pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0020885**
Facility Type	**Municipal**	APS ID	**320084**
Major / Minor	**Major**	Authorization ID	**1374719**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Mechanicsburg Borough**	Facility Name	**Mechanicsburg STP**
Applicant Address	36 W Allen Street	Facility Address	842 W Church Road
	Mechanicsburg, PA 17055-6257		Mechanicsburg, PA 17055-3103
Applicant Contact	Curtis Huey	Facility Contact	Curtis Huey
Applicant Phone	(717) 691-3320	Facility Phone	(717) 691-3320
Client ID	117422	Site ID	451764
Ch 94 Load Status	Not Overloaded	Municipality	Mechanicsburg Borough
Connection Status	No Limitations	County	Cumberland
Date Application Received	October 29, 2021	EPA Waived?	No
Date Application Accepted	November 2, 2021	If No, Reason	Major Facility, Significant CB Discharge
Purpose of Application	NPDES Permit Renewal		

Summary of Review

Mechanicsburg Borough (Mechanicsburg) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on April 27, 2017 and became effective on May 1, 2017. The permit expired on April 30, 2022 but the terms and conditions of the permit have been extended since that time.

Based on the review, it is recommended that the permit be issued.

Sludge use and disposal description and location(s): Sludge is processed onsite prior to being land applied under PAG083523 and PAG073523.

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.

Approve	Deny	Signatures	Date
X		Jinsu Kim Jinsu Kim / Environmental Engineering Specialist	October 6 2022
X		Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	November 15, 022

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	2.08
Latitude	40° 15’ 9.00”	Longitude	77° 0’ 27.15”
Quad Name	Wertzville	Quad Code	1629
Wastewater Description:	Treated sewage		
Receiving Waters	Conodoguinet Creek	Stream Code	10194
NHD Com ID	56404001	RMI	15.75
Drainage Area	485	Yield (cfs/mi^2)	0.153
Q_{7-10} Flow (cfs)	74.4	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-B	Chapter 93 Class.	WWF, MF
Existing Use	WWF, MF	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Organic Enrichment		
Source(s) of Impairment	Unknown		
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Steelton Borough		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	3,204
PWS RMI	68.36	Distance from Outfall (mi)	19.3

Drainage Area
The discharge is to Conodoguinet Creek at RM 15.75. A drainage area upstream of the discharge point is estimated to be 485 sq.mi, according to USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
USGS Streamflow produced a Q7-10 flow of 74.4 at the discharge point.

Conodoguinet Creek
25 Pa Code §93.9o lists Conodoguinet Creek from PA997 at Roxbury to Mouth as warm water and migratory fishes. No special protection water is impacted by this discharge. DEP’s latest integrated water quality report finalized in 2022 indicates that the receiving stream is impaired for organic enrichment as a result of unknown source. A TMDL was developed in December 2000 to address nutrient and sediment impairments identified within the Conodoguinet Creek basin. However, this TMDL mainly identified agriculture, construction and urban runoff/storm sewers as the sources of these impairments. The TMDL covered subwatersheds, not the main stem. The integrated water quality identified organic enrichment impairment under Category 5 which requires a TMDL.

Public Water Supply Intake
The fact sheet developed for the last permit renewal indicates that the nearest downstream intake is Steelton Borough on Susquehanna River, approximately 19.3 miles downstream of the discharge. Given the distance, the discharge is not expected to affect the water supply.

Treatment Facility Summary				
Treatment Facility Name: Mechanicsburg WWTP				
WQM Permit No.	**Issuance Date**			
2109402	Last amended on 4/22/2022			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Tertiary	Activated Sludge	Gas Chlorine	2.08
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
3.328	4694	Not Overloaded	Anaerobic Digestion	Compost

Mechanicsburg owns and operates a municipal wastewater treatment plant serving the areas of Mechanicsburg Borough (66.5%), Monroe Township (7.5%), Silver Spring Township (17.7%), Upper Allen Township (0.4%) and Hampden Township (7.99%). All sewer systems are 100% separated. The facility utilizes tricking filter-MLE activated sludge treatment process consisting of primary screening treatment, primary clarification (2), trickling filters (4), MLE anoxic/aerobic tanks (2), final clarification (3), sand denitrification filter, chlorine contact and outfall structure. The facility is rated for 2.05 MGD (annual average design flow), 3.328 MGD (hydraulic design capacity) and 4,694 lbs BOD/day (organic design capacity).

Chlorine gas is used for disinfection, Aluminum Sulfate and polymer are used for coagulant, settling and phosphorus control.

A sludge thickener, digesters (2) and filter press are used for sludge processing. Any solids generated from this facility will be land applied under PAG083523 and PAG073523.

The application reported a number of industrial/commercial users connected to this sewer system. These users are shown below:

Name	Description of Industry	Wastewater Volume (GPD)	Significant Industrial User?
Advanced Coating Technologies	Custom metal finishing	1,650 (process)	No
Nestle Purina	Pet food manufacturing	16,169 (process)	Yes
Fry Communication, Inc.	Magazine and direct mail printers	2,985 (process)	No

The application indicates that Mechanicsburg is not implementing an approved pretreatment program administered by EPA.

Compliance History	
Summary of DMRs:	A summary of past 12-month DMR is presented on the next page.
Summary of Inspections:	01/05/22: Brandon Bettinger, DEP Water Quality Specialist, conducted a routine inspection and noted that the facility's grit system has been offline for approximately one year, failed to maintain permitted treatment units in operable condition. No violations were noted at the time of inspection. 03/08/21: Mike Benham, former DEP Water Quality Specialist, conducted a routine inspection. A number of recommendations were made at the time of inspection but no violations were noted. 02/27/20: Mike Benham conducted a routine inspection. No violations were noted at the time of inspection.
Other Comments:	Since the last reissuance, there have been a number of violations reported by the permittee or identified by DEP. A table below summarizes these violations. DEP's database shows that there is no open violation associated with this permittee or facility.

Date	Violation Description	Category	PARAMETER	Sample Results	Limits	Units	SBC	Comments
Aug-17	Sample collection less frequent than required	Other Violations	Nitrate-Nitrite as N					
Aug-17	Sample type not in accordance with permit	Other Violations	Nitrate-Nitrite as N					
Nov-17	Sample type not in accordance with permit	Other Violations	Nitrate-Nitrite as N					
Jul-19	Violation of permit condition	Effluent	Total Nitrogen (Total Load, lbs)	41140	37990	lbs	Total Annual	
Mar-18	Late DMR Submission	Other Violations						
Jun-18	Violation of permit condition	Effluent	Fecal Coliform	15900	1000	CFU/100 ml	Instantaneous Maximum	Testing was performed during high flow due to sand filter bypass. In the past, when flow has been high, the chlorine flow has been reduced to prevent exceeding the instantaneous maximum for residual chlorine. The combination of reduced chlorine and reduced contact time from high flow resulted in high fecal coliform results. In the future, we will alter our SOP to better treat for fecal coliform during high flow while trying not to exceed the instantaneous maximum.
Jul-18	Violation of permit condition	Effluent	Fecal Coliform	1650	1000	CFU/100 ml	Instantaneous Maximum	
Aug-18	Violation of permit condition	Effluent	Fecal Coliform	> 503	200	CFU/100 ml	Geometric Mean	
Aug-18	Violation of permit condition	Effluent	Fecal Coliform	3300	1000	CFU/100 ml	Instantaneous Maximum	
Sep-18	Violation of permit condition	Effluent	Ammonia-Nitrogen	9.4	9.0	mg/L	Average Monthly	
Sep-18	Violation of permit condition	Effluent	Fecal Coliform	2500	1000	CFU/100 ml	Instantaneous Maximum	
Oct-18	Violation of permit condition	Effluent	Fecal Coliform	4150	1000	CFU/100 ml	Instantaneous Maximum	
Dec-18	Late DMR Submission	Other Violations						
Jun-20	Late DMR Submission	Other Violations						
Oct-19	Violation of permit condition	Effluent	Total Suspended Solids	37	30	mg/L	Average Monthly	
Oct-19	Violation of permit condition	Effluent	Total Suspended Solids	51	45	mg/L	Weekly Average	
Nov-19	Violation of permit condition	Effluent	Total Suspended Solids	36	30	mg/L	Average Monthly	
Nov-19	Violation of permit condition	Effluent	Total Suspended Solids	71	45	mg/L	Weekly Average	
Dec-19	Violation of permit condition	Effluent	Total Suspended Solids	160	45	mg/L	Weekly Average	
Dec-19	Violation of permit condition	Effluent	Total Suspended Solids	58	30	mg/L	Average Monthly	
Mar-20	Violation of permit condition	Effluent	Total Suspended Solids	47	45	mg/L	Weekly Average	Our lab's accreditation was suspended by the Bureau of Laboratories. The contract lab we were using was getting very high results for influent and effluent suspended solids. The accreditation was reinstated in February, and we got much better numbers and expect to be in compliance going forward.
Aug-20	Violation of permit condition	Effluent	Carbonaceous Biochemical Oxygen	49	40	mg/L	Weekly Average	See Attachment
Mar-21	Violation of permit condition	Effluent	Fecal Coliform	> 1468	2000	CFU/100 ml	Geometric Mean	
Mar-21	Violation of permit condition	Effluent	Fecal Coliform	> 2420	10000	CFU/100 ml	Instantaneous Maximum	
Apr-21	Violation of permit condition	Effluent	Fecal Coliform	> 1053	2000	CFU/100 ml	Geometric Mean	
Apr-21	Violation of permit condition	Effluent	Fecal Coliform	> 2420	10000	CFU/100 ml	Instantaneous Maximum	
Jul-21	Violation of permit condition	Effluent	Fecal Coliform	1416	1000	CFU/100 ml	Instantaneous Maximum	At the time of sampling, there was no known issue that would have caused a high fecal. 2 days later, the fecal was 49 with no process changes.
Sep-21	Violation of permit condition	Effluent	Fecal Coliform	1553	1000	CFU/100 ml	Instantaneous Maximum	The residual chlorine was low on 8/5. After getting a high fecal, the chlorine feed was increased and the chlorine contact tank walls were cleaned to reduce chlorine demand from algae.
Mar-22	Late DMR Submission	Other Violations						

