10	1.98	1.44	1.13	1.50	1.08	1.03	1.33	2.24	1.85
Flow (MGD) Daily Maximum	3.82	1.97	6.66	6.50	6.3	2.58	4.89	3.75	0.88	3.20	10.36	4.64
pH (S.U.) Daily Minimum	7.68	7.75	7.66	7.6	7.63	7.88	7.7	7.95	7.86	7.72	7.56	7.41
pH (S.U.) Daily Maximum	8.13	8.13	8.08	8.2	8.2	8.34	8.32	8.27	8.25	8.22	8.17	8.08
DO (mg/L) Minimum	9.8	9.8	10.0	9.6	8.5	8.6	7.8	8.0	7.8	8.2	8.3	7.9
CBOD5 (lbs/day) Average Monthly	29	28	53	40	25	24	20	17	18	25	27	42
CBOD5 (lbs/day) Weekly Average	37	38	119	87	38	25	34	24	20	47	39	55
CBOD5 (mg/L) Average Monthly	3.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0	2.0	2.0	2.0	3.0
CBOD5 (mg/L) Weekly Average	3.0	4.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	29	2885	3699	4670	2841	3058	2727	2373	2489	3212	2946	3095
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	55	4829	6942	17707	4320	6400	7532	3794	3809	6498	4629	6343
BOD5 (mg/L) Raw Sewage Influent Average Monthly	3	266	194	262	288	324	260	285	297	278	230	205
TSS (lbs/day) Average Monthly	28	< 33	151	< 46	23	29	< 47	< 13	12	24	49	59
TSS (lbs/day) Raw Sewage Influent Average Monthly	29	5571	8128	6171	4146	5423	8021	5972	5371	4649	4449	4530
TSS (lbs/day) Raw Sewage Influent Daily Maximum	73	17174	63920	26982	9944	14885	33682	22766	16621	16090	15914	8384

TSS (lbs/day) Weekly Average	55	71	596	78	32	52	112	< 20	19	48	131	80
TSS (mg/L) Average Monthly	3.0	< 3.0	5.0	< 3.0	2.0	3.0	< 2.0	< 1.0	1.0	< 2.0	3.0	4.0
TSS (mg/L) Raw Sewage Influent Average Monthly	3	477	341	402	431	566	514	626	616	381	354	308
TSS (mg/L) Weekly Average	4.0	6.0	15.0	5.0	3.0	4.0	4.0	2.0	2.0	2.0	4.0	5.0
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 2	< 1	< 1	< 1	< 3	10	< 4	< 2	3	< 6	2.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	2	7.5	3.1	1	< 1	21.6	50	11	8.5	6.3	58	14.6
UV Intensity (mW/cm²) Minimum	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5
Nitrate-Nitrite (mg/L) Average Monthly	7.69	7.01	8.32	7.31	7.08	7.58	6.73	8.12	8.1	8.3	8.97	6.5
Nitrate-Nitrite (lbs) Total Monthly	2621.9	1925.3	4290.7	2729.7	2120.1	1932.5	2470.1	2192.2	2174.5	2479.9	3888.5	2491.7
Total Nitrogen (mg/L) Average Monthly	< 8.22	< 7.68	< 8.83	< 7.86	< 8.84	< 8.14	< 7.3	< 8.62	< 8.6	< 9.7	< 9.72	< 7.0
Total Nitrogen (lbs) Effluent Net Total Monthly	< 2801.4	< 2109.4	< 4548	< 2922.3	< 2564.4	< 2069.9	< 2687.2	< 2330.5	< 2308.9	< 2874.1	< 4180.7	< 2683.2
Total Nitrogen (lbs) Total Monthly	< 2801.4	< 2109.4	< 4548	< 2922.3	< 2564.4	< 2069.9	< 2687.2	< 2330.5	< 2308.9	< 2874.1	< 4180.7	< 2683.2
Total Nitrogen (lbs) Effluent Net Total Annual							< 32042					
Total Nitrogen (lbs) Total Annual							< 32042					
Ammonia (mg/L) Average Monthly	< 0.11	< 0.11	< 0.1	< 0.12	< 0.11	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.1	< 0.1
Ammonia (lbs) Total Monthly	< 37.7	< 28.6	< 50.3	< 43	< 35.1	< 25.7	< 38.6	< 27.7	< 26.9	< 49.6	< 44.3	< 38.3
Ammonia (lbs) Total Annual							< 428					
TKN (mg/L) Average Monthly	< 0.54	< 0.67	< 0.51	< 0.54	< 1.76	< 0.6	< 0.57	< 0.5	< 0.5	< 1.4	< 0.75	< 0.5

TKN (lbs) Total Monthly	< 179.5	< 184.1	< 257.3	< 192.7	< 444.3	< 137.5	< 217	< 138.3	< 134.4	< 394.1	< 292.3	< 191.6
Total Phosphorus (mg/L) Average Monthly	0.76	0.84	0.37	0.76	1.5	1.8	1.0	0.51	1.06	1.71	0.53	0.38
Total Phosphorus (lbs) Effluent Net Total Monthly	244.2	229	189.2	252.5	419.4	454.9	334.1	139.5	262.3	504.1	214	144.4
Total Phosphorus (lbs) Total Monthly	244.2	229	189.2	252.5	419.4	454.9	334.1	139.5	262.3	504.1	214	144.4
Total Phosphorus (lbs) Effluent Net Total Annual							2420					
Total Phosphorus (lbs) Total Annual							2420					

3.2 Summary of Discharge Monitoring Reports (DMRs):

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.1 indicates permit limits have been met consistently. No effluent violations were noted on DMRs for the period reviewed.

3.3 Summary of Inspections:

The facility has been inspected a couple times during last permit cycle. No effluent violations were found during plant inspections. The facility is operated and maintained well. Several SSO discharges were reported within the collection system and the facility is under a corrective action plan to address them. The Department issued a Notice of Violation for discharges of unauthorized, unpermitted sewage via connections of residential sanitary sewer laterals to stormwater systems.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 2.818
Latitude 40º 35' 9.73" **Longitude** -77º 34' 13.56"
Wastewater Description: Effluent

4.1 Basis for Effluent Limitations

In general, the Clean Water Act (CWA) 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.

