pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0020621**
Facility Type	**Municipal**	APS ID	**276446**
Major / Minor	**Major**	Authorization ID	**1433370**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Waynesboro Borough Authority** **Franklin County**	Facility Name	**Waynesboro STP**
Applicant Address	PO Box 310 57 E Main Street Waynesboro, PA 17268-0310	Facility Address	99 Cemetery Avenue Waynesboro, PA 17268
Applicant Contact	Scott Pryor	Facility Contact	Leitor Pryor
Applicant Phone	(717) 762-2101	Facility Phone	(717) 762-2101
Client ID	69281	Site ID	451504
Ch 94 Load Status	Not Overloaded	Municipality	Waynesboro Borough
Connection Status	No Limitations	County	Franklin
Date Application Received	March 27, 2023	EPA Waived?	No
Date Application Accepted	March 31, 2023	If No, Reason	Major Facility, Significant CB Discharge

Purpose of Application: This is an application for NPDES renewal.

Approve	Deny	Signatures	Date
X		Nicholas Hong, P.E. / Environmental Engineer Nick Hong (via electronic signature)	February 23, 2024
x		Daniel W. Martin, P.E. / Environmental Engineer Manager Maria D. Bebenek for Daniel W. Martin	March 22, 2024
x		Maria D. Bebenek, P.E. / Environmental Program Manager Maria D. Bebenek	March 22, 2024

Summary of Review

The application submitted by the applicant requests a NPDES renewal permit for the Waynesboro STP located at 99 Cemetery Avenue, Waynesboro, PA 17268 in Franklin County, municipality of Waynesboro Borough. The existing permit became effective on October 1, 2018 and expired on September 30, 2023. The application for renewal was received by DEP Southcentral Regional Office (SCRO) on March 27, 2023.

The purpose of this Fact Sheet is to present the basis of information used for establishing the proposed NPDES permit effluent limitations. The Fact Sheet includes a description of the facility, a description of the facility's receiving waters, a description of the facility's receiving waters attainment/non-attainment assessment status, and a description of any changes to the proposed monitoring/sampling frequency. Section 6 provides the justification for the proposed NPDES effluent limits derived from technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), total maximum daily loading (TMDL), antidegradation, anti-backsliding, and/or whole effluent toxicity (WET). A brief summary of the outlined descriptions has been included in the Summary of Review section.

The subject facility is a 1.6 MGD annual average treatment facility. The hydraulic design capacity of the treatment units is 1.9 mgd. The applicant anticipates a proposed upgrade to the treatment facility in the next five years. The facility is planning on installing a trickling filter media replacement and headworks modification including grit removal and screening. The NPDES application has been processed as a Major Sewage Facility (< 5 MGD) due to the type of sewage and the design flow rate for the facility. The applicant disclosed the Act 14 requirement to Franklin County and Waynesboro Borough Council and the notice was received by the parties on January 2023. A planning approval letter was not necessary as the facility is neither new or expanding.

Utilizing the DEP's web-based Emap-PA information system, the receiving waters has been determined to be Trib 59292 To East Branch Antietam Creek. The sequence of receiving streams that the Trib 59292 To East Branch Antietam Creek discharges into are East Branch Antietam Creek, Antietam Creek, and the Potomac River which eventually drains into the Chesapeake Bay. The subject site is subject to the Chesapeake Bay implementation requirements. The receiving water has protected water usage for cold water fishes (CWF) and migratory fishes (MF). No Class A Wild Trout fisheries are impacted by this discharge. The absence of high quality and/or exceptional value surface waters removes the need for an additional evaluation of anti-degradation requirements.

The Trib 59292 To East Branch Antietam Creek is a Category 2, 4c, and 5 stream listed in the 2024 Integrated List of All Waters (formerly 303d Listed Streams). This stream is an attaining stream that supports fish consumption. The receiving waters is impaired (1) due to habitat modification from habitat alterations and (2) recreational uses due to pathogens from an unknown source. The receiving waters is not subject to a local total maximum daily load (TMDL) plan to improve water quality in the subject facility's watershed.

The existing permit and proposed permit differ as follows:

- **Due to the EPA triennial review, monitoring for E. Coli shall be required.**
- **Monitoring for PFAS related parameters shall be required.**

Sludge use and disposal description and location(s):

- Barr Farm in Franklin County, Antrim under PAG083579 for agricultural utilization
- Gayman Farm in Franklin County, Antrim under PAG083579 for agricultural utilization
- West Branch Farm in Franklin County, Waynesboro under PAG083579 for agricultural utilization

The proposed permit will expire five (5) years from the effective date.

Based on the review in this report, it is recommended that the permit be drafted. 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.

Summary of Review
Any additional information or public review of documents associated with the discharge or facility may be available at PA DEP Southcentral Regional Office (SCRO), 909 Elmerton Avenue, Harrisburg, PA 17110. To make an appointment for file review, contact the SCRO File Review Coordinator at 717.705.4700.

1.0 Applicant

1.1 General Information

This fact sheet summarizes PA Department of Environmental Protection's review for the NPDES renewal for the following subject facility.

Facility Name:	Waynesboro WWTP
NPDES Permit #	PA0020621
Physical Address:	99 Cemetery Avenue Waynesboro, PA 17268
Mailing Address:	PO Box 310 Waynesboro, PA 17268
Contact:	Scott Pryor Director of Utilities leiter@waynesboropa.org
Consultant:	Nicholaus Sahd Principal Environmental Scientist Gannett Fleming, Inc. 207 Senate Avenue Camp Hill, PA 17011 (717) 886-5395 nsahd@gfnet.com

1.2 Permit History

Permit submittal included the following information.

- NPDES Application
- Flow Diagrams
- Influent Sample Data
- Effluent Sample Data
- WET Testing Data

2.0 Treatment Facility Summary

2.1.1 Site location

The physical address for the facility is 99 Cemetery Avenue, Waynesboro, PA 17268. A topographical and an aerial photograph of the facility are depicted as Figure 1 and Figure 2.

Figure 1: Topographical map of the subject facility

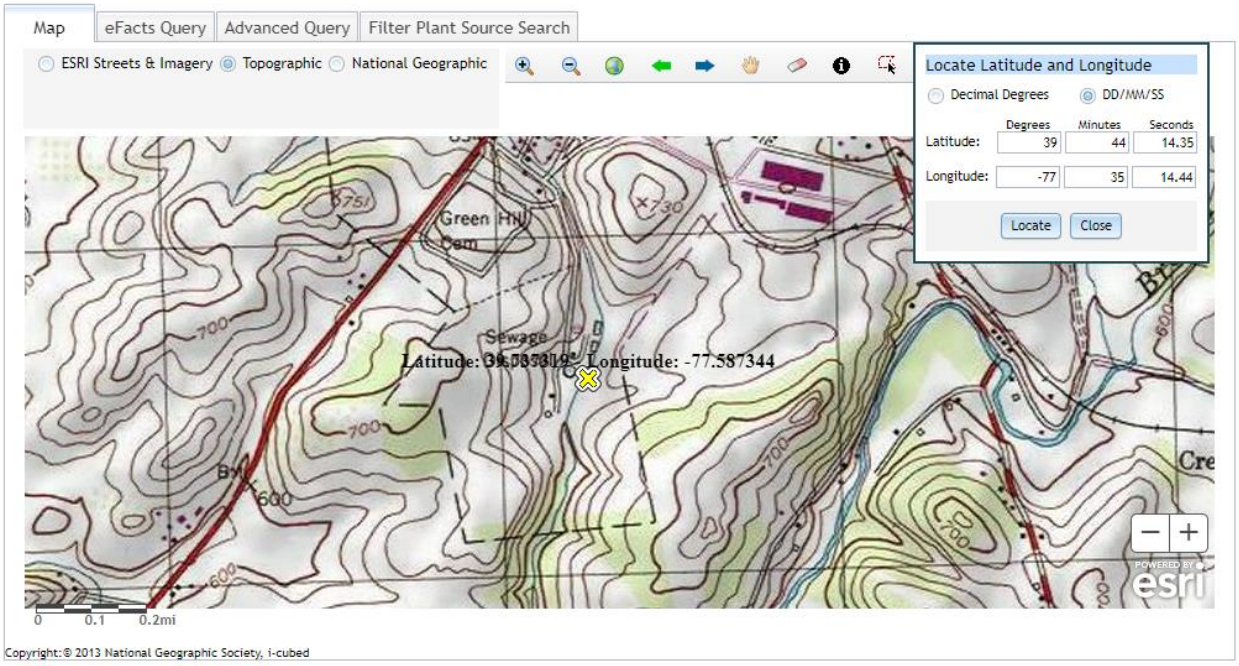
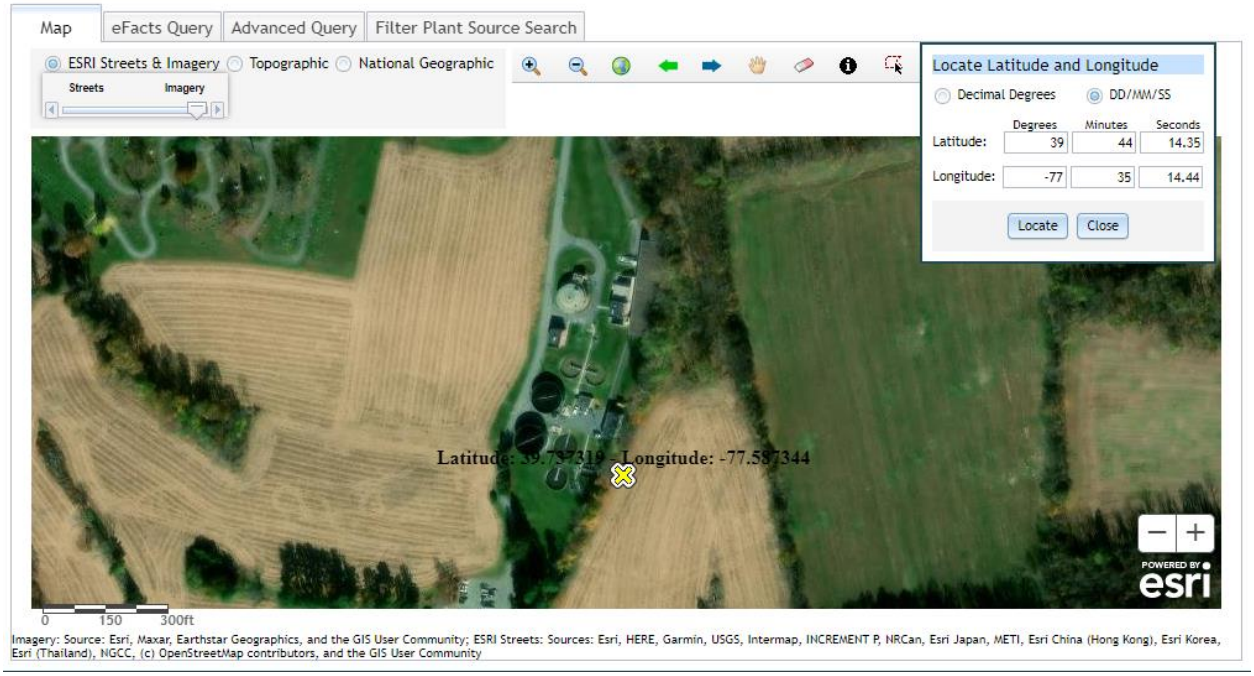


Figure 2: Aerial Photograph of the subject facility



2.1.2 Sources of Wastewater/Stormwater

The facility receives wastewater contribution from two different municipalities. See the summary table.