Effluent Data

DMR Data for Outfall 001 (from April 1, 2021 to March 31, 2022)

Parameter	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21
Flow (MGD) Average Monthly	0.551	0.623	0.574	0.58	0.626	0.74	1.234	601	0.633	0.556	0.636	0.618
Flow (MGD) Daily Maximum	0.601	1.032	0.733	0.656	0.888	1.017	3.56	0.751	1.062	0.681	0.947	0.983
pH (S.U.) Minimum	6.5	6.7	6.8	7.0	7.1	7.3	7.2	7.2	7.1	7.1	6.9	6.9
pH (S.U.) Instantaneous Maximum	6.9	7.0	7.2	7.4	7.6	7.6	7.6	7.6	7.5	7.4	7.3	7.2
DO (mg/L) Minimum	7.9	8.2	8.0	7.8	8.0	7.7	7.6	7.4	7.5	7.8	7.8	7.9
TRC (mg/L) Average Monthly	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.20	0.10
TRC (mg/L) Instantaneous Maximum	0.20	0.82	0.21	0.14	0.80	0.31	0.19	0.20	0.53	0.25	0.27	0.40
CBOD5 (lbs/day) Average Monthly	< 13	13	12	< 12	< 17	< 13	< 20	< 18	< 12	< 12	< 9	11
CBOD5 (lbs/day) Weekly Average	19	19	13	15	< 24	22	< 38	< 23	< 15	20	15	14
CBOD5 (mg/L) Average Monthly	< 3	3	3	< 2	< 3	< 2	< 2	< 3	< 2	< 3	< 2	2
CBOD5 (mg/L) Weekly Average	4	4	3	3	< 4	4	3	5	3	4	3	3
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	330	1470	1466	2297	1825	1857	2123	1673	1484	1614	1486	1544
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	536	2386	1631	3593	2708	2664	3157	2750	2313	2988	2097	1884
BOD5 (mg/L) Raw Sewage Influent Average Monthly	1758	256	261	386	302	292	242	277	246	295	268	281
TSS (lbs/day) Average Monthly	65	31	37	46	22	25	93	75	45	30	22	24
TSS (lbs/day) Raw Sewage Influent Average Monthly	1851	2707	2815	3516	2728	5692	2012	2237	2852	2763	2530	3091

Parameter	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21
TSS (lbs/day) Raw Sewage Influent Daily Maximum	2809	6999	5173	5076	4548	10881	4811	2971	4209	3361	3348	4501
TSS (lbs/day) Weekly Average	65	36	39	57	20	31	342	150	83	47	46	29
TSS (mg/L) Average Monthly	16	6	7	10	4	4	5	13	9	6	4	4
TSS (mg/L) Raw Sewage Influent Average Monthly	353	495	480	603	459	836	207	356	450	501	452	537
TSS (mg/L) Weekly Average	42	7	8	11	4	5	13	20	18	10	9	5
Fecal Coliform (CFU/100 ml) Geometric Mean	154	231	494	838	468	301	< 61	146	95	129	37	1452
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	1986	2420	2420	2420	1046	770	816	1553	488	1416	75	6130
Nitrate-Nitrite (mg/L) Average Monthly	< 16.02	< 16.47	< 20.36	< 14.87	< 16.79	< 10.91	< 8.27	11.8	< 12.16	< 12.41	< 14.26	< 14.86
Nitrate-Nitrite (lbs) Total Monthly	< 2163	< 2224	< 2560	< 2160	< 2563	< 2068	< 1884	1956	< 2058	< 1756	< 2357	< 2280
Total Nitrogen (mg/L) Average Monthly	< 19.37	< 20.16	< 22.99	< 18.95	< 19.19	< 13.1	< 8.8	< 12.3	< 12.66	< 12.91	< 14.79	< 15.36
Total Nitrogen (lbs) Effluent Net Total Monthly	< 2612	< 2719	< 3386	< 2765	< 2928	< 2488	< 2007	< 2039	< 2144	< 1888	< 2446	< 2356
Total Nitrogen (lbs) Total Monthly	< 2612	< 2719	< 3386	< 2765	< 2928	< 2488	< 2007	< 2039	< 2144	< 1827	< 2446	< 2356
Total Nitrogen (lbs) Effluent Net Total Annual							< 30105					
Total Nitrogen (lbs) Total Annual							< 30755					
Ammonia (lbs/day) Average Monthly	< 0.3	0.2	< 0.2	< 0.2	< 0.2	< 0.3	< 0.4	< 0.4	< 0.2	< 0.2	< 0.2	< 0.7
Ammonia (mg/L) Average Monthly	< 0.07	0.05	< 0.05	< 0.04	< 0.05	< 0.04	< 0.06	< 0.06	< 0.04	< 0.04	< 0.04	< 0.13
Ammonia (lbs) Total Monthly	< 10	7	< 7	< 6	< 7	< 8	< 12	< 13	< 7	< 6	< 7	< 20
Ammonia (lbs) Total Annual							< 129					

Parameter	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21
TKN (mg/L) Average Monthly	< 3.36	3.69	5.4	4.08	2.4	2.19	< 0.52	< 0.5	< 0.5	< 0.5	< 0.53	< 0.5
TKN (lbs) Total Monthly	< 449	495	826	604	365	421	< 124	< 83	< 86	< 71	< 88	< 3
Total Phosphorus (lbs/day) Average Monthly	3	3	3	4	3	4	3	5	4	3	3	3
Total Phosphorus (mg/L) Average Monthly	0.76	0.53	0.7	0.81	0.61	0.67	0.43	0.93	0.65	0.69	0.55	0.58
Total Phosphorus (lbs) Effluent Net Total Monthly	102	71	102	120	93	127	96	164	113	101	92	90
Total Phosphorus (lbs) Total Monthly	102	71	102	120	93	127	96	164	113	98	92	90
Total Phosphorus (lbs) Effluent Net Total Annual							1383					
Total Phosphorus (lbs) Total Annual							1383					
Total Copper (lbs/day) Daily Maximum	0.033			0.041			0.057			0.082		
Total Copper (mg/L) Daily Maximum	0.0074			0.0072			0.0103			0.015		

Existing Effluent Limits and Monitoring Requirements

Tables below summarize effluent limits and monitoring requirements specified in the current permit.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) 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	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.45	XXX	1.48	1/day	Grab
CBOD5	433	693	XXX	25	40	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Suspended Solids	520	780	XXX	30	45	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
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/week	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/week	Grab
Ammonia-Nitrogen May 1 - Oct 31	156	XXX	XXX	9.0	XXX	18	2/week	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	277	XXX	XXX	16	XXX	32	2/week	24-Hr Composite
Total Phosphorus	34	XXX	XXX	2.0	XXX	4.0	2/week	24-Hr Composite
Copper, Total	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/quarter	24-Hr Composite

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		
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	37990*	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	5065*	XXX	XXX	XXX	XXX	1/month	Calculation

*The permittee is authorized to use 650 lbs/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 Turing 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 26 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.

Development of Effluent Limitations and Monitoring Requiremens

Outfall No. 001 **Design Flow (MGD)** 2.08
Latitude 40º 15' 9.00" **Longitude** -77º 0' 27.16"
Wastewater Description: Sewage Effluent

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)

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen (DO)
WQM 7.0 is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's guidance no. 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. DEP recently updated this model (ver. 1.1) to include new ammonia criteria that has been approved by US EPA as part of the 2017 Triennial Review. The model output indicates that all existing effluent limits for these pollutants are still appropriate. No changes are therefore recommended.

Toxic Pollutants
DEP utilizes a Toxics Management Spreadsheet (last modified on March 2021 ver. 1.3) to facilitate calculations necessary for completing a reasonable potential analysis and determining WQBELs for toxic pollutants. The worksheet combines the functionality of DEP's Toxics Screening Analysis worksheet and PENTOXSD. The current permit requires a quarterly sampling for Total Copper as Total Copper was detected at levels higher than the water quality criteria yet no reasonable potential was determined. During the last permit renewal review process, DEP determined that a quarterly sampling requirement would produce ample data for further analysis. The results from April 2017 through July 2022 (a total of 22 datasets) were summarized below.