4.2 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 limitation is not applicable, the facility uses UV for disinfection.

4.3 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

4.3.1 WQM 7.0 Stream Model

WQM 7.0 is a water quality model DEP utilizes to establish appropriate effluent limits for $CBOD_5$, NH_3-N and DO in permits. The model simulates mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits.

4.4 Water Quality-Based Limitations

4.4.1 Receiving Stream

The receiving stream is the Juniata River. According to 25 PA § 93.9n, this stream is protected for Warm Water Fishes (WWF) and Migratory Fishes (MF). It is located in Drainage List n and State Watershed 12-A. It has been assigned stream code 11414. According to eMapPA, this segment of Juniata River is attaining its designated uses.

4.4.2 Streamflow:

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No 01563500 on Juniata River at Mapleton Depot. The $Q_{7\text{-}10}$, $Q_{1\text{-}10}$ and $Q_{30\text{-}10}$ flows at the gage are 415 ft^3/s, 384 ft^3/s and 440ft^3/s respectively. The drainage area at the gage is 2030 mi^2. The resulting yields are as follows:

- $Q_{7\text{-}10}$ = (415ft^3/s)/2030 mi^2 = 0.204$ft^3/s/ mi^2$
- $Q_{30\text{-}10}$ / $Q_{7\text{-}10}$ = 1.06
- $Q_{1\text{-}10}$ / $Q_{7\text{-}10}$ = 0.925
-

The drainage area at discharge taken from the previous protection report = 2710.01 mi^2

The $Q_{7\text{-}10}$ at discharge = 2710.01 mi^2 x 0.204 $ft^3/s/mi^2$ = 552.842 ft^3/s.

4.4.3 NH_3N Calculations

NH_3N calculations are 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 WQM 7.0 model:

Discharge pH	= 7.8 (July -Sept DMR median)
Discharge Temperature	= 25 ^{o} C (Default)
Stream pH	= 7.6 (WQN#215, median July-Sep)
Stream Temp	= 22^0 C (WQN#215, median July-Sep)
Background Hardness	= 114 (WQN#215, median July-Sep
Background NH_3-N	= 0.0 (default)

4.4.4 $CBOD_5$

Due to the proximity of Grantville Township and Twin Borough discharges, they were modelled together with Borough of Lewistown's discharge The attached results of the WQM 7.0 stream model (attachment B) indicates that, for the Borough of Lewistown's discharge of 2.818MGD, an average monthly limit (AML) of 25mg/l for $CBOD_5$ is required to protect the water quality of the stream. This limit is consistent with the existing permit and the STP has been consistently achieving below this limitation. Therefore, a limit of 25mg/l AML, 40mg/l average weekly limit (AWL) and 50 mg/l IMAX is still recommended for this permit cycle. Mass limits are calculated as follows:

Mass based AML (lb/day) = 25 (mg/L) × 2.818(mgd) × 8.34 = 585 (rounded)

Mass based AWL (lb/day) = 40(mg/L) × 2.818(mgd) × 8.34 = 940

4.4.5 NH_3-N

The attached results of the WQM 7.0 stream model (attachment B) also indicates that no limitation on NH_3 as a monthly average is necessary to protect the aquatic life from toxicity effects. However, ammonia monitoring required in the existing permit will continue to ensure treatment efficiency.

4.4.6 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 ran using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement.

4.4.7 Total Suspended Solids (TSS):

There is no water quality criteria for TSS. The existing limit of 30 mg/l AML 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) will remain in the permit. Mass limit are calculated as follows:

Mass based AML (lb/day) = 30 (mg/L) × 2.818(mgd) × 8.34 = 705

Mass based AWL (lb/day) = 45(mg/L) × 2.818(mgd) × 8.34 = 1055 (rounded)

4.4.8 Total Residual Chlorine (TRC) and Ultraviolet (UV)

The discharge does not have a reasonable potential to cause or contribute to a water quality standards violation for TRC since the permittee no longer utilizes chlorine for disinfection and uses UV for disinfection. Therefore, TRC limitation is not necessary. 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 is required in the permit to ensure efficiency of the UV unit.

4.4.9 Toxics

A reasonable potential (RP) analysis was done for pollutants sampled in support of the permit renewal application. All pollutants that were presented in the application sampling data were entered into DEP's Toxics Management Spreadsheet (TMS) to calculate WQBELs. The results of the TMS are presented in attachment C. The results of the TMS indicate discharge levels for all pollutants are well below DEP's target quantitation limits and the calculated WQBELs, therefore, no monitoring or limitation was recommended.

4.4.10 Fecal Coliform and E. Coli

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. In March of 2021, EPA approved DEP's Triennial Review of Water Quality Standards, which included a new swimming season criterion for E.coli. As a result, DEP is including monitoring requirements for E. Coli in new and renewed sewage permits above 2000gpd. Monitoring frequency is based on annual average flow as follows: 1/month for design flows >= 1 MGD, 1/quarter for design flows >= 0.05 and < 1 MGD and 1/year for design flows of 0.002 – 0.05 MGD. Your discharge of 2.818 MGD requires 1/month monitoring as included in the permit.

4.4.11 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay 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 DEP based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers received 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) are 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 to be implemented with the original Chesapeake Bay Strategy. Phase 3 WIP and the supplement to the WIP proposed no changes to the existing strategy for significant dischargers whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewals. This facility falls in phase 1 of the strategy and is required to meet a total maximum annual Total Nitrogen Cap load of 51,470lbs/year based on a flow of 2.818 MGD and 6 mg/l Total Nitrogen and a TP cap load of 6,863lbs/year based on a flow of 2.818 MGD and 0.8 mg/l Total Phosphorus.