Sources of Wastewater		
Municipalities Served	**Flow Contribution**	**Population**
Waynesboro Borough	95%	13,100
Washington Township	5%	925

The facility did not receive any hauled-in wastes in the last three years and does not anticipate receiving hauled-in wastes in the next five years.

The facility has the following industrial/commercial users.

- Tyco Electronics located at 627 North Grant Street, Waynesboro, PA. The facility is a categorical industry with a total wastewater flow of 31,850 gpd. The sanitary wastewater contribution is 11,900 gpd (included in the total wastewater flow).
- York Refrigeration located at 100 Cumberland Valley Avenue, Waynesboro, PA. The facility is not a categorical industry. The total wastewater flow is 10,906 gpd. The sanitary wastewater contribution is 8,426 gpd (included in the total wastewater flow).

The facility has the following outfall information for stormwater.

Outfall No. 002 **Design Flow (MGD)** 0
Latitude 39º 44' 20.35" **Longitude** -77º 35' 13.80"
Wastewater Description: Stormwater

Outfall No. 003 **Design Flow (MGD)** 0
Latitude 39º 44' 17.62" **Longitude** -77º 35' 13.33"
Wastewater Description: Stormwater

2.2 Description of Wastewater Treatment Process

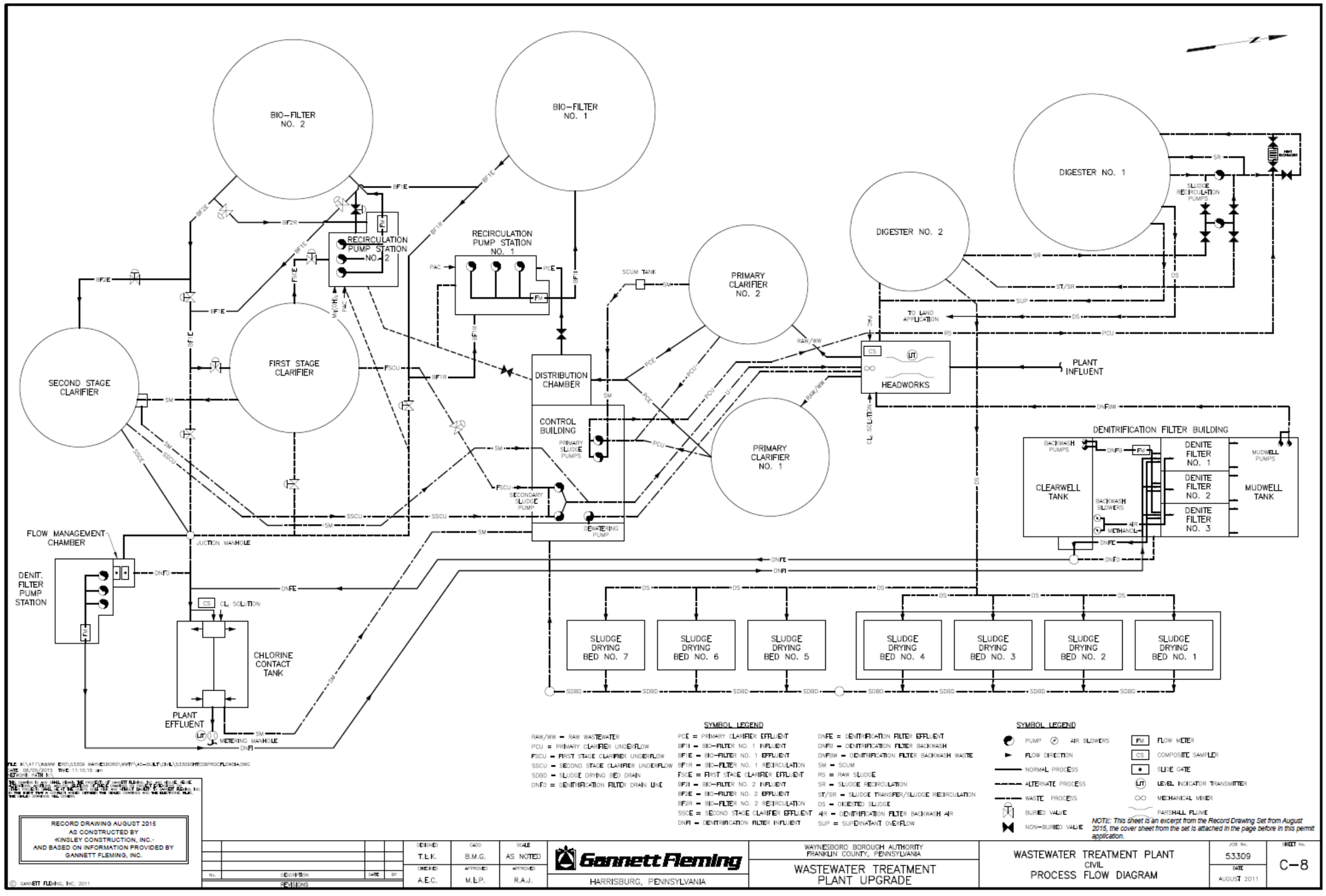
The subject facility is a 1.6 MGD design (annual average) flow facility. The subject facility treats wastewater using two primary clarifiers, stage one biofilter/clarifier, stage two biofilter/clarifier, denitrification filter, and chlorine disinfection prior to discharge through the outfall to UNT of the East Branch Antietam Creek.

The facility is being evaluated for flow, pH, dissolved oxygen, TRC, CBOD, TSS, fecal coliform, copper, nitrogen species, and phosphorus. The existing permits limits for the facility is summarized in Section 2.4.

The treatment process is summarized in the table.

Treatment Facility Summary				
Treatment Facility Name: Waynesboro STP				
WQM Permit No.	**Issuance Date**			
2888401	06/01/2011			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Trickling Filter With Settling	Gas Chlorine	1.6
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
1.9	3245	Not Overloaded	Aerobic Digestion	Land Application

A plan view schematic of the treatment process is shown.


BIO-FILTER NO. 2
BIO-FILTER NO. 1
RECIRCULATION PUMP STATION NO. 2
RECIRCULATION PUMP STATION NO. 1
PRIMARY CLARIFIER NO. 2
DIGESTER NO. 1
DIGESTER NO. 2
SECOND STAGE CLARIFIER
FIRST STAGE CLARIFIER
DISTRIBUTION CHAMBER
CONTROL BUILDING
PRIMARY CLARIFIER NO. 1
SCUM TANK
SLUDGE RECIRCULATION PUMPS
TO LAND APPLICATION
HEADWORKS
PLANT INFLUENT
DENITRIFICATION FILTER BUILDING
BACKWASH PUMPS
CLEARWELL TANK
BACKWASH BLOWERS
DENITE FILTER NO. 1
DENITE FILTER NO. 2
DENITE FILTER NO. 3
MUDWELL PUMPS
MUDWELL TANK
FLOW MANAGEMENT CHAMBER
DENIT. FILTER PUMP STATION
JUNCTION MANHOLE
CHLORINE CONTACT TANK
PLANT EFFLUENT
METERING MANHOLE
SECONDARY SLUDGE PUMP
DEWATERING PUMP
PRIMARY SLUDGE PUMPS
SLUDGE DRYING BED NO. 7
SLUDGE DRYING BED NO. 6
SLUDGE DRYING BED NO. 5
SLUDGE DRYING BED NO. 4
SLUDGE DRYING BED NO. 3
SLUDGE DRYING BED NO. 2
SLUDGE DRYING BED NO. 1
CL2 SOLUTION
METHANOL
AIR
SYMBOL LEGEND
RAW/WW = RAW WASTEWATER
PCU = PRIMARY CLARIFIER UNDERFLOW
FSCU = FIRST STAGE CLARIFIER UNDERFLOW
SSCU = SECOND STAGE CLARIFIER UNDERFLOW
SDBD = SLUDGE DRYING BED DRAIN
DNFD = DENITRIFICATION FILTER DRAIN LINE
PCE = PRIMARY CLARIFIER EFFLUENT
BF1I = BIO-FILTER NO. 1 INFLUENT
BF1E = BIO-FILTER NO. 1 EFFLUENT
BF1R = BIO-FILTER NO. 1 RECIRCULATION
FSCE = FIRST STAGE CLARIFIER EFFLUENT
BF2I = BIO-FILTER NO. 2 INFLUENT
BF2E = BIO-FILTER NO. 2 EFFLUENT
BF2R = BIO-FILTER NO. 2 RECIRCULATION
SSCE = SECOND STAGE CLARIFIER EFFLUENT
DNFI = DENITRIFICATION FILTER INFLUENT
DNFE = DENITRIFICATION FILTER EFFLUENT
DNFW = DENITRIFICATION FILTER BACKWASH
DNFBW = DENITRIFICATION FILTER BACKWASH WASTE
SM = SCUM
RS = RAW SLUDGE
SR = SLUDGE RECIRCULATION
ST/SR = SLUDGE TRANSFER/SLUDGE RECIRCULATION
DS = DIGESTED SLUDGE
AIR = DENITRIFICATION FILTER BACKWASH AIR
SUP = SUPERNATANT OVERFLOW
SYMBOL LEGEND
PUMP
AIR BLOWERS
FLOW DIRECTION
NORMAL PROCESS
ALTERNATE PROCESS
WASTE PROCESS
BURIED VALVE
NON-BURIED VALVE
FLOW METER
COMPOSITE SAMPLER
SLIDE GATE
LEVEL INDICATOR TRANSMITTER
MECHANICAL MIXER
PARSHALL FLUME
NOTE: This sheet is an excerpt from the Record Drawing Set from August 2015, the cover sheet from the set is attached in the page before in this permit application.
RECORD DRAWING AUGUST 2015
AS CONSTRUCTED BY
KINSLEY CONSTRUCTION, INC.
AND BASED ON INFORMATION PROVIDED BY
GANNETT FLEMING, INC.
© GANNETT FLEMING, INC. 2011
DESIGNED T.L.K.
DRAWN B.M.G.
SCALE AS NOTED
CHECKED A.E.C.
APPROVED M.L.P.
APPROVED R.A.J.
Gannett Fleming
HARRISBURG, PENNSYLVANIA
WAYNESBORO BOROUGH AUTHORITY
FRANKLIN COUNTY, PENNSYLVANIA
WASTEWATER TREATMENT PLANT UPGRADE
WASTEWATER TREATMENT PLANT
CIVIL
PROCESS FLOW DIAGRAM
JOB No. 53309
DATE AUGUST 2011
SHEET No. C-8

2.3 Facility Outfall Information

The facility has the following outfall information for wastewater.

Outfall No.	001	**Design Flow (MGD)**	1.6
Latitude	39º 44' 14.61"	**Longitude**	-77º 35' 14.78"
Wastewater Description:	Sewage Effluent		

The subject facility outfall is within the vicinity of another sewage/wastewater outfall. The Washington Township MA WWTP (PA0080225, Latitude 39.72627 and Longitude 77.59202) is located on the East Branch Antietam Creek.