Total Copper (mg/L)	
Maximum	0.082
Minimum	<0.022
No. of Non-Detect Results	8

DEP's TOXCON worksheet was utilized to produce an average monthly effluent concentration and daily coefficient of variation. These values were then entered into Toxics Management Spreadsheet. The TMS no longer requires any further monitoring for Total Copper. As a result, it is recommended that the existing quarterly sampling requirement for Total Copper be removed from the permit.

The TMD indicates that WQBELs are needed for Total Mercury. However, Mechanicsburg may not be able to achieve compliance with these WQBELs. As a result, DEP's pre-draft permit survey was sent on May 19, 2022. This survey form allows DEP to develop appropriate permit requirements and to understand facility's current capabilities or plans to treat or control the pollutant of concern. This approach is consistent with DEP's SOP no. BCW.PMT-037. Mechanicsburg submitted the survey form on June 23, 2022 and indicated that Mechanicsburg will further collect samples for Total Mercury to supplement the application. DEP received results of ten (10) additional samples on both influent and effluent on October 5, 2022. These results are summarized below.

Sample Date	Influent (ug/L)*	Effluent (ug/L)*	Sample Date	Influent (ug/L)*	Effluent (ug/L)*
8/16/2022	<0.2	<0.2	8/30/2022	<0.2	<0.2
8/18/2022	0.4	<0.2	9/5/2022	<0.2	<0.2
8/23/2022	<0.2	<0.2	9/7/2022	<0.2	<0.2
8/24/2022	<0.2	<0.2	9/12/2022	<0.2	<0.2
8/25/2022	<0.2	<0.2	9/14/2022	0.3	<0.2

*DEP's current Target QL for Total Mercury = 0.2 ug/L.

As shown above, while Total Mercury was detected slightly higher than DEP's Target QL in two of ten influent samples, Total Mercury was consistently not detected in effluent at DEP's target QL. Given a number of non-detected results, a statistical analysis using DEP's TOXCON worksheet cannot be performed. At this time, DEP determined based on additional sample results that Total Mercury level in the discharge is not of concern and ultimately no reasonable potential is determined. Therefore, no WQBELs are recommended. In case DEP determines, during the upcoming permit tern, that permit requirements for Total Mercury are needed, DEP may reopen this permit to include any necessary permit requirements per 40 CFR§§122.41(h) and 122.62.

Total Residual Chlorine
DEP's TRC_CALC worksheet was utilized to determine appropriate permit requirements for TRC. The worksheet shows that existing effluent limits are still appropriate. No change is therefore recommended.

Whole Effluent Toxicity Testing
Mechanicsburg is required under 40 CFR §122.21(h)(5)(ii)(A) to conduct WETT and submit the results to DEP. See WETT section of this fact sheet for more details on the results submitted by Mechanicsburg.

Best Professional Judgment (BPJ) Limitations

Dissolved Oxygen
The existing minimum DO effluent limit is the current warm water fishery water quality criterion for DO listed in 25 Pa Code §93.7(a). It is recommended that this limit be maintained in the permit to ensure the protection of water quality standards. This approach is consistent with DEP's current Standard Operating Procedure (SOP) no. BPNPSM-PMT-033 and has been applied to other point source dischargers throughout the state.

Total Phosphorus
The existing permit contains average monthly and instantaneous maximum (IMAX) effluent limits of 2.0 mg/L and 4.0 mg/L, respectively. Historically a TP effluent limit of 2.0 mg/L was established in the permit when DEP generally determines that the facility is expected to contribute 0.25% or more of the total point source phosphorus loading at the point of impact (page 17 of DEP's technical guidance no. 391-2000-018). DEP previously documented that the discharge contributes more than 0.25% and phosphorus controls were therefore needed. There is no reason to relax or remove these effluent limits; therefore, continuation of existing effluent limits is still appropriate in accordance with 40 CFR §122.44(l)(1).

Additional Considerations

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

Influent BOD & TSS Monitoring Requirement
As a result of negotiation with EPA, the existing influent monitoring reporting requirement for TSS and BOD5 will be maintained in the draft permit. This requirement has been consistently assigned to all municipal wastewater treatment facilities.

Total Dissolved Solids (TDS)
TDS and its associated solids including Bromide, Chloride, and Sulfate have become statewide pollutants of concern. The requirement to monitor these pollutants must be considered under the criteria specified in 25 Pa. Code § 95.10 and the following January 23, 2014 DEP Central Office Directive:

For point source discharges and upon issuance or reissuance of an individual NPDES permit:

-Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

-Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/L.

Mechanicsburg reported maximum concentrations of 726 mg/L for TDS, 0.2 mg/L for bromide, and < 10.0 µg/L for 1,4-dioxane. Accordingly, the requirement to monitor for these pollutants is not necessary.

Mass Loading Limitations
All effluent mass loading limits will be based on the formula: design flow x concentration limit x conversion factor of 8.34.

Stormwater Requirements
Stormwater discharges from any POTWs (SIC Code 4952) described in 40 CFR § 122.26(b)(14)(ix) require coverage under an NPDES permit. DEP's standard Part C stormwater requirements and site-specific best management practices (BMPs) will be included in the permit as this is a standard approach for major sewage facilities over 1.0 MGD.

E. Coli Monitoring Requirement
As recommended by DEP's SOP no. BPNPSM-PMT-033, a routine monitoring for E. Coli will be included in the permit under 25 Pa Code §92a.61. This requirement applies to all sewage dischargers greater than 0.002 MGD in their new and reissued permits. A monitoring frequency of 1/month will be included permit to be consistent with the recommendation from this SOP.

Chesapeake Bay TMDL
On March 30, 2012, DEP finalized Pennsylvania's Chesapeake Watershed Implementation Plan Phase 2 (i.e., Phase 2 WIP) to address U.S EPA's expectations for the Chesapeake Bay TMDL. The Chesapeake Bay TMDL identifies the necessary pollution reductions from major sources of nitrogen, phosphorus and sediment across the Bay jurisdictions and sets pollution limits necessary to meet water quality standards. The Phase 2 WIP is an update to the Pennsylvania's Chesapeake Bay TMDL Strategy (2004) and the Chesapeake WIP Phase I (2011). In August 2019, DEP finalized Phase 3 Chesapeake Bay Watershed Implementation Plan to provide the plans in place by 2025 to further achieve the nutrient and sediment reduction targets. The more details on the TMDL are available at www.dep.pa.gov.

As part of the Phase 3 WIP process, a Supplement to the Phase 3 WIP was developed, providing an update on TMDL implementation for point sources and a discussion of adjustments to the permitting strategy as a result of implementation experience. According to this document, Mechanicsburg Borough WWTP is a Phase 3 significant discharger located within the Chesapeake Bay watershed. The following Cap Loads specified in the current Supplement to the Phase 3 WIP will be included in the draft permit:

NPDES Permit No.	Phase	Facility	Latest Permit Issuance Date	Permit Expiration Date	Cap Load Compliance Start Date	TN Cap Load (lbs/yr)	TN Offsets Included in Cap Load (lbs/yr)	TP Cap Load (lbs/yr)	TN Delivery Ratio	TP Delivery Ratio
PA0020885	1	Mechanicsburg Borough MA	4/27/2017	04/30/2022	10/1/2012	37,990	-	5,065	0.951	0.436

The permittee is currently authorized to use 650 lbs/year as Total Nitrogen (TN) Offsets toward compliance with the Annual Net TN mass load limitations (Cap Loads) as a result of the connection of 26 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. No further offset request was received during the last permit reissuance.

Class A Wild Trout Fishery
A Class A Wild Trout stream is not impacted by this discharge.

Anti-backsliding Requirements
Unless stated otherwise in this fact sheet, all permit requirements proposed in this fact sheet are at least as stringent as those specified in the existing permit.

Whole Effluent Toxicity (WET)

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%, 5%, and 2%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 5%.

Summary of Four Most Recent Test Results

NOEC/LC50 Data Analysis

Test Date	*Ceriodaphnia* Results (% Effluent)			*Pimephales* Results (% Effluent)			Pass? *
	NOEC Survival	NOEC Reproduction	LC50	NOEC Survival	NOEC Growth	LC50	
August 2020	100	100		100	100		Yes
July 2019	100	30		100	100		Yes
August 2018	100	100		100	100		Yes
October 2017	100	100		100	60		Yes

***** *A "passing" result is that which is greater than or equal to the TIWC value.*

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).*

☐ **YES** ☒ **NO**

Comments: DEP's Whole Effluent Toxicity Analysis Spreadsheet is attached to this fact sheet.