East Derry Elementary School's 0.0065MGD treatment plant was decommissioned, and the flow connected to the Lewistown Borough STP for treatment. East Derry Elementary School's cap load was transferred to Lewistown Borough in accordance with DEP's Watershed Implementation Plan wastewater supplement during the 2018 permit renewal. The

loadings were calculated based on the design flow of 0.0065MGD with a default TN of 25 mg/l and TP of 4mg/l. A TN cap load of 494.66lbs/year (0.0065 x 25 x 8.34 x365) and a TP cap load of 79.15lbs/year (0.0065 x4x8.34 x365) has been added to the original cap loads of Lewistown Borough. The combined TN and TP cap loads for Lewistown Borough are respectively 51,964 lbs/year and 6,942lbs/year. The facility is in compliance with the cap load requirements.

The Department also approved a total nitrogen offset of 8,812.5 lbs of nitrogen based on 352.5EDUs at 25lbs/EDU for Lewistown Borough. The offsets are for 352.5 EDUs on-lot disposal systems that have been connected to the sewer conveyance system. These on-lot systems were put into use prior to January 1, 2003 and retired after January 1, 2003. The approved offsets are only for compliance purposes and are not available for trading or selling. The permit will show the base cap load on the effluent page and show the offsets as a foot note as follows: "The permittee is authorized to use 8,812.5lbs/year as Total Nitrogen (TN) offsets toward compliance with the Annual Net TN mass load limitations (Cap Loads), in accordance with Part C of this permit. These Offsets may be applied throughout the Compliance Year or during the Truing Period. The application of offsets must be reported to DEP as described in Part C. The Offsets are authorized for the following pollutant load reduction activities: Connection of equivalent of 352.5 on-lot sewage disposal systems to the public sewer system after January 1, 2003, in which 25 lbs/year of TN offsets are granted per connection". A complete list of addresses of the dwellings that were served by the retired on-lot systems that are now connected to the sewage conveyance system is on file.

4.4.12 Influent BOD and TSS Monitoring

The permit 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.

4.4.13 Stormwater

The application identifies outfalls 002 (40°35'7"/76°34'10"), 003 (40°35'9"/76°34'11") and 004 (40°35'10.3"/76°34'1.8") as receiving stormwater runoff from the treatment plant site. To comply with stormwater requirements of 40 CFR 122.26(b)(14)(ix), part C of the permit will require the permittee to comply with the standard requirements applicable to stormwater outfalls for 002 and 003 with BMP conditions

4.4.14 Industrial Users

Lewistown Borough wastewater treatment plant does not receive wastewater from any significant industrial users.

4.4.15 Pretreatment Requirements

The design annual average flow of the treatment plant is 2.818 MGD 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 Anti-backsliding

Not applicable

5.2 Anti-Degradation (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 per Chapter 93.4a(b) of the Department's rules and regulations. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

5.3 Class A Wild Trout Fisheries

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

5.4 303d Listed Streams

The discharge is not located on a 303d listed stream segment.

5.5 Special Permit Conditions

The permit contains the following special conditions:

- Stormwater Prohibition, Approval Contingencies, Solids Management, Restrictions on receipt of hauled in waste under certain conditions, High flow management plan requirement, storm water management requirement and Whole Effluent Toxicity Testing requirement.

5.6 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).

5.7 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 Whole Effluent Toxicity (WET)

6.1 For Outfall 001, ☐ Acute ☒ Chronic WET Testing was completed:

☒ For the permit renewal application (4 tests).
☐ Quarterly throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☐ Other:

The dilution series used for the tests was: 100%, 60%, 30%, 3%, and 1%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 3%.

6.2 Summary of Four Most Recent Test Results

TST Data Analysis

(NOTE – In lieu of recording information below, the application manager may attach the DEP WET Analysis Spreadsheet).

See attachment D for DEP WET Analysis Spreadsheet

6.3 Evaluation of Test Type, IWC and Dilution Series for Renewed Permit

Acute Partial Mix Factor (PMFa): **0.027** Chronic Partial Mix Factor (PMFc): **0.185**

6.3.1. Determine IWC – Acute (IWCa):

(Q_d x 1.547) / ((Q_{7-10} x PMFa) + (Q_d x 1.547))

[(2.818 MGD x 1.547) / ((552.84 cfs x 0.027) + (2.818 MGD x 1.547))] x 100 = **23%**

Is IWCa < 1%? ☐ **YES** ☒ **NO (YES - Acute Tests Required OR NO - Chronic Tests Required)**

If the discharge is to the tidal portion of the Delaware River, indicate how the type of test was determined:

N/A

Type of Test for Permit Renewal: **Chronic**

6.3.2a. Determine Target IWCa (If Acute Tests Required)

TIWCa = IWCa / 0.3 = **N/A%**

6.3.2b. Determine Target IWCc (If Chronic Tests Required)

(Q_d x 1.547) / (Q_{7-10} x PMFc) + (Q_d x 1.547)

[(2.818 MGD x 1.547) / ((552.84 cfs x .185) + (2.818MGD x 1.547))] x 100 = **4%**

6.3.3. Determine Dilution Series

(NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).

Dilution Series = 100%, 60%, 30%, 4%, and 2%.

6.4 WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

Will WET limits be established in the permit? ☐ YES ☒ NO

If WET limits will be established, identify the species and the limit values for the permit (TU).

N/A

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:

N/A

No WETT limit or monitoring is deemed necessary. The standard Part C condition for WET testing in the existing permit will be continued for the current permit renewal with the updated dilution series.