2.3.1 Operational Considerations- Chemical Additives

Chemical additives are chemical products introduced into a waste stream that is used for cleaning, disinfecting, or maintenance and which may be detected in effluent discharged to waters of the Commonwealth. Chemicals excluded are those used for neutralization of waste streams, the production of goods, and treatment of wastewater.

The subject facility utilizes the following chemicals as part of their treatment process.

- Poly-aluminum chloride for phosphorus removal
- Methanol for denitrification aid
- Magnesium hydroxide for supplemental alkalinity control
- Chlorine gas for disinfection

2.4 Existing NPDES Permits Limits

The existing NPDES permit limits are summarized in the table.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. A. For Outfall 001 , **Latitude** 39° 44' 14.35" , **Longitude** -77° 35' 14.44" , **River Mile Index** 1.003 , **Stream Code** 59291

Receiving Waters: Unnamed Tributary to East Branch Antietam Creek

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **October 1, 2018** through **September 30, 2023**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

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	7.0	XXX	9.0 Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.36	XXX	1.17	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	330	530	XXX	25.0	40.0	50	2/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Suspended Solids	400	600	XXX	30	45	60	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

Outfall 001 , Continued (from October 1, 2018 through September 30, 2023)

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-Nitrogen Nov 1 - Apr 30	180	XXX	XXX	13.5	XXX	27	2/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	60	XXX	XXX	4.5	XXX	9	2/week	24-Hr Composite
Copper, Total	XXX	XXX	XXX	0.053	0.132 Daily Max	XXX	1/week	24-Hr Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Discharge from facility

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. B. For Outfall 001, Latitude 39º 44' 14.35", Longitude -77º 35' 14.44", River Mile Index 1.003, Stream Code 59291

Receiving Waters: Unnamed Tributary to East Branch Antietam Creek

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **October 1, 2018** through **September 30, 2023**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs) (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	29,223	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	3,896	XXX	XXX	XXX	XXX	1/month	Calculation

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Discharge from facility

Footnotes:
(1) See Part C for Chesapeake Bay Requirements.
(2) This is the minimum number of sampling events required. Permittees are encouraged, and it may be advantageous in demonstrating compliance, to perform more than the minimum number of sampling events required.

3.0 Facility NPDES Compliance History

3.1 Summary of Inspections

A summary of the most recent inspections during the existing permit review cycle is as follows.

The DEP inspector noted the following during the inspection.

12/13/2019:

- There was nothing significant to report.

05/22/2020:

- There was nothing significant to report.

07/22/2021:

- Ensure that the facility's flow meters are calibrated on an annual basis.

05/02/2023:

- The NIST thermometers were observed to have not been replaced since February 2022. DEP recommends replacing or calibrating NIST thermometers on an annual basis.
- A review of DMR data for November 2022 was conducted and compared to the daily effluent supplemental report, influent supplemental report, lab results, and bench sheets. The average and max loadings were found to be incorrect on the influent and process control supplemental report. DEP requests revising average and max loadings on the influent supplemental report for November

2022. DEP requests revising the November 21, 2022 NO2-N + NO3-N entry to match the lab results.

- The staff were shown the self-calculating excel influent supplemental report that can be used to report influent data. Sludge supplemental reports were not being maintained on site and submitted through eDMR for months when hauling didn't occur. DEP requested submitting the sludge supplemental report through eDMR each month and checking the box when sludge hauling does not occur.
- The facility switched to LABS, Inc from Franklin Analytical starting February 2023. A lab accreditation form was not submitted to eDMR.

3.2 Summary of DMR Data

A review of approximately 1-year of DMR data shows that the monthly average flow data for the facility below the design capacity of the treatment system. The maximum average flow data for the DMR reviewed was 0.788 MGD in September 2023. The hydraulic design capacity of the treatment system is 1.9 MGD.

The off-site laboratory used for the analysis of the parameters was Fairway Laboratories located at 2019 Ninth Avenue, Altoona, PA 16602.

The off-site laboratory used for the WET analysis of the parameters was American Aquatic Testing, Inc. located at 890 North Graham Street, Allentown, PA 18109.

DMR Data for Outfall 001 (from December 1, 2022 to November 30, 2023)

Parameter	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22
Flow (MGD) Average Monthly	0.734	0.770	0.788	0.787	0.736	0.736	0.680	0.681	0.695	0.672	0.717	0.751
Flow (MGD) Daily Maximum	1.203	0.894	0.985	1.374	1.755	0.935	0.802	0.910	0.981	0.729	0.987	1.238
pH (S.U.) Minimum	7.0	7.0	7.1	7.4	7.5	7.6	7.5	7.5	7.5	7.6	7.5	7.4
pH (S.U.) Maximum	8.4	7.7	8.0	8.0	7.9	7.8	7.8	7.8	8.1	8.0	7.9	8.0
DO (mg/L) Minimum	8.1	7.3	7.1	7.0	6.4	6.8	7.2	7.0	8.0	8.0	8.1	8.5
TRC (mg/L) Average Monthly	0.23	0.24	0.27	0.26	0.19	0.19	0.17	0.22	0.19	0.24	0.22	0.24
TRC (mg/L) Instantaneous Maximum	0.47	0.38	0.58	0.41	0.35	0.32	0.33	0.34	0.35	0.35	0.33	0.35
CBOD5 (lbs/day) Average Monthly	< 41	34	< 2.5	< 17	< 19	29	28	30	35	40	< 56	51
CBOD5 (lbs/day) Weekly Average	64	39	< 2.7	< 20	29	34	34	32	46	44	75	63
CBOD5 (mg/L) Average Monthly	< 6.3	5.4	< 16.0	< 2.7	< 3.2	4.7	4.9	5.5	6.3	7.1	< 9.6	8.2
CBOD5 (mg/L) Weekly Average	7.8	6.1	< 18.0	< 3.8	4.7	5.2	6.0	6.0	8.4	7.6	13.7	12.1
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	1346	1442	1186	1123	1124	1416	1621	1816	1491	1517	1682	1808
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	2523	2131	1485	1496	1246	1666	2093	3332	2212	1740	1959	3516
BOD5 (mg/L) Raw Sewage Influent Average Monthly	231	251	203	195	217	237	242	283	268	270	287	275
TSS (lbs/day) Average Monthly	10	15	13	18	11	14	22	31	31	24	50	17

TSS (lbs/day) Raw Sewage Influent Average Monthly	675	701	649	782	628	646	896	869	760	762	675	< 933
TSS (lbs/day) Raw Sewage Influent Daily Maximum	1505	1144	960	1235	1002	1004	1592	1226	895	1010	1198	< 3365
TSS (lbs/day) Weekly Average	14	19	26	33	15	16	46	43	50	34	93	24
TSS (mg/L) Average Monthly	1	2	2	3	2	2	4	6	6	4	8	3
TSS (mg/L) Raw Sewage Influent Average Monthly	113	122	111	136	122	108	134	136	136	136	115	< 136
TSS (mg/L) Weekly Average	2	3	4	5	3	3	8	8	9	6	15	4
Fecal Coliform (No./100 ml) Geometric Mean	< 14	39	21	> 82	27	17	46	35	< 11	7	< 2	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	980	770	1553	> 2420	187	147	248	276	167	104	35	5
Nitrate-Nitrite (mg/L) Average Monthly	< 13.95	5.39	< 4.64	< 4.6	< 3.2	< 2.22	< 2.3	< 2.5	< 2.9	< 2.6	< 4.36	< 4.26
Nitrate-Nitrite (lbs) Total Monthly	< 2753	1060	< 919	< 960	< 564	< 410	< 404	< 405	< 498	< 414	< 792	< 852
Total Nitrogen (mg/L) Average Monthly	203	9.3	< 7.06	< 7.3	< 7.2	< 7.9	< 7.28	< 7.3	< 8	< 11	< 9.535	< 9.76
Total Nitrogen (lbs) Effluent Net Total Monthly	< 1487	1823	< 1383	< 1478	< 1268	< 1428	< 1266	< 1184	< 1380	< 1730	< 1719	< 1932
Total Nitrogen (lbs) Total Monthly	< 4187	1823	< 1383	< 1478	< 1268	< 1428	< 1266	< 1184	< 1380	< 1730	< 1719	< 1932
Total Nitrogen (lbs) Effluent Net Total Annual			< 17618									
Total Nitrogen (lbs) Total Annual			< 17618									

Ammonia (lbs/day) Average Monthly	39	< 13	< 7	< 7	12	20	13	12	18	28	19	30
Ammonia (mg/L) Average Monthly	5.9	< 2.1	< 1.1	< 1.1	2.1	3.3	2.4	2.3	3.2	4.9	3.2	4.8
Ammonia (lbs) Total Monthly	1162	< 417	< 210	< 203	371	596	418	373	549	781	574	941
Ammonia (lbs) Total Annual			< 6123									
TKN (mg/L) Average Monthly	7.3	3.9	< 2.42	2.7	4	5.7	4.99	4.8	5.1	8.3	5.17	5.5
TKN (lbs) Total Monthly	1436	764	< 464	518	704	1019	862	779	882	1317	927	1080
Total Phosphorus (lbs/day) Average Monthly	10	8	7	6	7	7	6	6	5	8	6	< 5
Total Phosphorus (mg/L) Average Monthly	1.6	1.19	1.03	0.88	1.23	1.12	1.03	1.18	0.99	1.41	1.04	< 0.751
Total Phosphorus (lbs) Effluent Net Total Monthly	309	235	200	174	223	205	179	191	170	221	189	< 146
Total Phosphorus (lbs) Total Monthly	309	235	200	174	223	205	179	191	170	221	189	< 146
Total Phosphorus (lbs) Effluent Net Total Annual			< 2266									
Total Phosphorus (lbs) Total Annual			< 2266									
Total Copper (mg/L) Average Monthly	0.008	< 0.006	< 0.005	< 0.005	< 0.004	< 0.005	< 0.005	< 0.006	0.006	0.009	< 0.010	< 0.010
Total Copper (mg/L) Daily Maximum	0.011	0.007	< 0.005	< 0.005	< 0.005	< 0.005	0.006	0.006	0.007	0.010	0.0106	0.010

3.2.1 Chesapeake Bay Truing

The table summarizes the facility's compliance/noncompliance with Chesapeake Bay cap loads.

Chesapeake Bay Annual Nutrient Summary				
Waynesboro WWTP				
PA0020621				
Year for Truing Period (Oct 1 - Sept 30)	Annual Net Mass Load	Annual Net Mass Load	Compliant with Permit Limits (Yes/No)	
			Nitrogen	Phosphorus
2018	23,865	2,735	Yes	Yes
2019	21,414	2,422	Yes	Yes
2020	21,600	3,031	Yes	Yes
2021	27,013	2,137	Yes	Yes
2022	20,051	3,262	Yes	Yes
2023	17,618	2,266	Yes	Yes
Notes:				
Nitrogen Annual Net Mass CAP Load =			29,223	lbs/yr
Phosphorus Annual Net Mass CAP Load =			3,896	lbs/yr

3.3 Non-Compliance

3.3.1 Non-Compliance- NPDES Effluent

A summary of the non-compliance to the permit limits for the existing permit cycle is as follows.