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

Acute Partial Mix Factor (PMFa): **0.116** Chronic Partial Mix Factor (PMFc): **0.801**

1. Determine IWC – Acute (IWCa):

$(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$

[(2.08 MGD x 1.547) / ((74.4 cfs x 0.116) + (2.08 MGD x 1.547))] x 100 = **27%**

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

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

2b. Determine Target IWCc (If Chronic Tests Required)

$(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$

[(2.8 MGD x 1.547) / ((74.4 cfs x 0.801) + (2.08 MGD x 1.547))] x 100 = **5%**

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%, 5%, and 2%.

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

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	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 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.45	XXX	1.48	1/day	Grab
CBOD5	433	693	XXX	25	40	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	520	780	XXX	30	45	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
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
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

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	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia Nov 1 - Apr 30	277	XXX	XXX	16	XXX	32	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	156	XXX	XXX	9.0	XXX	18	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	34	XXX	XXX	2.0	XXX	4	2/week	24-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
E. Coli (No./100 mL)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab

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	37990 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) Effluent Net	XXX	5065 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

*The permittee is authorized to use 650 lbs/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 Turing 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 26 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.

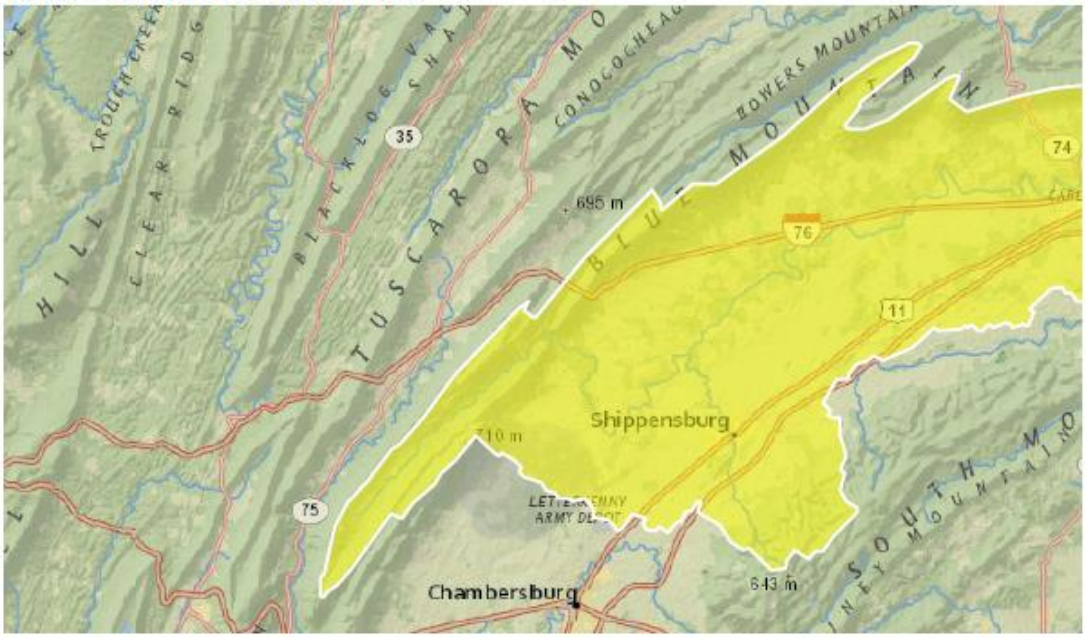
Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 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:
☐	Other:

Attachments

1. USGS Streamflow

StreamStats Report

Region ID: PA
Workspace ID: PA20221006123316108000
Clicked Point (Latitude, Longitude): 40.25336, -77.00699
Time: 2022-10-06 08:33:37 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	40.45	percent
DRNAREA	Area that drains to a point on a stream	485	square miles
PRECIP	Mean Annual Precipitation	39	inches
ROCKDEP	Depth to rock	4.6	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.62	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	485	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	1.62	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.6	feet	3.32	5.65
CARBON	Percent Carbonate	40.45	percent	0	99

Low-Flow Statistics Flow Report [Low Flow Region 2]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	112	ft^3/s	38	38
30 Day 2 Year Low Flow	132	ft^3/s	33	33
7 Day 10 Year Low Flow	74.4	ft^3/s	51	51
30 Day 10 Year Low Flow	87.9	ft^3/s	46	46
90 Day 10 Year Low Flow	108	ft^3/s	36	36

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

2. WQM 7.0 ver. 1.1

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
07B	10194	CONODOGUINET CREEK	**15.840**	343.00	468.00	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	0.143	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Silver Spring	PA0083593	1.2000	1.2000	1.2000	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	18.00	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
07B	10194	CONODOGUINET CREEK	**15.750**	342.00	485.00	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	0.100	0.00	74.40	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Mechanicsburg	PA0020885	2.0800	2.0800	2.0800	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	9.00	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
07B	10194	CONODOGUINET CREEK	**14.140**	338.00	488.00	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	0.100	0.00	74.80	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

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
07B	10194	CONODOGUINET CREEK	**10.210**	325.00	495.00	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	0.100	0.00	75.20	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07B	10194	CONODOGUINET CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
15.840	1.200	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
126.316	1.008	125.372	0.540
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.62	0.383	0.49	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.155	5.973	Tsivoglou	5
Reach Travel Time (days)			
0.010			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.001	2.62	0.49	7.54
0.002	2.62	0.48	7.54
0.003	2.62	0.48	7.54
0.004	2.62	0.48	7.54
0.005	2.61	0.48	7.54
0.006	2.61	0.48	7.54
0.007	2.61	0.48	7.54
0.008	2.61	0.48	7.54
0.009	2.61	0.48	7.54
0.010	2.61	0.48	7.54

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
15.750	3.280	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
146.295	1.058	138.268	0.513
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.46	0.621	0.78	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.502	1.269	Tsivoglou	5
Reach Travel Time (days)			
0.192			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.019	3.41	0.77	7.38
0.038	3.36	0.75	7.26
0.057	3.31	0.74	7.15
0.077	3.26	0.72	7.04
0.096	3.21	0.71	6.94
0.115	3.16	0.69	6.84
0.134	3.11	0.68	6.74
0.153	3.07	0.67	6.65
0.172	3.02	0.65	6.57
0.192	2.98	0.64	6.49

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07B	10194	CONODOGUINET 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												
15.840	66.92	0.00	66.92	1.8564	0.00210	1.008	126.32	125.37	0.54	0.010	25.00	7.00
15.750	74.40	0.00	74.40	5.0742	0.00047	1.058	146.29	138.27	0.51	0.192	25.00	7.00
14.140	74.80	0.00	74.80	5.0742	0.00063	1.049	144.67	137.98	0.53	0.456	25.00	7.00
Q1-10 Flow												
15.840	42.83	0.00	42.83	1.8564	0.00210	NA	NA	NA	0.42	0.013	25.00	7.00
15.750	47.62	0.00	47.62	5.0742	0.00047	NA	NA	NA	0.41	0.241	25.00	7.00
14.140	47.87	0.00	47.87	5.0742	0.00063	NA	NA	NA	0.42	0.574	25.00	7.00
Q30-10 Flow												
15.840	91.02	0.00	91.02	1.8564	0.00210	NA	NA	NA	0.64	0.009	25.00	7.00
15.750	101.18	0.00	101.18	5.0742	0.00047	NA	NA	NA	0.60	0.163	25.00	7.00
14.140	101.73	0.00	101.73	5.0742	0.00063	NA	NA	NA	0.62	0.388	25.00	7.00

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	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07B	10194	CONODOGUINET CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
15.840	Silver Spring	11.07	36	11.07	36	0	0
15.750	Mechanicsburg	11.07	18	11.07	18	0	0
14.140		NA	NA	11.07	NA	NA	NA

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
15.840	Silver Spring	1.37	18	1.37	18	0	0
15.750	Mechanicsburg	1.37	9	1.37	9	0	0
14.140		NA	NA	1.37	NA	NA	NA

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
15.84	Silver Spring	25	25	18	18	5	5	0	0
15.75	Mechanicsburg	25	25	9	9	5	5	0	0
14.14		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07B	10194	CONODOGUINET CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
15.840	Silver Spring	PA0083593	1.200	CBOD5	25		
				NH3-N	18	36	
				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)
15.750	Mechanicsburg	PA0020885	2.080	CBOD5	25		
				NH3-N	9	18	
				Dissolved Oxygen			5

3. Toxics Management Spreadsheet

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Mechanicsburg Borough** NPDES Permit No.: **PA0020885** 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
2.08	201	7						

					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		726									
	Chloride (PWS)	mg/L		100									
	Bromide	mg/L		0.2									
	Sulfate (PWS)	mg/L		75.7									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		0.983									
	Total Antimony	µg/L		0.00085									
	Total Arsenic	µg/L		0.000472									
	Total Barium	µg/L		0.0128									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		0.22									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L		0.000732									
	Hexavalent Chromium	µg/L		0.077									
	Total Cobalt	µg/L		0.000415									
	Total Copper	µg/L		0.0699704			0.8608						
	Free Cyanide	µg/L		4.4									
	Total Cyanide	µg/L		0.0032									
	Dissolved Iron	µg/L	<	20									
	Total Iron	µg/L		0.11									
	Total Lead	µg/L		0.000328									
	Total Manganese	µg/L		0.0341									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		0.0018									
	Total Phenols (Phenolics) (PWS)	µg/L		0.003									
	Total Selenium	µg/L		0.00521									
	Total Silver	µg/L	<	0.4									
	Total Thallium	µg/L	<	2									
	Total Zinc	µg/L		0.0797									
	Total Molybdenum	µg/L		0.012									
	Acrolein	µg/L	<	0.5									
	Acrylamide	µg/L	<	0.5									
	Acrylonitrile	µg/L	<	0.5									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									
	Carbon Tetrachloride	µg/L	<	0.5									