7.0 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	585	940	XXX	25.0	40.0	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	705	1055	XXX	30.0	45.0	60	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
UV Intensity (mW/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

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		
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: At Outfall 001

7.1 Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

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

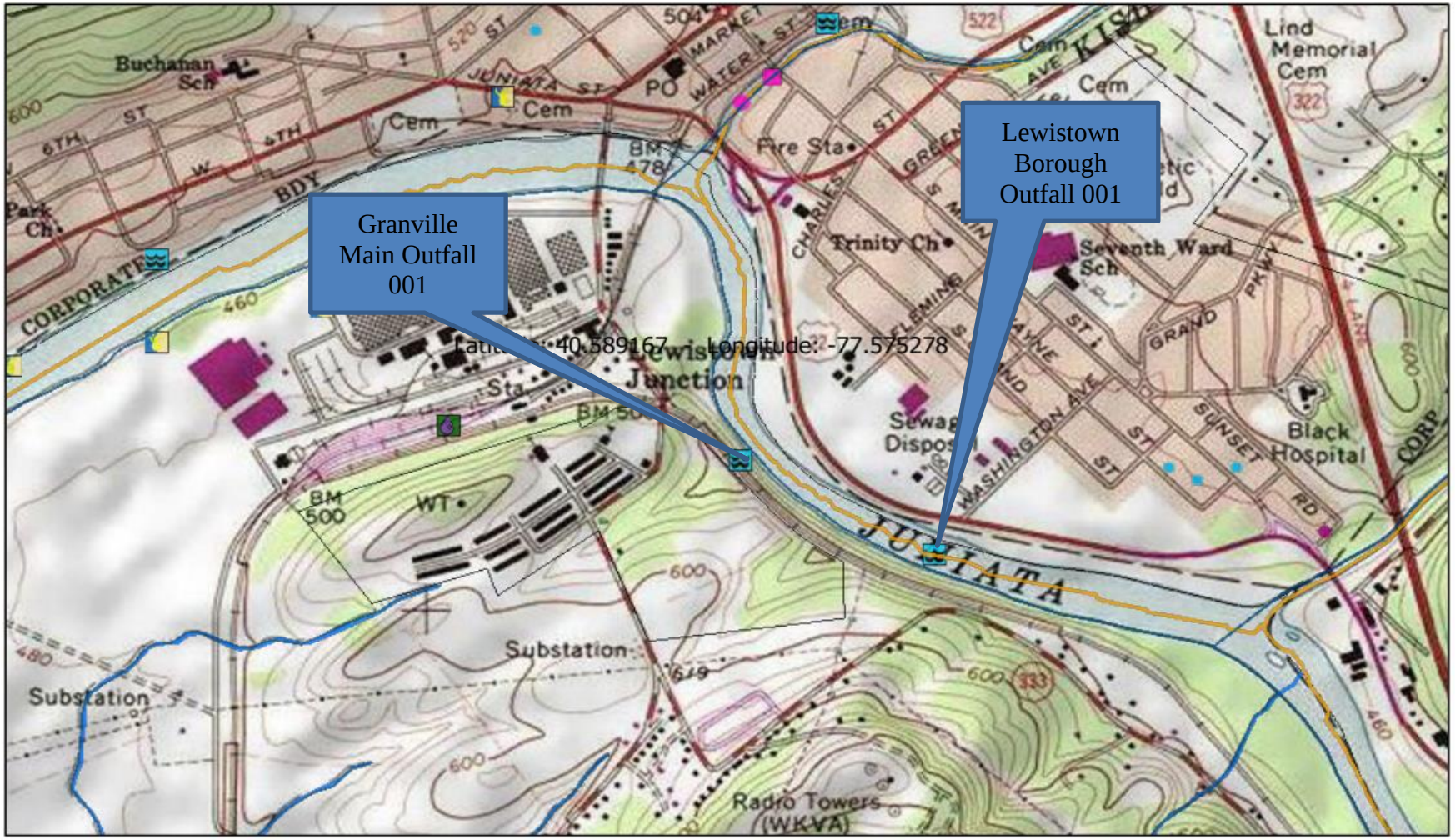
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen (lbs) Effluent Net	XXX	51,964 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs) Effluent Net	XXX	6,942 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: At Outfall 001

8.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☒	Toxics Management Spreadsheet (see Attachment **C**)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 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 limits for individual sewage permit, WETT
☒	Other: WIP 3 and Supplement

Attachment

A. Topographical Map



B. WQM Model Results.

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
46.300	Granville STP	PA0032051	0.500	CBOD5	25		
				NH3-N	25	50	
				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)
46.010	Lewistown STP	PA0026280	2.818	CBOD5	25		
				NH3-N	25	50	
				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)
33.940	Twin Borough	PA0023264	0.900	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
12B	11414	JUNIATA RIVER	**46.300**	448.00	2710.00	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	0.204	0.00	0.00	0.000	0.000	0.0	0.00	0.00	22.00	7.60	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
Granville STP	PA0032051	0.5000	0.5000	0.5000	0.000	25.00	6.80

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

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
12B	11414	JUNIATA RIVER	**46.010**	419.00	2710.01	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	0.204	0.00	0.00	0.000	0.000	0.0	0.00	0.00	22.00	7.60	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
Lewistown STP	PA0026280	2.8180	2.8180	2.8180	0.000	25.00	7.80

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

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
12B	11414	JUNIATA RIVER	**33.940**	412.00	2840.00	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	0.159	0.00	0.00	0.000	0.000	0.0	0.00	0.00	24.00	8.30	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
Twin Borough	PA0023264	0.9000	0.9000	0.9000	0.000	25.00	7.50

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

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
12B	11414	JUNIATA RIVER	33.500	411.00	2840.10	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	0.159	0.00	113.00	0.000	0.000	0.0	0.00	0.00	24.00	8.30	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
Empire Kosher P	PA0007552	2.2000	0.0000	0.0000	0.000	25.00	7.30