From the DMR data beginning in October 1, 2018 to January 23, 2023, the following were observed effluent non-compliances.

Summary of Non-Compliance with NPDES Permit
Beginning October 1, 2018 and Ending January 23, 2023

NON_COMPLIANCE_DATE	NON_COMPL_TYPE_DESC	NON_COMPL_CATEGORY_DESC	PARAMETER	SAMPLE_VALUE	VIOLATION_CONDITION	PERMIT_VALUE	UNIT_OF_MEASURE	STAT_BASE_CODE	DISCHARGE_COMMENTS	FACILITY_COMMENTS
9/2/2021		Unauthorized Discharges							Due to 6" of rain in a 12-hour period the receiving stream level prevented the plant from fully discharging. The final clarifiers overflowed un-chlorinated effluent for approximately 4-hours. Some effluent did leave the plant via discharge point 001. It is difficult to estimate the volume of the overflow.	
9/22/2023	Violation of permit condition	Effluent	Fecal Coliform	> 2420	>	1000	No./100 ml	Instantaneous Maximum		Had one test event out of compliance for an unknown reason, we increased chlorine feed rate, and had our contract lab change the test procedure to give us an actual number instead of (greater than).
9/22/2023	Violation of permit condition	Effluent	Fecal Coliform	> 82	>	200	No./100 ml	Geometric Mean		
10/19/2023	Violation of permit condition	Effluent	Fecal Coliform	1553	>	1000	No./100 ml	Instantaneous Maximum		

3.3.2 Non-Compliance- Enforcement Actions

A summary of the non-compliance enforcement actions for the current permit cycle is as follows:

Beginning in October 1, 2018 to January 23, 2023, there were no observed enforcement actions.

3.4 Summary of Biosolids Disposal

A summary of the biosolids disposed of from the facility is as follows.

2023			
Sewage Sludge / Biosolids Production Information			
Hauled Off-Site			
Date (2023)	Gallons	% Solids	Dry Tons
January			
February			
March	78,000	1.41	4.59
April	510,000	2.218	48.344
May			
June	174,000	2.21	16.035
July			
August	180,000	2.085	14.191
September			
October	168,000	2.24	15.593
November	534,000	2.2075	49.361
Notes:			
BIOSOLIDS/SEWAGE SLUDGE DISPOSAL LOCATION			
- Barr Farm in Franklin County, Antrim under PAG083579 for agricultural utilization			
- Gayman Farm in Franklin County, Antrim under PAG083579 for agricultural utilization			
- West Branch Farm in Franklin County, Waynesboro under PAG083579 for agricultural utilizatic			

3.5 Open Violations

No open violations existed as of February 2024.

4.0 Receiving Waters and Water Supply Information Detail Summary

4.1 Receiving Waters

The receiving waters has been determined to be Trib 59292 To East Branch Antietam Creek. The sequence of receiving streams that the Trib 59292 To East Branch Antietam Creek discharges into are East Branch Antietam Creek, Antietam Creek, and the Potomac River which eventually drains into the Chesapeake Bay.

4.2 Public Water Supply (PWS) Intake

Per the NPDES application, the closest PWS to the subject facility is the Brunswick Mayor and Council in Brunswick, MD located approximately 30 miles downstream of the subject facility on the Potomac River. Based upon the distance and the flow rate of the facility, the PWS should not be impacted.

4.3 Class A Wild Trout Streams

Class A Wild Trout Streams are waters that support a population of naturally produced trout of sufficient size and abundance to support long-term and rewarding sport fishery. DEP classifies these waters as high-quality coldwater fisheries.

The information obtained from EMAP suggests that no Class A Wild Trout Fishery will be impacted by this discharge.

4.4 2024 Integrated List of All Waters (303d Listed Streams)

Section 303(d) of the Clean Water Act requires States to list all impaired surface waters not supporting uses even after appropriate and required water pollution control technologies have been applied. The 303(d) list includes the reason for impairment which may be one or more point sources (i.e. industrial or sewage discharges) or non-point sources (i.e. abandoned mine lands or agricultural runoff and the pollutant causing the impairment such as metals, pH, mercury or siltation).

States or the U.S. Environmental Protection Agency (EPA) must determine the conditions that would return the water to a condition that meets water quality standards. As a follow-up to listing, the state or EPA must develop a Total Maximum Daily Load (TMDL) for each waterbody on the list. A TMDL identifies allowable pollutant loads to a waterbody from both point and non-point sources that will prevent a violation of water quality standards. A TMDL also includes a margin of safety to ensure protection of the water.

The water quality status of Pennsylvania's waters uses a five-part categorization (lists) of waters per their attainment use status. The categories represent varying levels of attainment, ranging from Category 1, where all designated water uses are met to Category 5 where impairment by pollutants requires a TMDL for water quality protection.

The receiving waters is listed in the 2024 Pennsylvania Integrated Water Quality Monitoring and Assessment Report as a Category 2, 4c, and 5 waterbody. This stream is an attaining stream that supports fish consumption. The receiving waters is impaired (1) due to habitat modification from habitat alterations and (2) recreational uses due to pathogens from an unknown source. The designated use has been classified as protected waters for cold water fishes (CWF) and migratory fishes (MF).

4.5 Low Flow Stream Conditions

Water quality modeling estimates are based upon conservative data inputs. The data are typically estimated using either a stream gauge or through USGS web based StreamStats program. The NPDES effluent limits are based upon the combined flows from both the stream and the facility discharge.

A conservative approach to estimate the impact of the facility discharge using values which minimize the total combined volume of the stream and the facility discharge. The volumetric flow rate for the stream is based upon the seven-day, 10-year low flow (Q710) which is the lowest estimated flow rate of the stream during a 7 consecutive day period that occurs once in 10 -year time period. The facility discharge is based upon a known design capacity of the subject facility.

The closest gauge station to the subject facility is the Antietam Creek station at Waynesboro, PA (USGS station number 01619000). This gauge station is located approximately 2.6 miles downstream of the subject facility’s discharge point and 1.7 miles downstream from the POFU.

For WQM modeling, default values for pH and stream water temperature data were utilized. pH was estimated to be 7.0 and the stream water temperature was estimated to be 20 C.

The hardness of the stream was estimated by collecting a sample upstream of the facility. The sampling result was 109 mg/l $CaCO_3$.

The low flow yield and the Q710 for the subject facility was estimated as shown below.

Gauge Station Data			
USGS Station Number	01619000		
Station Name	Antietam Creek near Waynesboro, PA		
Q710	23.4	ft^3/sec	
Drainage Area (DA)	93.5	mi^2	
Q1-10 /Q7-10 ratio	0.96		
Q30-10 / Q7-10 ratio	1.11		
Calculations			
The low flow yield of the gauge station is:			
Low Flow Yield (LFY) = Q710 / DA			
LFY =	(23.4 ft^3/sec / 93.5 mi^2)		
LFY =	0.2503	$ft^3/sec/mi^2$	
The low flow at the subject site is based upon the DA of		51.3	mi^2
Q710 = (LFY@gauge station)(DA@Subject Site)			
Q710 = (0.2503 $ft^3/sec/mi^2$)(51.3 mi^2)			
Q710 =	12.839	ft^3/sec	

4.6 Summary of Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	1.6
Latitude	39º 44' 14.35"	Longitude	-77º 35' 14.44"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to East Branch Antietam Creek (CWF)	Stream Code	59292 (Discharge Location) 59291 @ POFU
NHD Com ID	49481294	RMI	0.88 (Discharge location) 0.98 @ POFU
Drainage Area	51.3 @POFU	Yield (cfs/mi^2)	0.2503 @POFU
Q_{7-10} Flow (cfs)	12.839 @ POFU	Q_{7-10} Basis	StreamStats/StreamGauge
Elevation (ft)	612	Slope (ft/ft)	
Watershed No.	13-C	Chapter 93 Class.	CWF, MF
Existing Use	Same as Chapter 93 class	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s) for fish consumption. Impaired for aquatic life.		
Cause(s) of Impairment	Habitat modification and pathogens		
Source(s) of Impairment	Habitat alterations		
TMDL Status	Not applicable	Name	

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°C)	20	Default
Hardness (mg/L)	109	Data from NPDES app. Sampling on 9/29/2022
Other:		

Nearest Downstream Public Water Supply Intake	Brunswick Mayor and Council in Brunswick, MD (from NPDES application)		
PWS Waters	Potomac River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	30

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0
Latitude	39º 44' 17.15"	Longitude	-77º 35' 13.29"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		
Receiving Waters	Unnamed Tributary to East Branch Antietam Creek (CWF, MF)	Stream Code	59292
NHD Com ID	49481294	RMI	0.9200
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	13-C	Chapter 93 Class.	CWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s) for fish consumption; Impaired for aquatic life/recreational uses		
Cause(s) of Impairment	Habitat modifications and pathogens		
Source(s) of Impairment	Habitat alterations		

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0
Latitude	39º 44' 16.36"	Longitude	-77º 35' 13.65"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		
Receiving Waters	Unnamed Tributary to East Branch Antietam Creek (CWF, MF)	Stream Code	59292
NHD Com ID	49481294	RMI	0.9000
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	13-C	Chapter 93 Class.	CWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s) for fish consumption; Impaired for aquatic life/recreational uses		
Cause(s) of Impairment	Habitat modifications and pathogens		
Source(s) of Impairment	Habitat alterations		

5.0: Overview of Presiding Water Quality Standards

5.1 General

There are at least six (6) different policies which determines the effluent performance limits for the NPDES permit. The policies are technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), antidegradation, total maximum daily loading (TMDL), anti-backsliding, and whole effluent toxicity (WET) The effluent performance limitations enforced are the selected permit limits that is most protective to the designated use of the receiving waters. An overview of each of the policies that are applicable to the subject facility has been presented in Section 6.

5.2.1 Technology-Based Limitations

TBEL treatment requirements under section 301(b) of the Act represent the minimum level of control that must be imposed in a permit issued under section 402 of the Act (40 CFR 125.3). Available TBEL requirements for the state of Pennsylvania are itemized in PA Code 25, Chapter 92a.47.

The presiding sources for the basis for the effluent limitations are governed by either federal or state regulation. The reference sources for each of the parameters is itemized in the tables. The following technology-based limitations apply, subject to water quality analysis and best professional judgement (BPJ) where applicable:

Parameter	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)

5.2.2 Mass Based Limits

For publicly owned treatment works (POTW), mass loadings are calculated based upon design flow rate of the facility and the permit limit concentration. The generalized calculation for mass loadings is shown below:

$$Quantity\left(\frac{lb}{day}\right) = (MGD)(Concentration)(8.34)$$

5.3 Water Quality-Based Limitations

WQBEL are based on the need to attain or maintain the water quality criteria and to assure protection of designated and existing uses (PA Code 25, Chapter 92a.2). The subject facility that is typically enforced is the more stringent limit of either the TBEL or the WQBEL.