Discharge Information 10/6/2022 Page 1

Group 3	Chlorobenzene	µg/L		0.5										
	Chlorodibromomethane	µg/L		0.44										
	Chloroethane	µg/L	<	0.5										
	2-Chloroethyl Vinyl Ether	µg/L	<	5										
	Chloroform	µg/L		3										
	Dichlorobromomethane	µg/L	<	0.5										
	1,1-Dichloroethane	µg/L	<	0.5										
	1,2-Dichloroethane	µg/L	<	0.5										
	1,1-Dichloroethylene	µg/L	<	0.5										
	1,2-Dichloropropane	µg/L	<	0.5										
	1,3-Dichloropropylene	µg/L	<	0.5										
	1,4-Dioxane	µg/L	<	10										
	Ethylbenzene	µg/L	<	0.5										
	Methyl Bromide	µg/L	<											
	Methyl Chloride	µg/L	<											
	Methylene Chloride	µg/L	<	0.5										
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5										
	Tetrachloroethylene	µg/L	<	0.5										
	Toluene	µg/L	<	0.5										
	1,2-trans-Dichloroethylene	µg/L	<	0.5										
	1,1,1-Trichlorcethane	µg/L	<	0.5										
	1,1,2-Trichlorcethane	µg/L	<	0.5										
	Trichloroethylene	µg/L	<	0.5										
	Vinyl Chloride	µg/L	<	0.5										
Group 4	2-Chlorophenol	µg/L	<	10										
	2,4-Dichlorophenol	µg/L	<	10										
	2,4-Dimethylphenol	µg/L	<	10										
	4,6-Dinitro-o-Cresol	µg/L	<											
	2,4-Dinitrophenol	µg/L	<	10										
	2-Nitrophenol	µg/L	<	10										
	4-Nitrophenol	µg/L	<	10										
	p-Chloro-m-Cresol	µg/L	<											
	Pentachlorophenol	µg/L	<	10										
	Phenol	µg/L	<	10										
	2,4,6-Trichlorophenol	µg/L	<	10										
Group 5	Acenaphthene	µg/L	<	2.5										
	Acenaphthylene	µg/L	<	2.5										
	Anthracene	µg/L	<	2.5										
	Benzidine	µg/L	<	50										
	Benzo(a)Anthracene	µg/L	<	2.5										
	Benzo(a)Pyrene	µg/L	<	2.5										
	3,4-Benzofluoranthene	µg/L	<											
	Benzo(ghi)Perylene	µg/L	<	2.5										
	Benzo(k)Fluoranthene	µg/L	<	2.5										
	Bis(2-Chloroethoxy)Methane	µg/L	<	5										
	Bis(2-Chloroethyl)Ether	µg/L	<	5										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5										
	4-Bromophenyl Phenyl Ether	µg/L	<	5										
	Butyl Benzyl Phthalate	µg/L	<	5										
	2-Chloronaphthalene	µg/L	<	5										
	4-Chlorophenyl Phenyl Ether	µg/L	<	5										
	Chrysene	µg/L	<	2.5										
	Dibenzo(a,h)Anthrancene	µg/L	<	2.5										
	1,2-Dichlorobenzene	µg/L	<	0.5										
	1,3-Dichlorobenzene	µg/L	<	0.5										
	1,4-Dichlorobenzene	µg/L	<	0.5										
	3,3-Dichlorobenzidine	µg/L	<	5										
	Diethyl Phthalate	µg/L	<	5										
	Dimethyl Phthalate	µg/L	<	5										
	Di-n-Butyl Phthalate	µg/L	<	5										
	2,4-Dinitrotoluene	µg/L	<	5										
	2,6-Dinitrotoluene	µg/L	<	5										
	Di-n-Octyl Phthalate	µg/L	<	5										

	1,2-Diphenylhydrazine	µg/L	<	10										
	Fluoranthene	µg/L	<	2.5										
	Fluorene	µg/L	<	2.5										
	Hexachlorobenzene	µg/L	<	5										
	Hexachlorobutadiene	µg/L	<	0.5										
	Hexachlorocyclopentadiene	µg/L	<	5										
	Hexachloroethane	µg/L	<	5										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5										
	Isophorone	µg/L	<	5										
	Naphthalene	µg/L	<	0.5										
	Nitrobenzene	µg/L	<	5										
	n-Nitrosodimethylamine	µg/L	<	5										
	n-Nitrosodi-n-Propylamine	µg/L	<	5										
	n-Nitrosodiphenylamine	µg/L	<	5										
	Phenanthrene	µg/L	<	2.2										
	Pyrene	µg/L	<	2.5										
	1,2,4-Trichlorobenzene	µg/L	<	0.5										
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 1.3, March 2021

Stream / Surface Water Information

Mechanicsburg Borough, NPDES Permit No. PA0020885, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Conodoguinet Creek**

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	010194	15.75	342	485			Yes
End of Reach 1	010194	14.14	338	488			Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi²)*	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	15.75	0.1	74.4									252	7		
End of Reach 1	14.14	0.1	74.8												

Q_h

Location	RMI	LFY (cfs/mi²)	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	15.75														
End of Reach 1	14.14														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Mechanicsburg Borough, NPDES Permit No. PA0020885, Outfall 001

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

Hydrodynamics

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
15.75	74.40		74.40	3.218	0.00047	1.057	144.939	137.136	0.507	0.194	1122.456
14.14	74.80		74.8								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
15.75	321.18		321.18	3.218	0.00047	1.983	144.939	73.091	1.129	0.087	465.965
14.14	322.685		322.69								

Wasteload Allocations

AFC CCT (min): 15 PMF: 0.116 Analysis Hardness (mg/l): 238.11 Analysis pH: 7.00

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	2,755	
Total Antimony	0	0		0	1,100	1,100	4,040	
Total Arsenic	0	0		0	340	340	1,249	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	77,131	
Total Boron	0	0		0	8,100	8,100	29,750	
Total Cadmium	0	0		0	4.677	5.15	18.9	Chem Translator of 0.908 applied
Total Chromium (III)	0	0		0	1159.530	3,669	13,477	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	59.8	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	349	
Total Copper	0	0		0	30.435	31.7	116	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	80.8	
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	163.730	246	905	Chem Translator of 0.665 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	6.05	Chem Translator of 0.85 applied
Total Nickel	0	0		0	975.496	977	3,590	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	14.305	16.8	61.8	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	239	
Total Zinc	0	0		0	244.403	250	918	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	11.0	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	650	650	2,387	
Benzene	0	0		0	640	640	2,351	
Bromoform	0	0		0	1,800	1,800	6,611	
Carbon Tetrachloride	0	0		0	2,800	2,800	10,284	
Chlorobenzene	0	0		0	1,200	1,200	4,407	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	66,112	
Chloroform	0	0		0	1,900	1,900	6,978	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	55,093	
1,1-Dichloroethylene	0	0		0	7,500	7,500	27,547	
1,2-Dichloropropane	0	0		0	11,000	11,000	40,402	
1,3-Dichloropropylene	0	0		0	310	310	1,139	
Ethylbenzene	0	0		0	2,900	2,900	10,651	
Methylene Chloride	0	0		0	12,000	12,000	44,075	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	3,673	
Tetrachloroethylene	0	0		0	700	700	2,571	
Toluene	0	0		0	1,700	1,700	6,244	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	24,976	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	11,019	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	12,488	
Trichloroethylene	0	0		0	2,300	2,300	8,448	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	2,057	
2,4-Dichlorophenol	0	0		0	1,700	1,700	6,244	
2,4-Dimethylphenol	0	0		0	660	660	2,424	
2,4-Dinitrophenol	0	0		0	660	660	2,424	
2-Nitrophenol	0	0		0	8,000	8,000	29,383	
4-Nitrophenol	0	0		0	2,300	2,300	8,448	
Pentachlorophenol	0	0		0	8.723	8.72	32.0	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,690	
Acenaphthene	0	0		0	83	83.0	305	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	1,102	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.84	
Benzo(a)Pyrene	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	110,187	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	16,528	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	992	
Butyl Benzyl Phthalate	0	0		0	140	140	514	
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	3,012	
1,3-Dichlorobenzene	0	0		0	350	350	1,286	
1,4-Dichlorobenzene	0	0		0	730	730	2,681	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	14,692	
Dimethyl Phthalate	0	0		0	2,500	2,500	9,182	
Di-n-Butyl Phthalate	0	0		0	110	110	404	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	5,877	
2,6-Dinitrotoluene	0	0		0	990	990	3,636	
1,2-Diphenylhydrazine	0	0		0	15	15.0	55.1	
Fluoranthene	0	0		0	200	200	735	
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	36.7	
Hexachlorocyclopentadiene	0	0		0	5	5.0	18.4	
Hexachloroethane	0	0		0	60	60.0	220	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	36,729	
Naphthalene	0	0		0	140	140	514	
Nitrobenzene	0	0		0	4,000	4,000	14,692	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	62,439	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	1,102	
Phenanthrene	0	0		0	5	5.0	18.4	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	477	