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

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
46.300	Granville STP	6.74	50	6.74	50	0	0
46.010	Lewistown STP	6.67	50	6.71	50	0	0
33.940	Twin Borough	6.53	50	6.53	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
46.300	Granville STP	1.12	25	1.12	25	0	0
46.010	Lewistown STP	1.11	25	1.12	25	0	0
33.940	Twin Borough	1.1	25	1.1	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)		
46.30	Granville STP	25	25	25	25	5	5	0	0
46.01	Lewistown STP	25	25	25	25	5	5	0	0
33.94	Twin Borough	25	25	25	25	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
46.300	0.500	22.004	7.597
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
249.894	1.634	152.940	1.356
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.03	0.026	0.03	0.817
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.238	125.613	Tsivoglou	5
Reach Travel Time (days)			
0.013			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.001	2.03	0.03	7.95
0.003	2.03	0.03	7.95
0.004	2.03	0.03	7.95
0.005	2.03	0.03	7.95
0.007	2.03	0.03	7.95
0.008	2.03	0.03	7.95
0.009	2.03	0.03	7.95
0.010	2.03	0.03	7.95
0.012	2.03	0.03	7.95
0.013	2.03	0.03	7.95

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
46.010	3.318	22.028	7.598
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
458.350	1.187	386.269	1.026
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.21	0.095	0.23	0.818
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.922	0.552	Tsivoglou	5
Reach Travel Time (days)			
0.719			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.072	2.19	0.22	7.87
0.144	2.18	0.20	7.83
0.216	2.16	0.19	7.79
0.288	2.15	0.18	7.76
0.359	2.13	0.17	7.73
0.431	2.11	0.16	7.71
0.503	2.10	0.15	7.69
0.575	2.08	0.14	7.67
0.647	2.07	0.14	7.66
0.719	2.05	0.13	7.64

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
33.940	4.218	22.105	7.610
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
449.065	1.151	390.190	1.122
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.11	0.089	0.18	0.823
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.658	2.369	Tsivoglou	5
Reach Travel Time (days)			
0.024			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.002	2.10	0.18	7.66
0.005	2.10	0.18	7.67
0.007	2.10	0.18	7.67
0.010	2.10	0.18	7.67
0.012	2.10	0.18	7.68
0.014	2.10	0.18	7.68
0.017	2.10	0.18	7.69
0.019	2.10	0.18	7.69
0.022	2.10	0.18	7.69
0.024	2.10	0.18	7.70

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	0.925	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.06	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

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												
46.300	552.84	0.00	552.84	.7735	0.01894	1.634	249.89	152.94	1.36	0.013	22.00	7.60
46.010	552.84	0.00	552.84	5.1329	0.00011	1.187	458.35	386.27	1.03	0.719	22.03	7.60
33.940	573.51	0.00	573.51	6.5252	0.00043	1.151	449.07	390.19	1.12	0.024	22.11	7.61
Q1-10 Flow												
46.300	511.38	0.00	511.38	.7735	0.01894	NA	NA	NA	1.30	0.014	22.00	7.60
46.010	511.38	0.00	511.38	5.1329	0.00011	NA	NA	NA	0.98	0.751	22.03	7.60
33.940	530.50	0.00	530.50	6.5252	0.00043	NA	NA	NA	1.07	0.025	22.11	7.61
Q30-10 Flow												
46.300	586.01	0.00	586.01	.7735	0.01894	NA	NA	NA	1.40	0.013	22.00	7.60
46.010	586.01	0.00	586.01	5.1329	0.00011	NA	NA	NA	1.06	0.696	22.03	7.60
33.940	607.92	0.00	607.92	6.5252	0.00043	NA	NA	NA	1.16	0.023	22.10	7.61

C. Toxics Management Spreadsheet

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Lewistown Borough** NPDES Permit No.: **PA0026280** 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
2.818	284	7.8						

					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		442									
	Chloride (PWS)	mg/L		70									
	Bromide	mg/L		0.07									
	Sulfate (PWS)	mg/L		65									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		134									
	Total Antimony	µg/L		0.4									
	Total Arsenic	µg/L	<	0.2									
	Total Barium	µg/L		9.6									
	Total Beryllium	µg/L	<	0.7									
	Total Boron	µg/L		251									
	Total Cadmium	µg/L		0.12									
	Total Chromium (III)	µg/L	<	2									
	Hexavalent Chromium	µg/L	<	0.04									
	Total Cobalt	µg/L		0.48									
	Total Copper	µg/L		3.6									
	Free Cyanide	µg/L		4									
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L	<	20									
	Total Iron	µg/L		30									
	Total Lead	µg/L		0.5									
	Total Manganese	µg/L		18									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		3.4									
	Total Phenols (Phenolics) (PWS)	µg/L		5									
	Total Selenium	µg/L	<	1.7									
	Total Silver	µg/L	<	1.4									
	Total Thallium	µg/L	<	0.07									
	Total Zinc	µg/L		45									
	Total Molybdenum	µg/L		5.7									
	Acrolein	µg/L	<	1.95									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	1									
	Benzene	µg/L	<	0.43									
	Bromoform	µg/L	<	0.34									