Determination of WQBEL is calculated by spreadsheet analysis or by a computer modeling program developed by DEP. DEP permit engineers utilize the following computing programs for WQBEL permit limitations: (1) MS Excel worksheet for Total Residual Chorine (TRC); (2) WQM 7.0 for Windows Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1.1 (WQM Model) and (3) Toxics using DEP Toxics Management Spreadsheet for Toxics pollutants.

For Waynesboro WWTP, Outfall 001 discharges near the plant location at latitude 39.73738° and longitude -77.58738°. The wastewater generated by the treatment plant dominates the assimilative capacity of the receiving waters (Tributary 59292 to East Branch Antietam Creek). For modelling, the point of first use is located at the confluence of Tributary 59292 to East Branch Antietam Creek and East Branch Antietam Creek at RMI 0.98. An additional node for Washington Township MA (PA0080225, Latitude 39.72627 and Longitude 77.59202) was modelled at RMI 0.94. The RMI for the two facilities have been utilized in the 2005 and 2009 Fact Sheets.

The modeling point nodes utilized for this facility are summarized below.

General Data 1	***(Modeling Point #1)***	***(Modeling Point #2)***	***(Modeling Point #3)***	***Units***
Stream Code	59291	59291	59291	
River Mile Index	0.98	0.94	0	miles
Elevation	567	564	550	feet
Latitude	39.726458	39.726194	39.724378	
Longitude	-77.592427	-77.593542	-77.60543	
Drainage Area	51.3	51.4	93.2	sq miles
Low Flow Yield	0.2503	0.2503	0.2503	cfs/sq mile

5.3.1 Water Quality Modeling 7.0

The WQM Model is a computer model that is used to determine NPDES discharge effluent limitations for Carbonaceous BOD (CBOD5), Ammonia Nitrogen (NH3-N), and Dissolved Oxygen (DO) for single and multiple point source discharges scenarios. WQM Model is a complete-mix model which means that the discharge flow and the stream flow are assumed to instantly and completely mixed at the discharge node.

WQM recommends effluent limits for DO, CBOD5, and NH_3-N in mg/l for the discharge(s) in the simulation.

Four types of limits may be recommended. The limits are

(a) a *minimum concentration for DO in the discharge as 30-day average;*
(b) a 30-day average concentration for CBOD5 in the discharge;
(c) a 30-day average concentration for the NH_3-N in the discharge;
(d) *24-hour average concentration for NH_3-N in the discharge*.

The WQM Model requires several input values for calculating output values. The source of data originates from either EMAP, the National Map, or Stream Stats. Data for stream gauge information, if any, was abstracted from USGS Low-Flow, Base-Flow, and Mean-Flow Regression Equations for Pennsylvania Streams authored by Marla H. Stuckey (Scientific Investigations Report 2006-5130).

The applicable WQM Effluent Limit Type are discussed in Section 6 under the corresponding parameter which is either DO, CBOD, or ammonia-nitrogen.

5.3.2 Toxics Modeling

The Toxics Management Spreadsheet model is a computer model that is used to determine effluent limitations for toxics (and other substances) for single discharge wasteload allocations. This computer model uses a mass-balance water quality analysis that includes consideration for mixing, first-order decay, and other factors used to determine recommended water quality-based effluent limits. Toxics Management Spreadsheet does not assume that all discharges completely mix with the stream. The point of compliance with water quality criteria are established using criteria compliance times (CCTs). The available CCTs are either acute fish criterion (AFC), chronic fish criterion (CFC), or human health criteria (THH & CRL).

Acute Fish Criterion (AFC) measures the criteria compliance time as either the maximum criteria compliance time (i.e.15 minutes travel time downstream of the current discharge) or the complete mix time whichever comes first. AFC is evaluated at Q710 conditions.

Chronic Fish Criterion (CFC) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the complete mix time whichever comes first. CFC is evaluated at Q710 conditions.

Threshold Human Health (THH) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the estimated travel time downstream to the nearest potable water supply intake whichever comes first. THH is evaluated at Q710 conditions.

Cancer Risk Level (CRL) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the complete mix time whichever comes first. CRL is evaluated at Qh (harmonic mean or normal flow) conditions.

The Toxics Model requires several input values for calculating output values. The source of data originates from either EMAP, the National Map, or Stream Stats. Data for stream gauge information, if any, was abstracted from USGS Low-Flow, Base-Flow, and Mean-Flow Regression Equations for Pennsylvania Streams authored by Marla H. Stuckey (Scientific Investigations Report 2006-5130).

5.3.2.1 Determining if NPDES Permit Will Require Monitoring/Limits in the Proposed Permit for Toxic Pollutants

To determine if Toxics modeling is necessary, DEP has developed a Toxics Management Spreadsheet to identify toxics of concern. Toxic pollutants whose maximum concentrations as reported in the permit application or on DMRs are greater than the most stringent applicable water quality criterion are pollutants of concern. A Reasonable Potential Analysis was utilized to determine (a) if the toxic parameters modeled would require monitoring or (b) if permit limitations would be required for the parameters. The toxics reviewed for reasonable potential were the pollutants in Groups 1 through 5.

Based upon the SOP- Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants (Revised January 10, 2019), monitoring and/or limits will be established as follows.

(a) When reasonable potential is demonstrated, establish limits where the maximum reported concentration equals or exceeds 50% of the WQBEL.
(b) For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.
(c) For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

Applicable monitoring or permit limits for toxics are summarized in Section 6.

The Toxics Management Spreadsheet output has been included in Attachment B.

5.3.3 Whole Effluent Toxicity (WET)

Whole effluent toxicity is the aggregate toxic effect from a facility's wastewater discharge on aquatic organisms. WET measures the effect of wastewater effluent on an organisms' ability to survive, grow, and reproduce. WET testing is either acute or chronic. Acute testing measures lethality, the ability for an organism to survive after no more than 96 hours of exposure to an effluent. Chronic tests measures both lethality, immobility, and sublethal endpoints to exposures ranging longer than 96 hours and up to 8 days.

WET is required if the applicant satisfies any one of the following conditions.

(a) Major sewage facilities with an average annual design flow greater than or equal to 1.0 MGD (25 Pa. Code § 92a.27(a)(1)(i)).
(b) Sewage facilities with EPA-approved pretreatment programs or will be required in the permit to develop a program (25 Pa. Code § 92a.27(a)(1)(i)).
(c) Other facilities that are considered candidates for WET testing by one or more of the factors contained in 25 Pa. Code § 92a.27(a)(2).

5.3.3.1 WET Tests Review

The four most recent WET tests were submitted and reviewed. The WET tests were conducted between 2017 and 2022. In August 2022, the Ceriodaphnia for reproduction failed the WET test. The WET tests were re-sampled with passing results in September 2022.

The in-stream waste concentration and dilution series was estimated using partial mixing factor factors from Toxics Management Spreadsheet, the design flow rate for the facility, and the Q710.

The proposed NPDES permit shall utilize a chronic instream waste concentration of 16%. The complete dilution series will be 4%, 8%, 16%, 58%, and 100%.

The derivation is shown in the calculations.

Whole Effluent Toxicity (WET)

For Outfall 001, **Chronic** WET Testing was completed:

X	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%, 58%, 16%, 8%, and 4%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 16%.

Summary of Four Most Recent Test Results

(NOTE – Enter results into one table, depending on which data analysis method was used).

TST Data Analysis

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

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
11/7/2017	Pass	Pass	Pass	Pass
7/16/2019	Pass	Pass	Pass	Pass
6/9/2020	Pass	Pass	Pass	Pass
8/2/2022	Pass	Fail	Pass	Pass
9/13/2022	Pass	Pass	-----	-----

***** *A "passing" result is that in which the replicate data for the TIWC is not statistically significant from the control condition. This is exhibited when the calculated t value ("T-Test Result") is greater than the critical t value. A "failing" result is exhibited when the calculated t value ("T-Test Result") is less than the critical t 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:

No. There was a WET failure on August 2, 2022 for ceriodaphnia reproduction. The WET was retested on September 13, 2022 with a passing result

Data

PMFa =	0.49	
PMFc =	1	
Qd =	1.6	MGD
Q710 =	12.839	cfs

Step 1: Determine IWC - Acute (IWCa)

IWCa = [(Qd x 1.547) / ((Q7-10 x PMFa) + (Qd x 1.547))] x 100

IWCa = 28.24

Is IWCA < 1% No (Yes- acute tests required; No- chronic test required)

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

Type of Test for Permit Renewal:

No. Chronic tests will be required.

Step 2a: Determine Target IWCa (If acute tests required)

TIWCa = IWCA / 0.3

TIWCa = 94.12

Step 2b: Determine Target IWCc (If chronic tests required)

ICCc = [(Qd x 1.547) / ((Q7-10 x PWFc) + (Design Flow MGD x 1.547))] x 100

ICCc = 16.16

Step 3: Determine Dilution Series

Dilution Series =	100%	58%	16%	8%	4%

WET Limits

Has reasonable potential been determined ? No

Will WET limits be established in the permit ? No

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

Not applicable

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

Not applicable

5.4 Total Maximum Daily Loading (TMDL)

5.4.1 TMDL

The goal of the Clean Water Act (CWA), which governs water pollution, is to ensure that all of the Nation's waters are clean and healthy enough to support aquatic life and recreation. To achieve this goal, the CWA created programs designed to regulate and reduce the amount of pollution entering United States waters. Section 303(d) of the CWA requires states to assess their waterbodies to identify those not meeting water quality standards. If a waterbody is not meeting standards, it is listed as impaired and reported to the U.S. Environmental Protection Agency. The state then develops a plan to clean up the impaired waterbody. This plan includes the development of a Total Maximum Daily Load (TMDL) for the pollutant(s) that were found to be the cause of the water quality violations. A Total Maximum Daily Load (TMDL) calculates the maximum amount of a specific pollutant that a waterbody can receive and still meet water quality standards.

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit margin of safety (MOS) to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody. The TMDL components are illustrated using the following equation:

$$TMDL = \Sigma WLAs + \Sigma LAs + MOS$$

Pennsylvania has committed to restoring all impaired waters by developing TMDLs and TMDL alternatives for all impaired waterbodies. The TMDL serves as the starting point or planning tool for restoring water quality.

5.4.1.1 Local TMDL

The subject facility does not discharge into a local TMDL.

5.4.1.2 Chesapeake Bay TMDL Requirement

The Chesapeake Bay Watershed is a large ecosystem that encompasses approximately 64,000 square miles in Maryland, Delaware, Virginia, West Virginia, Pennsylvania, New York and the District of Columbia. An ecosystem is composed of interrelated parts that interact with each other to form a whole. All of the plants and animals in an ecosystem depend on each other in some way. Every living thing needs a healthy ecosystem to survive. Human activities affect the Chesapeake Bay ecosystem by adding pollution, using resources and changing the character of the land.

Most of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the federal Water Pollution Control Act ("Clean Water Act"), 33 U.S.C. § 1313(d). While the Chesapeake Bay is outside the boundaries of Pennsylvania, more than half of the State lies within the watershed. Two major rivers in Pennsylvania are part of the Chesapeake Bay Watershed. They are (a) the Susquehanna River and (b) the Potomac River. These two rivers total 40 percent of the entire Chesapeake Bay watershed.