☑ ***CFC*** CCT (min): 720 PMF: 0.801 Analysis Hardness (mg/l): 249.39 Analysis pH: 7.00

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	4,294	
Total Arsenic	0	0		0	150	150	2,928	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	80,025	
Total Boron	0	0		0	1,600	1,600	31,229	

Total Cadmium	0	0		0	0.464	0.53	10.4	Chem Translator of 0.871 applied
Total Chromium (III)	0	0		0	156.655	182	3,555	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	203	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	371	
Total Copper	0	0		0	19.554	20.4	398	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	101	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	36,183	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	6.699	10.2	199	Chem Translator of 0.658 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	17.7	Chem Translator of 0.85 applied
Total Nickel	0	0		0	112.671	113	2,206	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	97.4	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	254	
Total Zinc	0	0		0	256.250	260	5,073	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	58.6	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	130	130	2,537	
Benzene	0	0		0	130	130	2,537	
Bromoform	0	0		0	370	370	7,222	
Carbon Tetrachloride	0	0		0	560	560	10,930	
Chlorobenzene	0	0		0	240	240	4,684	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	68,314	
Chloroform	0	0		0	390	390	7,612	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	60,507	
1,1-Dichloroethylene	0	0		0	1,500	1,500	29,277	
1,2-Dichloropropane	0	0		0	2,200	2,200	42,940	
1,3-Dichloropropylene	0	0		0	61	61.0	1,191	
Ethylbenzene	0	0		0	580	580	11,321	
Methylene Chloride	0	0		0	2,400	2,400	46,844	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	4,099	
Tetrachloroethylene	0	0		0	140	140	2,733	
Toluene	0	0		0	330	330	6,441	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	27,326	
1,1,1-Trichloroethane	0	0		0	610	610	11,906	
1,1,2-Trichloroethane	0	0		0	680	680	13,272	
Trichloroethylene	0	0		0	450	450	8,783	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	2,147	
2,4-Dichlorophenol	0	0		0	340	340	6,636	
2,4-Dimethylphenol	0	0		0	130	130	2,537	
2,4-Dinitrophenol	0	0		0	130	130	2,537	
2-Nitrophenol	0	0		0	1,600	1,600	31,229	

4-Nitrophenol	0	0		0	470	470	9,174		
Pentachlorophenol	0	0		0	6.693	6.69	131		
Phenol	0	0		0	N/A	N/A	N/A		
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,776		
Acenaphthene	0	0		0	17	17.0	332		
Anthracene	0	0		0	N/A	N/A	N/A		
Benzidine	0	0		0	59	59.0	1,152		
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.95		
Benzo(a)Pyrene	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	6,000	6,000	117,110		
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A		
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	17,762		
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	1,054		
Butyl Benzyl Phthalate	0	0		0	35	35.0	683		
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	160	160	3,123		
1,3-Dichlorobenzene	0	0		0	69	69.0	1,347		
1,4-Dichlorobenzene	0	0		0	150	150	2,928		
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A		
Diethyl Phthalate	0	0		0	800	800	15,615		
Dimethyl Phthalate	0	0		0	500	500	9,759		
Di-n-Butyl Phthalate	0	0		0	21	21.0	410		
2,4-Dinitrotoluene	0	0		0	320	320	6,246		
2,6-Dinitrotoluene	0	0		0	200	200	3,904		
1,2-Diphenylhydrazine	0	0		0	3	3.0	58.6		
Fluoranthene	0	0		0	40	40.0	781		
Fluorene	0	0		0	N/A	N/A	N/A		
Hexachlorobenzene	0	0		0	N/A	N/A	N/A		
Hexachlorobutadiene	0	0		0	2	2.0	39.0		
Hexachlorocyclopentadiene	0	0		0	1	1.0	19.5		
Hexachloroethane	0	0		0	12	12.0	234		
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A		
Isophorone	0	0		0	2,100	2,100	40,988		
Naphthalene	0	0		0	43	43.0	839		
Nitrobenzene	0	0		0	810	810	15,810		
n-Nitrosodimethylamine	0	0		0	3,400	3,400	66,362		
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A		
n-Nitrosodiphenylamine	0	0		0	59	59.0	1,152		
Phenanthrene	0	0		0	1	1.0	19.5		
Pyrene	0	0		0	N/A	N/A	N/A		
1,2,4-Trichlorobenzene	0	0		0	26	26.0	507		

THH CCT (min): 720 PMF: 0.801 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Model Results 10/6/2022

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	109	
Total Arsenic	0	0		0	10	10.0	195	
Total Barium	0	0		0	2,400	2,400	46,844	
Total Boron	0	0		0	3,100	3,100	60,507	
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	78.1	
Dissolved Iron	0	0		0	300	300	5,855	
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	19,518	
Total Mercury	0	0		0	0.050	0.05	0.98	
Total Nickel	0	0		0	610	610	11,906	
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	4.68	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	58.6	
Acrylamide	0	0		0	N/A	N/A	N/A	
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	1,952	
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	111	
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	644	
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	1,327	
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	1,113	

1,2-trans-Dichloroethylene	0	0		0	100	100.0	1,952	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	195,183	
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	586	
2,4-Dichlorophenol	0	0		0	10	10.0	195	
2,4-Dimethylphenol	0	0		0	100	100.0	1,952	
2,4-Dinitrophenol	0	0		0	10	10.0	195	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	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	78,073	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	1,366	
Anthracene	0	0		0	300	300	5,855	
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	
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	3,904	
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	1.95	
2-Chloronaphthalene	0	0		0	800	800	15,615	
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	19,518	
1,3-Dichlorobenzene	0	0		0	7	7.0	137	
1,4-Dichlorobenzene	0	0		0	300	300	5,855	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	11,711	
Dimethyl Phthalate	0	0		0	2,000	2,000	39,037	
Di-n-Butyl Phthalate	0	0		0	20	20.0	390	
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	390	
Fluorene	0	0		0	50	50.0	976	
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	78.1	
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	664	
Naphthalene	0	0		0	N/A	N/A	N/A	

Nitrobenzene	0	0		0	10	10.0	195	
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	390	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	1.37	

CRL CCT (min): ###### 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 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	
Acrylamide	0	0		0	0.07	0.07	7.06	
Acrylonitrile	0	0		0	0.06	0.06	6.05	
Benzene	0	0		0	0.58	0.58	58.5	
Bromoform	0	0		0	7	7.0	706	
Carbon Tetrachloride	0	0		0	0.4	0.4	40.3	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	80.7	
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	95.8		
1,2-Dichloroethane	0	0		0	9.9	9.9	998		
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A		
1,2-Dichloropropane	0	0		0	0.9	0.9	90.7		
1,3-Dichloropropylene	0	0		0	0.27	0.27	27.2		
Ethylbenzene	0	0		0	N/A	N/A	N/A		
Methylene Chloride	0	0		0	20	20.0	2,016		
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	20.2		
Tetrachloroethylene	0	0		0	10	10.0	1,008		
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	55.4		
Trichloroethylene	0	0		0	0.6	0.6	60.5		
Vinyl Chloride	0	0		0	0.02	0.02	2.02		
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		
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		
Pentachlorophenol	0	0		0	0.030	0.03	3.02		
Phenol	0	0		0	N/A	N/A	N/A		
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	151		
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	0.01		
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.1		
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.01		
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	1.01		
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	3.02		
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A		
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	32.3		
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	12.1		
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.01		
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	5.04		
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	5.04		
2,6-Dinitrotoluene	0	0		0	0.05	0.05	5.04		

Model Results 10/6/2022

1,2-Diphenylhydrazine	0	0		0	0.03	0.03	3.02	
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	0.008	
Hexachlorobutadiene	0	0		0	0.01	0.01	1.01	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	10.1	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.1	
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	0.071	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.5	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	333	
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

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	1,766	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	109	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	195	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	46,844	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	19,069	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	10.4	µg/L	Discharge Conc < TQL
Total Chromium (III)	3,555	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	38.4	µg/L	Discharge Conc ≤ 10% WQBEL