Group 3	Carbon Tetrachloride	µg/L	<	0.51									
	Chlorobenzene	µg/L		0.21									
	Chlorodibromomethane	µg/L	<	0.39									
	Chloroethane	µg/L	<	0.42									
	2-Chloroethyl Vinyl Ether	µg/L	<	4									
	Chloroform	µg/L	<	0.51									
	Dichlorobromomethane	µg/L	<	0.32									
	1,1-Dichloroethane	µg/L	<	0.42									
	1,2-Dichloroethane	µg/L	<	0.39									
	1,1-Dichloroethylene	µg/L	<	0.33									
	1,2-Dichloropropane	µg/L	<	0.42									
	1,3-Dichloropropylene	µg/L	<	0.59									
	1,4-Dioxane	µg/L	<	3									
	Ethylbenzene	µg/L	<	0.27									
	Methyl Bromide	µg/L	<	0.46									
	Methyl Chloride	µg/L	<	0.36									
	Methylene Chloride	µg/L	<	0.45									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.36									
	Tetrachloroethylene	µg/L	<	0.39									
	Toluene	µg/L	<	0.33									
	1,2-trans-Dichloroethylene	µg/L	<	0.39									
	1,1,1-Trichloroethane	µg/L	<	0.38									
	1,1,2-Trichloroethane	µg/L	<	0.24									
	Trichloroethylene	µg/L	<	0.46									
	Vinyl Chloride	µg/L	<	0.46									
Group 4	2-Chlorophenol	µg/L	<	0.13									
	2,4-Dichlorophenol	µg/L	<	0.25									
	2,4-Dimethylphenol	µg/L	<	0.9									
	4,6-Dinitro-o-Cresol	µg/L	<	0.9									
	2,4-Dinitrophenol	µg/L	<	0.86									
	2-Nitrophenol	µg/L	<	0.25									
	4-Nitrophenol	µg/L	<	0.19									
	p-Chloro-m-Cresol	µg/L	<	0.4									
	Pentachlorophenol	µg/L	<	0.97									
	Phenol	µg/L	<	0.4									
	2,4,6-Trichlorophenol	µg/L	<	0.24									
Group 5	Acenaphthene	µg/L	<	0.38									
	Acenaphthylene	µg/L	<	0.22									
	Anthracene	µg/L	<	0.13									
	Benzidine	µg/L	<	0.35									
	Benzo(a)Anthracene	µg/L	<	0.21									
	Benzo(a)Pyrene	µg/L	<	0.29									
	3,4-Benzofluoranthene	µg/L	<	0.31									
	Benzo(ghi)Perylene	µg/L	<	0.32									
	Benzo(k)Fluoranthene	µg/L	<	0.4									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.15									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.25									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.34									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	0.64									
	4-Bromophenyl Phenyl Ether	µg/L	<	0.19									
	Butyl Benzyl Phthalate	µg/L	<	0.38									
	2-Chloronaphthalene	µg/L	<	0.28									
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.29									
	Chrysene	µg/L	<	0.45									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.28									
	1,2-Dichlorobenzene	µg/L	<	0.32									
	1,3-Dichlorobenzene	µg/L	<	0.17									
	1,4-Dichlorobenzene	µg/L	<	0.15									
	3,3-Dichlorobenzidine	µg/L	<	0.13									
	Diethyl Phthalate	µg/L	<	0.27									
	Dimethyl Phthalate	µg/L	<	0.23									
	Di-n-Butyl Phthalate	µg/L		0.57									
	2,4-Dinitrotoluene	µg/L	<	0.77									

	2,6-Dinitrotoluene	µg/L	<	0.32									
	Di-n-Octyl Phthalate	µg/L	<	0.28									
	1,2-Diphenylhydrazine	µg/L	<	0.2									
	Fluoranthene	µg/L	<	0.35									
	Fluorene	µg/L	<	0.25									
	Hexachlorobenzene	µg/L	<	0.25									
	Hexachlorobutadiene	µg/L	<	0.27									
	Hexachlorocyclopentadiene	µg/L	<	0.22									
	Hexachloroethane	µg/L	<	0.26									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.25									
	Isophorone	µg/L	<	0.23									
	Naphthalene	µg/L	<	0.25									
	Nitrobenzene	µg/L	<	0.26									
	n-Nitrosodimethylamine	µg/L	<	0.4									
	n-Nitrosodi-n-Propylamine	µg/L	<	0.31									
	n-Nitrosodiphenylamine	µg/L	<	0.27									
	Phenanthrene	µg/L	<	0.21									
	Pyrene	µg/L	<	0.16									
	1,2,4-Trichlorobenzene	µg/L	<	0.17									
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Lewistown Borough, NPDES Permit No. PA0026280, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Juniata River**

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	011414	46.01	419	2710.01			Yes
End of Reach 1	011414	33.84	412	2840			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	46.01	0.204										120	7.6		
End of Reach 1	33.84	0.204													

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	46.01														
End of Reach 1	33.84														

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Toxics Management Spreadsheet
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Model Results

Lewistown Borough, NPDES Permit No. PA0026280, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.027 Analysis Hardness (mg/l): 157.35 Analysis pH: 7.64

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 Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	3,293	
Total Antimony	0	0		0	1,100	1,100	4,830	
Total Arsenic	0	0		0	340	340	1,493	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	92,207	
Total Boron	0	0		0	8,100	8,100	35,566	
Total Cadmium	0	0		0	3.128	3.38	14.8	Chem Translator of 0.925 applied
Total Chromium (III)	0	0		0	825.905	2,614	11,476	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	71.5	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	417	
Total Copper	0	0		0	20.600	21.5	94.2	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	96.6	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	105.403	145	638	Chem Translator of 0.725 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	7.23	Chem Translator of 0.85 applied
Total Nickel	0	0		0	687.093	688	3,023	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	7.015	8.25	36.2	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	285	
Total Zinc	0	0		0	172.053	176	772	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	13.2	

Acrylonitrile	0	0		0	650	650	2,854	
Benzene	0	0		0	640	640	2,810	
Bromoform	0	0		0	1,800	1,800	7,903	
Carbon Tetrachloride	0	0		0	2,800	2,800	12,294	
Chlorobenzene	0	0		0	1,200	1,200	5,269	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	79,035	
Chloroform	0	0		0	1,900	1,900	8,343	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	65,862	
1,1-Dichloroethylene	0	0		0	7,500	7,500	32,931	
1,2-Dichloropropane	0	0		0	11,000	11,000	48,299	
1,3-Dichloropropylene	0	0		0	310	310	1,361	
Ethylbenzene	0	0		0	2,900	2,900	12,733	
Methyl Bromide	0	0		0	550	550	2,415	
Methyl Chloride	0	0		0	28,000	28,000	122,943	
Methylene Chloride	0	0		0	12,000	12,000	52,690	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	4,391	
Tetrachloroethylene	0	0		0	700	700	3,074	
Toluene	0	0		0	1,700	1,700	7,464	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	29,858	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	13,172	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	14,929	
Trichloroethylene	0	0		0	2,300	2,300	10,099	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	2,459	
2,4-Dichlorophenol	0	0		0	1,700	1,700	7,464	
2,4-Dimethylphenol	0	0		0	660	660	2,898	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	351	
2,4-Dinitrophenol	0	0		0	660	660	2,898	
2-Nitrophenol	0	0		0	8,000	8,000	35,127	
4-Nitrophenol	0	0		0	2,300	2,300	10,099	
p-Chloro-m-Cresol	0	0		0	160	160	703	
Pentachlorophenol	0	0		0	16.565	16.6	72.7	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	2,020	
Acenaphthene	0	0		0	83	83.0	364	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	1,317	
Benzo(a)Anthracene	0	0		0	0.5	0.5	2.2	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	131,725	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	19,759	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	1,186	
Butyl Benzyl Phthalate	0	0		0	140	140	615	