The overall management approach needed for reducing nitrogen, phosphorus and sediment are provided in the Bay TMDL document and the Phase I, II, and III WIPs which is described in the Bay TMDL document and Executive Order 13508.

The Bay TMDL is a comprehensive pollution reduction effort in the Chesapeake Bay watershed identifying the necessary pollution reductions of nitrogen, phosphorus and sediment across the seven Bay watershed jurisdictions of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia to meet applicable water quality standards in the Bay and its tidal waters.

The Watershed Implementation Plans (WIPs) provides objectives for how the jurisdictions in partnership with federal and local governments will achieve the Bay TMDL's nutrient and sediment allocations.

Phase 3 WIP provides an update on Chesapeake Bay TMDL implementation activities for point sources and DEP's current implementation strategy for wastewater. The latest revision of the supplement was September 13, 2021.

The Chesapeake Bay TMDL (Appendix Q) categorizes point sources into four sectors:

- Sector A- significant sewage dischargers;
- Sector B- significant industrial waste (IW) dischargers;
- Sector C- non-significant dischargers (both sewage and IW facilities); and

- Sector D- combined sewer overflows (CSOs).

All sectors contain a listing of individual facilities with NPDES permits that were believed to be discharging at the time the TMDL was published (2010). All sectors with the exception of the non-significant dischargers have individual wasteload allocations (WLAs) for TN and TP assigned to specific facilities. Non-significant dischargers have a bulk or aggregate allocation for TN and TP based on the facilities in that sector that were believed to be discharging at that time and their estimated nutrient loads.

Cap Loads will be established in permits as Net Annual TN and TP loads (lbs/yr) that apply during the period of October 1 – September 30. For facilities that have received Cap Loads in any other form, the Cap Loads will be modified accordingly when the permits are renewed.

Offsets have been incorporated into Cap Loads in several permits issued to date. From this point forward, permits will be issued with the WLAs as Cap Loads and will identify Offsets separately to facilitate nutrient trading activities and compliance with the TMDL.

Based upon the supplement the subject facility has been categorized as a Sector A discharger. The supplement defines Sector A as a sewage facility is considered significant if it has a design flow of at least 0.4 MGD.

Table 5 of the Phase 3 WIP (revised September 13, 2021) presents all NPDES permits for Significant Sewage dischargers with Cap Loads. The NPDES Permit No., phase, facility name, latest permit issuance date, expiration date, Cap Load compliance start date, TN and TP Cap Loads, and TN and TP Delivery Ratios are presented. In addition, if TN Offsets were incorporated into the TN Cap Loads when the permit was issued, the amount is shown; these Offsets will be removed from Cap Loads upon issuance of renewed permits to implement Section IV of this document (i.e., a facility may use Offsets for compliance but may not register them as credits).

The total nitrogen (TN) and total phosphorus (TP) cap loads itemized by Table 5 for the subject facility are as follows:

TN Cap Load (lbs/yr)	29,223
TN Delivery Ratio	0.864
TP Cap Load (lbs/yr)	3,896
TP Delivery Ratio	0.725

Expansions by any Significant Sewage discharger will not result in any increase in Cap Loads. Where non-significant facilities expand to a design flow of 0.4 MGD or greater, the lesser of baseline Cap Loads of 7,306 lbs/yr TN and 974 lbs/yr TP or existing performance will be used for permits, and the load will be moved from the Non-Significant sector load to the Significant Sewage sector load. If considered necessary for environmental protection, DEP may decide to move load from the Point Source Reserve to the Significant Sewage sector in the future.

The minimum monitoring frequency for TN species and TP in new or renewed NPDES permits for Significant Sewage dischargers is 2x/week.

This facility is subject to Sector A monitoring requirements. Monitoring shall be required at least 2x/week.

Reporting

Cap Loads will be established in permits as Net Annual TN and TP loads (lbs/yr) that apply during the period of October 1 – September 30.

Facilities with NPDES permits must use DEP's eDMR system for reporting, except small flow treatment facilities. An Annual DMR must be submitted by the end of the Truing Period, November 28. As attachments to the Annual DMR a facility must submit a completed Annual Chesapeake Bay Spreadsheet, available through DEP's Supplemental Reports website, which contains an Annual Nutrient Monitoring worksheet and an Annual Nutrient Budget worksheet. This Spreadsheet will be submitted once per Compliance Year only, and reflect all nutrient sample results (for the period October 1 – September 30), Credit transactions (including the Truing Period) and Offsets applied during the Compliance Year.

5.5 Anti-Degradation Requirement

Chapter 93.4a of the PA regulations requires that surface water of the Commonwealth of Pennsylvania may not be degraded below levels that protect the existing uses. The regulations specifically state that *Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected*. Antidegradation requirements are implemented through DEP's guidance manual entitled Water Quality Antidegradation Implementation Guidance (Document #391-0300-02).

The policy requires DEP to protect the existing uses of all surface waters and the existing quality of High Quality (HQ) and Exceptional Value (EV) Waters. Existing uses are protected when DEP makes a final decision on any permit or approval for an activity that may affect a protected use. Existing uses are protected based upon DEP's evaluation of the best available information (which satisfies DEP protocols and Quality Assurance/Quality Control (QA/QC) procedures) that indicates the protected use of the waterbody.

For a new, additional, or increased point source discharge to an HQ or EV water, the person proposing the discharge is required to utilize a nondischarge alternative that is cost-effective and environmentally sound when compared with the cost of the proposed discharge. If a nondischarge alternative is not cost-effective and environmentally sound, the person must use the best available combination of treatment, pollution prevention, and wastewater reuse technologies and assure that any discharge is nondegrading. In the case of HQ waters, DEP may find that after satisfaction of intergovernmental coordination and public participation requirements lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In addition, DEP will assure that cost-effective and reasonable best management practices for nonpoint source control in HQ and EV waters are achieved.

The subject facility's discharge will be to a non-special protection waters and the permit conditions are imposed to protect existing instream water quality and uses. Neither HQ waters or EV waters is impacted by this discharge.

5.6 Anti-Backsliding

Anti-backsliding is a federal regulation which prohibits a permit from being renewed, reissued, or modified containing effluent limitations which are less stringent than the comparable effluent limitations in the previous permit (40 CFR 122.l.1 and 40 CFR 122.l.2). A review of the existing permit limitations with the proposed permit limitations confirm that the facility is consistent with anti-backsliding requirements. The facility has proposed effluent limitations that are as stringent as the existing permit.

6.0 NPDES Parameter Details

The basis for the proposed sampling and their monitoring frequency that will appear in the permit for each individual parameter are itemized in this Section. The final limits are the more stringent of technology based effluent treatment (TBEL) requirements, water quality based (WQBEL) limits, TMDL, antidegradation, anti-degradation, or WET.

The reader will find in this section:

a) a justification of recommended permit monitoring requirements and limitations for each parameter in the proposed NPDES permit;
b) a summary of changes from the existing NPDES permit to the proposed permit; and
c) a summary of the proposed NPDES effluent limits.

6.1 Recommended Monitoring Requirements and Effluent Limitations

Water Quality Modeling and Point of First Use

Water quality modeling was conducted consistent with the *Policy and Procedure for Evaluating Wastewater Dischargers to Intermittent and Ephermeral Streams, Drainage Channels and Swales, and Storm Sewers* (Document Number 391-2000-014). Surface water quality criteria and protected uses designed to protect aquatic life apply at the point of first surface water use and at all points downstream (Policy and Procedure for Evaluating Page 3).

For Waynesboro WWTP, Outfall 001 discharges near the plant location at latitude 39.73738° and longitude -77.58738°. The wastewater generated by the treatment plant dominates the assimilative capacity of the receiving waters (Tributary 59292 to East Branch Antietam Creek). For modelling, the point of first use is located at the confluence of Tributary 59292 to East Branch Antietam Creek and East Branch Antietam Creek at RMI 0.98. An additional node for Washington Township MA (PA0080225, Latitude 39.72627 and Longitude 77.59202) was modelled at RMI 0.94. The RMI for the two facilities have been utilized in the 2005 and 2009 Fact Sheets. The 2017 Fact Sheet utilized a slightly different RMI for Waynesboro. This fact sheet will utilize the RMI utilized in the 2005 and 2009 Fact Sheet for consistency. A RMI stem showing the RMI is enclosed in the Attachment.

For TRC, the sum of the flow rates from Washington Township and Waynesboro were added together to evaluate impacts of residual chlorine on the receiving stream.

The Toxics Management Spreadsheet (TMS) was conducted through two different runs. Run #1 resulted in numerous parameters to be recommended for limits or monitoring requirements. Run #2 identified several parameters that had laboratory results not exceeding DEP quantitation limits. These results were placed in the TMS with a less than (<) value in TMS. Many of the parameter were dropped from limits or monitoring requirements.

Other parameters resulted in no reasonable potential. Copper and toxaphene were flagged as reasonable potential. The DMR for Copper was summarized in the table in Attachment. The daily maximum from the DMR from October 1, 2018 to January 23, 2024 was 0.050 mg/l. This value did not exceed the permit limit of 0.053 mg/l. Copper will remain in the permit at the same permit limit of 0.053 mg/l.

For toxaphene, there was a total of three samples collected. Two of the samples were collected at <0.208 ug/l. One sample was collected at <1.04 ug/l. DEP contacted the laboratory and they were not able to lower the detection limits for the sample that was <1.04 ug/l. Since there were two samples at <0.208 ug/l, DEP did not include the sample analyzed at <1.04 ug/l. DEP modelled toxaphene at <0.208 ug/l. No reasonable potential was observed.

A summary of the recommended monitoring requirements and effluent limitations are itemized in the tables. The tables are categorized by (a) Conventional Pollutants and Disinfection, (b) Nitrogen Species and Phosphorus, (c) Toxics, (d) Non-Conventional Pollutants, and (e) Parameters under review by Chapter 92a.61.