Total Cobalt	224	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	104	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	51.8	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	5,855	µg/L	Discharge Conc < TQL
Total Iron	36,183	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	199	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	19,518	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.98	µg/L	Discharge Conc < TQL
Total Nickel	2,206	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	97.4	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	39.6	µg/L	Discharge Conc < TQL
Total Thallium	4.68	µg/L	Discharge Conc < TQL
Total Zinc	588	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	7.06	µg/L	Discharge Conc < TQL
Acrylamide	7.06	µg/L	Discharge Conc ≤ 25% WQBEL
Acrylonitrile	6.05	µg/L	Discharge Conc < TQL
Benzene	58.5	µg/L	Discharge Conc < TQL
Bromoform	706	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	40.3	µg/L	Discharge Conc < TQL
Chlorobenzene	1,952	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	80.7	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	42,375	µg/L	Discharge Conc < TQL
Chloroform	111	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	95.8	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	998	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	644	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	90.7	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	27.2	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	1,327	µg/L	Discharge Conc < TQL
Methylene Chloride	2,016	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	20.2	µg/L	Discharge Conc < TQL
Tetrachloroethylene	1,008	µg/L	Discharge Conc < TQL
Toluene	1,113	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	1,952	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	7,063	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	55.4	µg/L	Discharge Conc < TQL
Trichloroethylene	60.5	µg/L	Discharge Conc < TQL
Vinyl Chloride	2.02	µg/L	Discharge Conc < TQL
2-Chlorophenol	586	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	195	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,554	µg/L	Discharge Conc < TQL

2,4-Dinitrophenol	195	µg/L	Discharge Conc < TQL
2-Nitrophenol	18,833	µg/L	Discharge Conc < TQL
4-Nitrophenol	5,415	µg/L	Discharge Conc < TQL
Pentachlorophenol	3.02	µg/L	Discharge Conc < TQL
Phenol	78,073	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	151	µg/L	Discharge Conc < TQL
Acenaphthene	195	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	5,855	µg/L	Discharge Conc < TQL
Benzidine	0.01	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.1	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.01	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	1.01	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	3.02	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	3,904	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	32.3	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	636	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	1.95	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	15,615	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	12.1	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.01	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,930	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	137	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	1,719	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	5.04	µg/L	Discharge Conc < TQL
Diethyl Phthalate	9,417	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	5,885	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	259	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	5.04	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	5.04	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	3.02	µg/L	Discharge Conc < TQL
Fluoranthene	390	µg/L	Discharge Conc < TQL
Fluorene	976	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.008	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	1.01	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	11.8	µg/L	Discharge Conc < TQL
Hexachloroethane	10.1	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.1	µg/L	Discharge Conc < TQL
Isophorone	664	µg/L	Discharge Conc < TQL
Naphthalene	330	µg/L	Discharge Conc < TQL
Nitrobenzene	195	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.071	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.5	µg/L	Discharge Conc < TQL

n-Nitrosodiphenylamine	333	µg/L	Discharge Conc < TQL
Phenanthrene	11.8	µg/L	Discharge Conc < TQL
Pyrene	390	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	1.37	µg/L	Discharge Conc < TQL

4. Total Mercury

Dear Permittee:

The Department of Environmental Protection (DEP) has reviewed your NPDES permit application and has reached a preliminary finding that new or more stringent water quality-based effluent limitations (WQBELs) for toxic pollutant(s) should be established in the permit. This finding is based on DEP's assessment that reasonable potential exists to exceed water quality criteria under Chapter 93 in the receiving waters during design flow conditions. The following WQBELs are anticipated based on the information available to DEP during its review:

Outfall No.	Pollutant	Average Monthly (µg/L)	Maximum Daily (µg/L)	IMAX (µg/L)
001	Total Mercury	0.98	1.52	2.44

Attached is a survey that DEP requests that you complete and return to DEP in 30 days. Completion of this survey will help DEP develop the draft NPDES permit and allow DEP to understand your current capabilities or plans to treat or control these pollutant(s). If you decide not to complete and return the survey, DEP will proceed with developing the draft NPDES permit based on all available information and certain assumptions. Your response to this notice does not constitute an official comment for DEP response but will be taken under consideration. When the draft NPDES permit is formally noticed in the *Pennsylvania Bulletin*, you may make official comments for DEP's further consideration and response.

Please contact me if you have any questions about this information or the attached survey.

Sincerely,

Jinsu Kim
Environmental Engineering Specialist
Clean Water Program

Pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Clean Water

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PRE-DRAFT PERMIT SURVEY FOR TOXIC POLLUTANTS

Permittee Name: **Mechanicsburg Borough Cumberland County** Permit No.: **PA0020885**

Pollutant(s) identified by DEP that may require WQBELs: **Total Mercury**

Is the permittee aware of the source(s) of the pollutant(s)? ☐ Yes ☐ No ☒ Suspected

If Yes or Suspected, describe the known or suspected source(s) of pollutant(s) in the effluent.

Infiltration of Ground Water and precipitation-induced I/I appears to be increasing concentration in influent; possibly failed seals on trickling filter distributors may increase concentration in effluent. Current influent testing is being performed and indicates that groundwater and I/I increases the concentration in the WWTP influent.

Has the permittee completed any studies in the past to control or treat the pollutant(s)? ☐ Yes ☒ No

If Yes, describe prior studies and results:

Does the permittee believe it can achieve the proposed WQBELs now? ☐ Yes ☐ No ☒ Uncertain

If No, describe the activities, upgrades or process changes that would be necessary to achieve the WQBELs, if known.

Continue to analyze influent samples to confirm suspected increase of pollutant from groundwater and/or precipitation-induced I/I; determine ability to limit I/I into WWTP. Although a low likelihood, if pollutant concentration in effluent is a result of trickling filter seal failure, replace the seals on the trickling filter distributors.

Estimated date by which the permittee could achieve the proposed WQBELs: ☒ Uncertain

Will the permittee conduct additional sampling for the pollutant(s) to supplement the application? ☒ Yes ☐ No

Check the appropriate box(es) below to indicate site-specific data that have been collected by the permittee in the past. If any of these data have not been submitted to DEP, please attach to this survey.

☐	Discharge pollutant concentration coefficient(s) of variability	Year(s) Studied:
☐	Discharge and background Total Hardness concentrations (metals)	Year(s) Studied:
☐	Background / ambient pollutant concentrations	Year(s) Studied:
☐	Chemical translator(s) (metals)	Year(s) Studied:
☐	Slope and width of receiving waters	Year(s) Studied:
☐	Velocity of receiving waters at design conditions	Year(s) Studied:
☐	Acute and/or chronic partial mix factors (mixing at design conditions)	Year(s) Studied:
☐	Volatilization rates (highly volatile organics)	Year(s) Studied:
☐	Site-specific criteria (e.g., Water Effect Ratio or related study)	Year(s) Studied:

Please submit this survey to the DEP regional office that is reviewing the permit application within 30 days of receipt.

Kim, Jin Su

From: Mendinsky, Justin <jmendinsky@hrg-inc.com>
Sent: Thursday, June 23, 2022 4:43 PM
To: Kim, Jin Su; Curtis Huey
Cc: Martin, Daniel; Luongo, Erica; Pollart, Yves
Subject: RE: [External] RE: Mechanicsburg Borough NPDES Permit Renewal Application
Attachments: PA0020885 Pre-Draft Permit Survey (Total Mercury) (002).docx

Hi Jinsu. Please see attached survey form. Thank you.

Justin J. Mendinsky, PE
Group Manager | Water & Wastewater

HERBERT, ROWLAND & GRUBIC, INC.
369 East Park Drive
Harrisburg, PA 17111
717.564.1121 (o) | 717.461.6864 (c)
jmendinsky@hrg-inc.com | vCard
hrg-inc.com | LinkedIn | Facebook

From: Kim, Jin Su <jikim@pa.gov>
Sent: Wednesday, June 22, 2022 8:08 AM
To: Mendinsky, Justin <jmendinsky@hrg-inc.com>; Curtis Huey <chuey@mechanicsburgborough.org>
Cc: Martin, Daniel <daniemarti@pa.gov>; Luongo, Erica <eluongo@hrg-inc.com>; Pollart, Yves <ypollart@hrg-inc.com>
Subject: RE: [External] RE: Mechanicsburg Borough NPDES Permit Renewal Application

Hi Justin,

That is fine. However, could you please complete and submit the survey form I provided previously by the end of this week?
Jinsu

Jinsu Kim | Permits Section
Department of Environmental Protection | Clean Water Program
Southcentral Regional Office
909 Elmerton Avenue | Harrisburg, Pa 17110-8200
Phone: 717.705.4825 | Fax: 717.705.4760
www.dep.state.pa.us

From: Mendinsky, Justin <jmendinsky@hrg-inc.com>
Sent: Monday, June 20, 2022 11:46 AM
To: Kim, Jin Su <jikim@pa.gov>; Curtis Huey <chuey@mechanicsburgborough.org>

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Kim, Jin Su

From: Curtis Huey <chuey@mechanicsburgborough.org>
Sent: Wednesday, October 5, 2022 10:11 AM
To: Kim, Jin Su; Mendinsky, Justin
Cc: Martin, Daniel; Luongo, Erica; Pollart, Yves
Subject: RE: [External] RE: Mechanicsburg Borough NPDES Permit Renewal Application

Jin Su,

Below are the results of 10 additional mercury tests for our NPDES permit renewal.