2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	3,600	
1,3-Dichlorobenzene	0	0		0	350	350	1,537	
1,4-Dichlorobenzene	0	0		0	730	730	3,205	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	17,563	
Dimethyl Phthalate	0	0		0	2,500	2,500	10,977	
Di-n-Butyl Phthalate	0	0		0	110	110	483	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	7,025	
2,6-Dinitrotoluene	0	0		0	990	990	4,347	
1,2-Diphenylhydrazine	0	0		0	15	15.0	65.9	
Fluoranthene	0	0		0	200	200	878	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	43.9	
Hexachlorocyclopentadiene	0	0		0	5	5.0	22.0	
Hexachloroethane	0	0		0	60	60.0	263	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	43,908	
Naphthalene	0	0		0	140	140	615	
Nitrobenzene	0	0		0	4,000	4,000	17,563	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	74,644	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	1,317	
Phenanthrene	0	0		0	5	5.0	22.0	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	571	

☑ ***CFC*** CCT (min): 720 PMF: 0.185 Analysis Hardness (mg/l): 126.7 Analysis pH: 7.61

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 Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	5,388	
Total Arsenic	0	0		0	150	150	3,674	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	100,418	
Total Boron	0	0		0	1,600	1,600	39,188	
Total Cadmium	0	0		0	0.290	0.32	7.9	Chem Translator of 0.899 applied
Total Chromium (III)	0	0		0	89.963	105	2,562	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	255	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	465	
Total Copper	0	0		0	10.963	11.4	280	Chem Translator of 0.96 applied

Free Cyanide	0	0		0	5.2	5.2	127	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	191,722	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.253	4.3	105	Chem Translator of 0.757 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	22.2	Chem Translator of 0.85 applied
Total Nickel	0	0		0	63.532	63.7	1,561	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	122	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	318	
Total Zinc	0	0		0	144.366	146	3,586	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	73.5	
Acrylonitrile	0	0		0	130	130	3,184	
Benzene	0	0		0	130	130	3,184	
Bromoform	0	0		0	370	370	9,062	
Carbon Tetrachloride	0	0		0	560	560	13,716	
Chlorobenzene	0	0		0	240	240	5,878	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	85,723	
Chloroform	0	0		0	390	390	9,552	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	75,926	
1,1-Dichloroethylene	0	0		0	1,500	1,500	36,738	
1,2-Dichloropropane	0	0		0	2,200	2,200	53,883	
1,3-Dichloropropylene	0	0		0	61	61.0	1,494	
Ethylbenzene	0	0		0	580	580	14,206	
Methyl Bromide	0	0		0	110	110	2,694	
Methyl Chloride	0	0		0	5,500	5,500	134,708	
Methylene Chloride	0	0		0	2,400	2,400	58,782	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	5,143	
Tetrachloroethylene	0	0		0	140	140	3,429	
Toluene	0	0		0	330	330	8,082	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	34,289	
1,1,1-Trichloroethane	0	0		0	610	610	14,940	
1,1,2-Trichloroethane	0	0		0	680	680	16,655	
Trichloroethylene	0	0		0	450	450	11,022	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	2,694	
2,4-Dichlorophenol	0	0		0	340	340	8,327	
2,4-Dimethylphenol	0	0		0	130	130	3,184	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	392	
2,4-Dinitrophenol	0	0		0	130	130	3,184	
2-Nitrophenol	0	0		0	1,600	1,600	39,188	
4-Nitrophenol	0	0		0	470	470	11,511	

☑ ***THH*** CCT (min): 720 PMF: 0.185 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 Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	137	
Total Arsenic	0	0		0	10	10.0	245	
Total Barium	0	0		0	2,400	2,400	58,782	
Total Boron	0	0		0	3,100	3,100	75,926	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	4	4.0	98.0	
Dissolved Iron	0	0		0	300	300	7,348	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	24,492	
Total Mercury	0	0		0	0.050	0.05	1.22	
Total Nickel	0	0		0	610	610	14,940	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	5.88	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	73.5	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	2,449	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	140	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	808	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	1,665	

Methyl Bromide	0	0		0	100	100.0	2,449	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	1,396	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	2,449	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	244,923	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	735	
2,4-Dichlorophenol	0	0		0	10	10.0	245	
2,4-Dimethylphenol	0	0		0	100	100.0	2,449	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	49.0	
2,4-Dinitrophenol	0	0		0	10	10.0	245	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	97,969	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	1,714	
Anthracene	0	0		0	300	300	7,348	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	4,898	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	2.45	
2-Chloronaphthalene	0	0		0	800	800	19,594	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	24,492	
1,3-Dichlorobenzene	0	0		0	7	7.0	171	
1,4-Dichlorobenzene	0	0		0	300	300	7,348	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	14,695	
Dimethyl Phthalate	0	0		0	2,000	2,000	48,985	
Di-n-Butyl Phthalate	0	0		0	20	20.0	490	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	

2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	490	
Fluorene	0	0		0	50	50.0	1,225	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	98.0	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	833	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	245	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	490	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	1.71	

☑ ***CRL*** CCT (min): 720 PMF: 0.274 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 Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	

Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	7.05	
Benzene	0	0		0	0.58	0.58	68.2	
Bromoform	0	0		0	7	7.0	823	
Carbon Tetrachloride	0	0		0	0.4	0.4	47.0	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	94.0	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	0.95	0.95	112	
1,2-Dichloroethane	0	0		0	9.9	9.9	1,164	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	106	
1,3-Dichloropropylene	0	0		0	0.27	0.27	31.7	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	2,351	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	23.5	
Tetrachloroethylene	0	0		0	10	10.0	1,176	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	64.7	
Trichloroethylene	0	0		0	0.6	0.6	70.5	
Vinyl Chloride	0	0		0	0.02	0.02	2.35	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	3.53	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	176	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.012	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.12	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.012	

3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.12	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	1.18	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	3.53	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	37.6	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	14.1	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.012	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	5.88	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	5.88	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	5.88	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	3.53	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.009	
Hexachlorobutadiene	0	0		0	0.01	0.01	1.18	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	11.8	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.12	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.082	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.59	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	388	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments

D. WET Testing Results

WET Summary and Evaluation

Facility Name	Lewistown Borough
Permit No.	PA0026280
Design Flow (MGD)	2.818
Q_{7-10} Flow (cfs)	552.84
PMF_a	0.027
PMF_c	0.185

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	9/27/22	12/7/21	12/22/20	12/17/19
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	9/27/22	12/7/21	12/22/20	12/17/19
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	9/27/22	12/7/21	12/22/20	12/17/19
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	9/27/22	12/7/21	12/22/20	12/17/19
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**	
TIWC	**4**	% Effluent
Dilution Series	**2, 4, 30, 60, 100**	% Effluent
Permit Limit	**None**	
Permit Limit Species		

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.03
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Lewistown Borough

Permit No.: PA0026280

Test Completion Date: 9/27/2022

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: PASS

Test Completion Date: 12/7/2021

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: PASS

Test Completion Date: 12/22/2020

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: PASS

Test Completion Date: 12/17/2019

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	0	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	0.900	1.000
Std Dev.	0.316	0.000
# Replicates	10	10

T-Test Result: 4.3333
Deg. of Freedom: 9
Critical T Value: 0.8834
Pass or Fail: PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.03
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Lewistown Borough

Permit No.: PA0026280

Test Completion Date: 9/27/2022

Replicate No.	Control	TIWC
1	34	28
2	31	42
3	14	20
4	36	32
5	22	22
6	39	38
7	19	31
8	34	30
9	28	36
10	32	34
11		
12		
13		
14		
15		
Mean	28.900	31.300
Std Dev.	8.075	6.800
# Replicates	10	10

T-Test Result	3.3426
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Test Completion Date: 12/7/2021

Replicate No.	Control	TIWC
1	37	32
2	36	34
3	36	34
4	36	34
5	42	31
6	36	43
7	40	31
8	27	40
9	31	41
10	35	37
11		
12		
13		
14		
15		
Mean	35.600	35.700
Std Dev.	4.195	4.322
# Replicates	10	10

T-Test Result	5.3239
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

Test Completion Date: 12/22/2020

Replicate No.	Control	TIWC
1	34	36
2	40	40
3	38	44
4	34	38
5	34	31
6	38	42
7	36	44
8	36	40
9	43	36
10	40	41
11		
12		
13		
14		
15		
Mean	37.300	39.200
Std Dev.	3.057	4.050
# Replicates	10	10

T-Test Result	7.6277
Deg. of Freedom	15
Critical T Value	0.8662
Pass or Fail	PASS

Test Completion Date: 12/17/2019

Replicate No.	Control	TIWC
1	22	26
2	28	23
3	28	34
4	29	26
5	14	31
6	26	26
7	28	32
8	15	18
9	32	30
10	34	36
11		
12		
13		
14		
15		
Mean	25.600	28.200
Std Dev.	6.670	5.432
# Replicates	10	10

T-Test Result	3.8539
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.03
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Lewistown Borough

Permit No.: PA0026280

Test Completion Date: 9/27/2022

Replicate No.	Control	TIWC
1	9	9
2	10	8
3	8	8
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.250	8.750
Std Dev.	0.957	0.957
# Replicates	4	4
T-Test Result	2.7169	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Test Completion Date: 12/7/2021

Replicate No.	Control	TIWC
1	10	10
2	10	9
3	9	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.750
Std Dev.	0.500	0.500
# Replicates	4	4
T-Test Result	6.7314	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Test Completion Date: 12/22/2020

Replicate No.	Control	TIWC
1	10	10
2	10	10
3	8	10
4	10	5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.500	8.750
Std Dev.	1.000	2.500
# Replicates	4	4
T-Test Result	1.5202	
Deg. of Freedom	4	
Critical T Value	0.7407	
Pass or Fail	PASS	

Test Completion Date: 12/17/2019

Replicate No.	Control	TIWC
1	10	10
2	9	10
3	10	10
4	10	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.750
Std Dev.	0.500	0.500
# Replicates	4	4
T-Test Result	6.7314	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.03
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Lewistown Borough

Permit No.: PA0026280

Test Completion Date: 9/27/2022

Replicate No.	Control	TIWC
1	0.311	0.319
2	0.376	0.333
3	0.322	0.328
4	0.398	0.348
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.352	0.332
Std Dev.	0.042	0.012
# Replicates	4	4
T-Test Result	4.0462	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Test Completion Date: 12/7/2021

Replicate No.	Control	TIWC
1	0.295	0.313
2	0.358	0.263
3	0.302	0.314
4	0.274	0.31
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.307	0.300
Std Dev.	0.036	0.025
# Replicates	4	4
T-Test Result	3.8079	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Test Completion Date: 12/22/2020

Replicate No.	Control	TIWC
1	0.359	0.352
2	0.358	0.406
3	0.301	0.399
4	0.368	0.229
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.347	0.347
Std Dev.	0.031	0.082
# Replicates	4	4
T-Test Result	2.0361	
Deg. of Freedom	4	
Critical T Value	0.7407	
Pass or Fail	PASS	

Test Completion Date: 12/17/2019

Replicate No.	Control	TIWC
1	0.361	0.319
2	0.318	0.316
3	0.391	0.338
4	0.387	0.359
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.364	0.333
Std Dev.	0.034	0.020
# Replicates	4	4
T-Test Result	3.7281	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

E. Process Flow Diagram