Curtis

	Influent					Effluent				
Date	Flow (MGD)	Hg	(mg/L)	Hg	(lbs/day)	Flow (MGD)	Hg	(mg/L)	Hg	
8/16/2022	0.658	<	0.0002	<	0.0011	0.554	<	0.0002	<	0.000
8/18/2022	0.706		0.0004		0.00236	0.594	<	0.0002	<	0.000
8/23/2022	0.666	<	0.0002	<	0.00111	0.559	<	0.0002	<	0.000
8/24/2022	0.675	<	0.0002	<	0.00113	0.573	<	0.0002	<	0.000
8/25/2022	0.715	<	0.0002	<	0.00119	0.631	<	0.0002	<	0.001
8/30/2022	0.799	<	0.0002	<	0.00133	0.657	<	0.0002	<	0.001
9/5/2022	0.924	<	0.0002	<	0.00154	0.885	<	0.0002	<	0.001
9/7/2022	0.752	<	0.0002	<	0.00125	0.681	<	0.0002	<	0.001
9/12/2022	0.705	<	0.0002	<	0.00118	0.639	<	0.0002	<	0.001
9/14/2022	0.656		0.0003		0.00164	0.538	<	0.0002	<	0.000

5. TRC_CALC Worksheet

TRC_CALC

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	74.4	**= Qstream (cfs)**		**0.5**	**= CV Daily**	
5	2.08	**= Qdischarge (MGD)**		**0.5**	**= CV Hourly**	
6	30	**= no. samples**		**1**	**= AFC_Partial Mix Factor**	
7	0.3	**= Chlorine Demand of Stream**		**1**	**= CFC_Partial Mix Factor**	
8	0	**= Chlorine Demand of Discharge**		**15**	**= AFC_Criteria Compliance Time (min)**	
9	**0.45**	**= BAT/BPJ Value**		**720**	**= CFC_Criteria Compliance Time (min)**	
	0	**= % Factor of Safety (FOS)**			**=Decay Coefficient (K)**	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	**1.3.2.iii**	WLA afc = 7.395		**1.3.2.ii**	WLA cfc = 7.202
12	PENTOXSD TRG	**5.1a**	LTAMULT afc = 0.373		**5.1c**	LTAMULT cfc = 0.581
13	PENTOXSD TRG	**5.1b**	LTA_afc= 2.755		**5.1d**	LTA_cfc = 4.187
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.450		BAT/BPJ	
18			INST MAX LIMIT (mg/l) = 1.472			

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...** **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**

6. Total Copper (TOXCON)

	Facility:	Mechanicsburg Borough			
	NPDES #:	PA0020885			
	Outfall No:	001			
	n (Samples/Month):	4			
	Reviewer/Permit Engineer:	Jinsu Kim			
Parameter Name	Total Copper				
Units	mg/L				
Detection Limit					
Sample Date	*When entering values below the detection limit, enter "ND" or use the < notation (eg. <0.02)*				
Apr-17	0.034				
Jul-17	< 0.040				
Oct-17	< 0.022				
Jan-18	< 0.045				
Apr-18	< 0.13				
Jul-18	< 0.032				
Oct-18	< 0.13				
Jan-19	< 0.09				
Apr-19	< 0.063				
Jul-19	0.053				
Oct-19	0.04				
Jan-20	0.068				
Apr-20	0.066				
Jul-20	0.033				
Oct-20	0.053				
Jan-21	0.07				
Apr-21	0.082				
Jul-21	0.057				
Oct-21	0.041				
Jan-22	0.033				
Apr-22	0.04				
Jul-22	0.033				

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		Reviewer/Permit Engineer:	Jinsu Kim
Facility:	Mechanicsburg Borough		
NPDES #:	PA0020885		
Outfall No:	001		
n (Samples/Month):	4		

Parameter	Distribution Applied	Coefficient of Variation (daily)	Avg. Monthly
Total Copper (mg/L)	Delta-Lognormal	0.8608267	0.0699704

7. Whole Effluent Toxicity Analysis Spreadsheet

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.05
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Mechanicsburg Borough

Permit No.: PA0020885

Replicate No.	Test Completion Date: 11/7/2017 Control	TIWC
1	10	10
2	10	10
3	10	9
4	9	8
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.250
Std Dev.	0.500	0.957
# Replicates	4	4

T-Test Result	3.3502
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

Replicate No.	Test Completion Date: 5/21/2018 Control	TIWC
1	10	10
2	9	10
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	10.000
Std Dev.	0.500	0.000
# Replicates	4	4

T-Test Result	12.5523
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	PASS

Replicate No.	Test Completion Date: 8/7/2019 Control	TIWC
1	10	10
2	10	10
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	10.000
Std Dev.	0.000	0.000
# Replicates	4	4

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

Replicate No.	Test Completion Date: 8/11/2020 Control	TIWC
1	10	10
2	10	10
3	10	10
4	10	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	9.750
Std Dev.	0.000	0.500
# Replicates	4	4

T-Test Result	7.6643
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.05
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Mechanicsburg Borough

Permit No.: PA0020885

Replicate No.	Test Completion Date: 11/7/2017 Control	TIWC
1	0.256	0.391
2	0.347	0.37
3	0.402	0.24
4	0.349	0.305
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.339	0.327
Std Dev.	0.061	0.068
# Replicates	4	4
T-Test Result	1.7703	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 8/20/2018 Control	TIWC
1	0.573	0.477
2	0.497	0.486
3	0.603	0.51
4	0.505	0.486
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.545	0.490
Std Dev.	0.052	0.014
# Replicates	4	4
T-Test Result	3.9359	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 8/7/2019 Control	TIWC
1	0.223	0.347
2	0.319	0.347
3	0.309	0.35
4	0.32	0.355
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.293	0.350
Std Dev.	0.047	0.004
# Replicates	4	4
T-Test Result	7.3811	
Deg. of Freedom	3	
Critical T Value	0.7649	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 8/11/2020 Control	TIWC
1	0.428	0.493
2	0.367	0.423
3	0.377	0.499
4	0.341	0.367
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.378	0.446
Std Dev.	0.036	0.063
# Replicates	4	4
T-Test Result	4.7320	
Deg. of Freedom	4	
Critical T Value	0.7407	
Pass or Fail	PASS	

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.05
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Mechanicsburg Borough

Permit No.: PA0020885

Test Completion Date: 11/7/2017

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: 8/20/2018

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: 8/6/2019

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	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: 8/10/2020

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	0
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	0.900
Std Dev.	0.000	0.316
# Replicates	10	10

T-Test Result: 1.5000
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)	0.05
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.2

Facility Name: Mechanicsburg Borough

Permit No.: PA0020885

Test Completion Date: 11/7/2017

Replicate No.	Control	TIWC
1	24	26
2	25	32
3	34	30
4	31	35
5	30	26
6	25	31
7	34	28
8	36	35
9	32	33
10	30	20
11		
12		
13		
14		
15		
Mean	30.100	29.600
Std Dev.	4.202	4.695
# Replicates	10	10

T-Test Result	3.9286
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

Test Completion Date: 8/20/2018

Replicate No.	Control	TIWC
1	27	32
2	30	36
3	31	40
4	30	37
5	30	32
6	29	31
7	38	34
8	35	28
9	34	34
10	34	31
11		
12		
13		
14		
15		
Mean	31.800	33.500
Std Dev.	3.327	3.472
# Replicates	10	10

T-Test Result	7.1373
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

Test Completion Date: 8/6/2019

Replicate No.	Control	TIWC
1	32	38
2	34	37
3	30	33
4	25	28
5	36	36
6	30	24
7	33	46
8	35	38
9	30	37
10	31	32
11		
12		
13		
14		
15		
Mean	31.600	34.900
Std Dev.	3.169	6.064
# Replicates	10	10

T-Test Result	5.4381
Deg. of Freedom	13
Critical T Value	0.8702
Pass or Fail	PASS

Test Completion Date: 8/10/2020

Replicate No.	Control	TIWC
1	16	16
2	30	30
3	28	35
4	18	37
5	34	38
6	28	32
7	22	34
8	28	0
9	30	36
10	20	27
11		
12		
13		
14		
15		
Mean	25.400	28.500
Std Dev.	5.967	11.909
# Replicates	10	10

T-Test Result	2.3489
Deg. of Freedom	13
Critical T Value	0.8702
Pass or Fail	PASS

WET Summary and Evaluation

Facility Name	Mechanicsburg Borough
Permit No.	PA0020885
Design Flow (MGD)	2.08
Q_{7-10} Flow (cfs)	74.4
PMF_a	0.116
PMF_c	0.801

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/7/17	5/21/18	8/7/19	8/11/20
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/7/17	8/20/18	8/7/19	8/11/20
Pimephales	Growth	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/7/17	8/20/18	8/6/19	8/10/20
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	11/7/17	8/20/18	8/6/19	8/10/20
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**	
TIWC	**5**	% Effluent
Dilution Series	**2, 5, 30, 60, 100**	% Effluent
Permit Limit	**None**	
Permit Limit Species		