6.1.1 Conventional Pollutants and Disinfection

Summary of Proposed NPDES Parameter Details for Conventional Pollutants and Disinfection
Waynesboro STP, PA0020621

Parameter	Permit Limitation Required by[1]:	Recommendation	
pH (S.U.)	TBEL	Monitoring:	The monitoring frequency shall be daily as a grab sample (Table 6-3).
		Effluent Limit:	Effluent limits may range from pH = 7.0 to 9.0
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 95.2(1). The existing permit included a minimum pH of 7.0. This limit shall continue to the proposed permit
Dissolved Oxygen	BPJ	Monitoring:	The monitoring frequency shall be daily as a grab sample (Table 6-3).
		Effluent Limit:	Effluent limits shall be greater than 5.0 mg/l.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by best professional judgement.
CBOD	TBEL	Monitoring:	The monitoring frequency shall be 2x/week as a 24-hr composite sample (Table 6-3).
		Effluent Limit:	Effluent limits shall not exceed 330 lbs/day and 25 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(1). WQM modeling indicates that the TBEL is more stringent than the WQBEL. Thus, the permit limit is confined to TBEL.
TSS	TBEL	Monitoring:	The monitoring frequency shall be 2x/week as a 24-hr composite sample (Table 6-3).
		Effluent Limit:	Effluent limits shall not exceed 400 lbs/day and 30 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(1). While there is no WQM modeling for this parameter, the permit limit for TSS is generally assigned similar effluent limits as CBOD or BOD.
TRC	TBEL	Monitoring:	The monitoring frequency shall be on a daily basis as a grab sample (Table 6-3).
		Effluent Limit:	The average monthly limit should not exceed 0.36 mg/l and/or 1.17 mg/l as an instantaneous maximum.
		Rationale: Chlorine in both combined (chloramine) and free form is extremely toxic to freshwater fish and other forms of aquatic life (Implementation Guidance Total Residual Chlorine 1). The TRC effluent limitations to be imposed on a discharger shall be the more stringent of either the WQBEL or TBEL requirements and shall be expressed in the NPDES permit as an average monthly and instantaneous maximum effluent concentration (Implementation Guidance Total Residual Chlorine 4). Based on the stream flow rate (lowest 7-day flow rate in 10 years) and the design flow rate of the subject facility calculated by the TRC Evaluation worksheet, the WQBEL is more stringent than the TBEL. The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by WQBEL. When conducting the TRC evaluation, both the Washington TWP (1.85 MGD) and Waynesboro WWTP (1.6 MGD) were included as the flow rate.	
Fecal Coliform	TBEL	Monitoring:	The monitoring frequency shall be 2x/week as a grab sample (Table 6-3).
		Effluent Limit:	Summer effluent limits shall not exceed 200 No./100 mL as a geometric mean. Winter effluent limits shall not exceed 2000 No./100 mL as a geometric mean.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-3 and the effluent limits assigned by Chapter 92a.47(a)(4) and 92a.47(a)(5).

Notes:

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 1.6 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

6.1.2 Nitrogen Species and Phosphorus

Summary of Proposed NPDES Parameter Details for Nitrogen Species and Phosphorus

Waynesboro STP, PA0020621

Parameter	Permit Limitation Required by[1]:	Recommendation	
Ammonia-Nitrogen	Anti-backsliding	Monitoring:	The monitoring frequency shall be 2x/week as a 24-hr composite sample
		Effluent Limit:	During the months of May 1 to October 31, effluent limits shall not exceed 60 lbs/day and 4.5 mg/l as an average monthly. During the months of November 1 to April 30, effluent limits shall not exceed 180 lbs/day and 13.5 mg/l as an average monthly.
		Rationale:	Due to anti-backsliding regulations, the existing permit shall continue to the proposed permit.
Nitrate-Nitrite as N	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 2x/week as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 2x/week.
Total Nitrogen	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/month as a calculation
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/month.
TKN	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 2x/week as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 2x/week.
Total Phosphorus	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 2x/week as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 2x/week.
Net Total Nitrogen	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/yr as a calculation
		Effluent Limit:	Effluent limits shall not exceed 29,223 lbs/yr
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/yr.
Net Total Phosphorus	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/yr as a calculation
		Effluent Limit:	Effluent limits shall not exceed 3,896 lbs/yr
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/yr.
Notes:			

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 1.6 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

6.1.3 Toxics

Summary of Proposed NPDES Parameter Details for Toxics

Waynesboro STP, PA0020621

Parameter	Permit Limitation Required by[1]:	Recommendation	
Total Copper	WQBEL	Monitoring:	The monitoring frequency shall be 1x/week as a 24-hr composite sample
		Effluent Limit:	Effluent limits shall not exceed 0.053 mg/l and 0.132 mg/l and 0.132 mg/l as a daily maximum
		Rationale:	Water quality modeling using Toxics Management Spreadsheet (TMS) recommends effluent limits

Notes:

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 1.6 MGD.

3 Table 6-3 (Self Monitoring Requirements for Sewage Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Chesapeake Bay Phase 3 Watershed Implementation Plan Wastewater Supplement, Revised September 13, 2021

6.1.3.1 Implementation of Regulation- Chapter 92a.61

Chapter 92a.61 provides provisions to DEP to monitor for pollutants that may have an impact on the quality of waters of the Commonwealth.

Based upon DEP policy directives the following pollutants shall be monitored:

- Consistent with DEP Management directives issued on March 22, 2021 and in conjunction with EPA's 2017 Triennial Review, monitoring for E. Coli shall be required. The monitoring frequency is based upon flow rate.
- Consistent with DEP Management directives issued on February 5, 2024, monitoring for PFAS parameters shall be required. PFAS are widely used, long lasting chemicals, components of which break down very slowly over time. The recommended monitoring frequency is quarterly. The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detect results at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees must enter a No Discharge Indicator (NODI) Code of "GG" on DMRs.

Summary of Proposed NPDES Parameter Details for polluants monitored under Chapter 92a.61
Waynesboro STP, PA0020621

Parameter	Permit Limitation Required by[1]:	Recommendation	
E. Coli	SOP; Chapter 92a.61	Monitoring:	The monitoring frequency shall be 1x/month as a grab sample (SOP).
		Effluent Limit:	No effluent requirements.
		Rationale:	Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised March 22, 2019) and under the authority of Chapter 92a.61, the facility will be required to monitor for E.Coli.
PFOA	SOP; Chapter 92a.61	Monitoring:	The monitoring frequency shall be 1x/quarter as a grab sample (SOP).
		Effluent Limit:	No effluent limit requirement
		Rationale:	Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised Febraury 5, 2024) and under the authority of Chapter 92a.61, the facility will be required to monitor for PFAS related parameters.
PFOS	SOP; Chapter 92a.61	Monitoring:	The monitoring frequency shall be 1x/quarter as a grab sample (SOP).
		Effluent Limit:	No effluent limit requirement
		Rationale:	Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised Febraury 5, 2024) and under the authority of Chapter 92a.61, the facility will be required to monitor for PFAS related parameters.
HFPO-DA	SOP; Chapter 92a.61	Monitoring:	The monitoring frequency shall be 1x/quarter as a grab sample (SOP).
		Effluent Limit:	No effluent limit requirement
		Rationale:	Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised Febraury 5, 2024) and under the authority of Chapter 92a.61, the facility will be required to monitor for PFAS related parameters.
PFBS	SOP; Chapter 92a.61	Monitoring:	The monitoring frequency shall be 1x/quarter as a grab sample (SOP).
		Effluent Limit:	No effluent limit requirement
		Rationale:	Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised Febraury 5, 2024) and under the authority of Chapter 92a.61, the facility will be required to monitor for PFAS related parameters.

Notes:

The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detect results at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees must enter a No Discharge Indicator (NODI) Code of "GG" on DMRs.

6.2 Summary of Changes From Existing Permit to Proposed Permit

A summary of how the proposed NPDES permit differs from the existing NPDES permit is summarized as follows.

Changes in Permit Monitoring or Effluent Quality

Parameter	Existing Permit	Draft Permit
E. Coli	No monitoring or effluent limits	Due to the EPA Triennial review, monitoring at least 1x/month shall be required for E.coli.
PFOA	No monitoring or effluent limits	Consistent with the SOP- Establishing Effluent Limitations for Individual Sewage Permits (Revised Febraury 5, 2024) and under the authority of Chapter 92a.61, the facility will be required to monitor for PFAS related parameters.
PFOS	No monitoring or effluent limits	
HFPO-DA	No monitoring or effluent limits	
PFBS	No monitoring or effluent limits	

6.3.1 Summary of Proposed NPDES Effluent Limits

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.

The proposed NPDES effluent limitations are summarized in the table below.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. A. For Outfall 001 , **Latitude** 39° 44' 14.61" , **Longitude** 77° 35' 14.78" , **River Mile Index** 0.88 @DP , **Stream Code** 59292

Receiving Waters: Unnamed Tributary to East Branch Antietam Creek (CWF)

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Permit Expiration Date**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

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	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	7.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.36	XXX	1.17	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	330	530	XXX	25.0	40.0 Wkly Avg	50	2/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Suspended Solids	400	600	XXX	30	45 Wkly Avg	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 (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

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	Daily Maximum	Instant. Maximum		
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report	XXX	1/month	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	180	XXX	XXX	13.5	XXX	27	2/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	60	XXX	XXX	4.5	XXX	9	2/week	24-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Copper, Total	XXX	XXX	XXX	0.053	0.132	XXX	1/week	24-Hr Composite
PFOA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFOS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFBS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 001

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. B. For Outfall 001 **. Latitude** 39° 44' 14.61" **. Longitude** 77° 35' 14.78" **. River Mile Index** 0.88 @ DP **. Stream Code** 59292

Receiving Waters: Unnamed Tributary to East Branch Antietam Creek (CWF)

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Permit Expiration Date**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

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	XXX	29223	XXX	XXX	XXX	XXX	1/year	Calculation
Net Total Phosphorus	XXX	3896	XXX	XXX	XXX	XXX	1/year	Calculation

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 001

Footnotes:
(1) See Part C for Chesapeake Bay Requirements.

(2) This is the minimum number of sampling events required. Permittees are encouraged, and it may be advantageous in demonstrating compliance, to perform more than the minimum number of sampling events required.

6.3.2 Summary of Proposed Permit Part C Conditions

The subject facility has the following Part C conditions.

- Chlorine Minimization
- Hauled-in Waste Restrictions
- Chesapeake Bay Nutrient Definitions
- Solids Management for Non-Lagoon Treatment Systems
- Whole Effluent Toxicity – No Permit Limits
- Stormwater Requirements

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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: New and Reissuance Sewage Individual NPDES Permit Applications, Revised, February 3, 2022
☐	Other:

Attachment A

Stream Stats/Gauge Data

16 Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi², square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi²)	Regulated[1]
01614000	Back Creek near Jones Springs, W.Va.	39.512	-78.037	235	N
01614090	Conococheague Creek near Fayetteville, Pa.	39.930	-77.439	5.05	N
01614500	Conococheague Creek at Fairview, Md.	39.716	-77.825	494	N
01616500	Opequon Creek near Martinsburg, W.Va.	39.424	-77.939	273	N
01617000	Tuscarora Creek above Martinsburg, W.Va.	39.470	-77.971	11.3	N
01617800	Marsh Run at Grimes, Md.	39.515	-77.777	18.9	N
01618000	Potomac River at Shepherdstown, W.Va.	39.435	-77.801	5,939	N
01619000	Antietam Creek near Waynesboro, Pa.	39.716	-77.607	93.5	N
01619500	Antietam Creek near Sharpsburg, Md.	39.450	-77.730	281	LF
01637500	Catoctin Creek near Middletown, Md.	39.427	-77.556	66.9	N
01639000	Monocacy River at Bridgeport, Md.	39.679	-77.235	173	N
01639140	Piney Creek near Taneytown, Md.	39.661	-77.221	31.3	N
01639500	Big Pipe Creek at Bruceville, Md.	39.612	-77.237	102	N
01640500	Owens Creek at Lantz, Md.	39.677	-77.464	5.93	N
01640965	Hunting Creek near Foxville, Md.	39.620	-77.466	2.14	N
01640970	Hunting Creek Tributary near Foxville, Md.	39.628	-77.462	4.01	N
01641000	Hunting Creek at Jimtown, Md.	39.594	-77.397	18.4	LF
01641500	Fishing Creek near Lewistown, Md.	39.527	-77.467	7.29	N
01642500	Linganore Creek near Frederick, Md.	39.415	-77.333	82.3	LF
01643000	Monocacy River at Jug Bridge near Frederick, Md.	39.403	-77.366	817	N
01643500	Bennett Creek at Park Mills, Md.	39.294	-77.407	62.8	N
03007800	Allegheny River at Port Allegany, Pa.	41.819	-78.293	248	N
03008000	Newell Creek near Port Allegany, Pa.	41.895	-78.349	7.79	N
03009680	Potato Creek at Smethport, Pa.	41.810	-78.430	160	N
03010500	Allegheny River at Eldred, Pa.	41.963	-78.386	550	N
03010655	Oswayo Creek at Shinglehouse, Pa.	41.962	-78.198	98.7	N
03011020	Allegheny River at Salamanca, N.Y.	42.156	-78.715	1,608	N
03011800	Kinzua Creek near Guffey, Pa.	41.766	-78.719	38.8	N
03012550	Allegheny River at Kinzua Dam, Pa.	41.841	-79.012	2,180	Y
03013000	Conewango Creek at Waterboro, N.Y.	42.171	-79.069	290	N
03014500	Chadakoin River at Falconer, N.Y.	42.113	-79.204	194	Y
03015000	Conewango Creek at Russell, Pa.	41.938	-79.133	816	Y
03015280	Jackson Run near North Warren, Pa.	41.903	-79.238	12.8	N
03015500	Brokenstraw Creek at Youngsville, Pa.	41.853	-79.317	321	N
03016000	Allegheny River at West Hickory, Pa.	41.571	-79.408	3,660	Y
03017500	Tionesta Creek at Lynch, Pa.	41.602	-79.050	233	N
03020000	Tionesta Creek at Tionesta Creek Dam, Pa.	41.478	-79.444	479	Y
03020500	Oil Creek at Rouseville, Pa.	41.482	-79.695	283	N
03021350	French Creek near Wattsburg, Pa.	42.015	-79.783	92.0	N
03021410	West Branch French Creek near Lowville, Pa.	42.082	-79.850	52.3	N
03021500	French Creek at Carters Corners, Pa.	41.956	-79.877	208	N
03021520	French Creek near Union City, Pa.	41.908	-79.897	221	Y
03022540	Woodcock Creek at Blooming Valley, Pa.	41.691	-80.048	31.1	N
03022554	Woodcock Creek at Woodcock Creek Dam, Pa.	41.696	-80.108	45.6	Y
03023100	French Creek at Meadville, Pa.	41.633	-80.160	788	Y

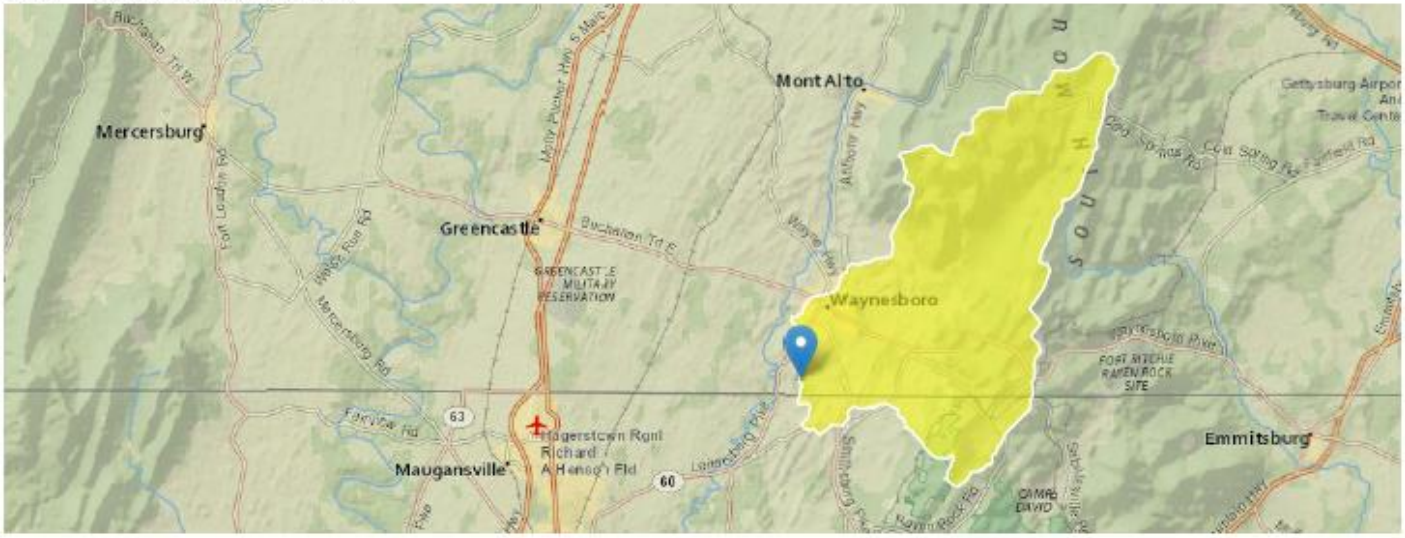
Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft³/s; cubic feet per second; —, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft³/s)	7-day, 10-year (ft³/s)	7-day, 2-year (ft³/s)	30-day, 10-year (ft³/s)	30-day, 2-year (ft³/s)	90-day, 10-year (ft³/s)
[4]01611500	1924–2008	83	37.2	39.3	56.4	45.6	65.6	56.0
[4]01613000	1934–2008	75	270	286	446	335	534	453
01613050	1967–2008	40	0	0	.1	<.1	.4	.2
[4]01614000	1930–2008	41	3.2	3.8	8.2	5.4	11.4	8.1
01614090	1962–1981	19	.2	.3	.8	.4	1.0	.7
[4]01614500	1930–2008	79	48.1	55.0	91.9	65.3	105	81.4
[4]01616500	1949–2008	60	34.4	36.7	54.4	41.0	61.9	48.7
01617000	1950–2008	24	.8	1.1	2.3	1.3	2.7	1.5
[4]01617800	1966–2008	43	.2	.5	3.0	.9	3.4	1.4
01618000	1930–2004	68	333	424	708	516	869	680
01619000	1950–2008	19	22.5	23.4	37.5	25.9	41.8	32.9
[4]01619500	1901–2008	82	57.9	65.2	93.1	72.4	103	82.5
[4]01637500	1949–2008	60	.6	.9	3.2	1.7	5.4	4.2
[4]01639000	1944–2008	65	.6	.8	4.7	2.9	8.2	6.6
[4]01639140	1992–2001	10	0	.1	.9	.3	1.5	.8
[4]01639500	1949–2008	60	—	7.1	23.9	10.4	26.6	17.2
[4]01640500	1933–1984	52	.1	.2	.6	.3	.8	.6
[4]01640965	1983–1994	12	<.1	<.1	.1	.1	.1	.1
[4]01640970	1983–1991	9	0.1	0.1	0.3	0.2	0.5	0.4
[4]01641000	[3]1951–1968	18	.9	1.1	1.9	1.5	2.5	1.9
[4]01641000	[2]1970–1991	22	2.1	2.4	3.6	3.2	4.6	4.2
[4]01641500	1949–1984	36	.8	.9	1.5	1.1	1.8	1.4
[4]01642500	[3]1933–1970	35	6.0	6.8	15.3	9.0	18.5	13.4
[4]01642500	[2]1972–1982	11	7.2	8.6	18.1	12.2	23.9	19.9
[4]01643000	1931–2008	78	45.1	49.2	105	63.9	128	93.1
[4]01643500	1950–2008	50	3.2	3.8	11.0	5.9	13.0	10.2
03007800	1976–2008	33	13.2	15.4	35.2	20.9	47.8	35.5
03008000	1968–1979	12	0	0	.2	<.1	.6	<.1
03009680	1976–1995	20	11.2	13.5	26.9	17.2	38.8	29.5
03010500	1941–2008	68	27.6	31.0	65.0	42.8	91.5	63.0
03010655	1976–2008	33	4.9	5.7	11.8	7.4	15.6	10.6
03011020	1905–2008	104	117	127	218	159	291	217
03011800	1967–2008	42	4.2	4.9	8.8	6.2	12.1	9.0
03012550	[2]1967–1991	25	—	414	681	542	944	828
03012550	[3]1937–1965	29	168	176	260	212	319	267
03013000	1940–1993	54	28.2	31.0	48.3	35.1	58.7	41.5
03014500	1936–2008	73	7.4	10.8	28.6	15.3	41.0	24.1
03015000	[2]1951–2008	58	76.4	81.7	143	95.1	180	115
03015000	[3]1941–1949	9	69.6	71.6	122	86.5	141	131
03015280	1964–1978	15	.7	.9	1.9	1.3	2.7	2.0
03015500	1911–2008	98	32.2	34.4	54.8	40.7	70.1	51.4
03016000	[2]1967–2008	44	527	579	1,230	708	1,630	906
03016000	[3]1943–1965	23	292	312	466	368	560	486
03017500	1939–1979	41	14.6	16.3	30.0	22.1	42.2	35.4
03020000	1942–1991	50	7.5	14.8	72.6	40.7	86.2	67.9

StreamStats Report

Region ID: PA
Workspace ID: PA20240214124926742000
Clicked Point (Latitude, Longitude): 39.72628, -77.59285
Time: 2024-02-14 07:49:47 -0500



Waynesboro WWTP PA0020621 Modeling Point #1 (POFU for Waynesboro WWTP) February 2024

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	26.54	percent
DRNAREA	Area that drains to a point on a stream	51.3	square miles
PRECIP	Mean Annual Precipitation	43	inches
ROCKDEP	Depth to rock	5.2	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.52	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	51.3	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	43	inches	35	50.4
STRDEN	Stream Density	1.52	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	5.2	feet	3.32	5.65
CARBON	Percent Carbonate	26.54	percent	0	99

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

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	15.7	ft^3/s	38	38
30 Day 2 Year Low Flow	18.2	ft^3/s	33	33
7 Day 10 Year Low Flow	10.5	ft^3/s	51	51
30 Day 10 Year Low Flow	11.8	ft^3/s	46	46
90 Day 10 Year Low Flow	14.3	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/)

Application Version: 4.19.4
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report

Region ID: PA
Workspace ID: PA20240214125239946000
Clicked Point (Latitude, Longitude): 39.72633, -77.59300
Time: 2024-02-14 07:53:01 -0500

Waynesboro WWTP PA0020621 Modeling Point #2 (Node for Washington WWTP) February 2024

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	26.54	percent
DRNAREA	Area that drains to a point on a stream	51.3	square miles
PRECIP	Mean Annual Precipitation	43	inches
ROCKDEP	Depth to rock	5.2	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.52	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	51.3	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	43	inches	35	50.4
STRDEN	Stream Density	1.52	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	5.2	feet	3.32	5.65
CARBON	Percent Carbonate	26.54	percent	0	99

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

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	15.7	ft^3/s	38	38
30 Day 2 Year Low Flow	18.2	ft^3/s	33	33
7 Day 10 Year Low Flow	10.5	ft^3/s	51	51
30 Day 10 Year Low Flow	11.8	ft^3/s	46	46
90 Day 10 Year Low Flow	14.3	ft^3/s	36	36

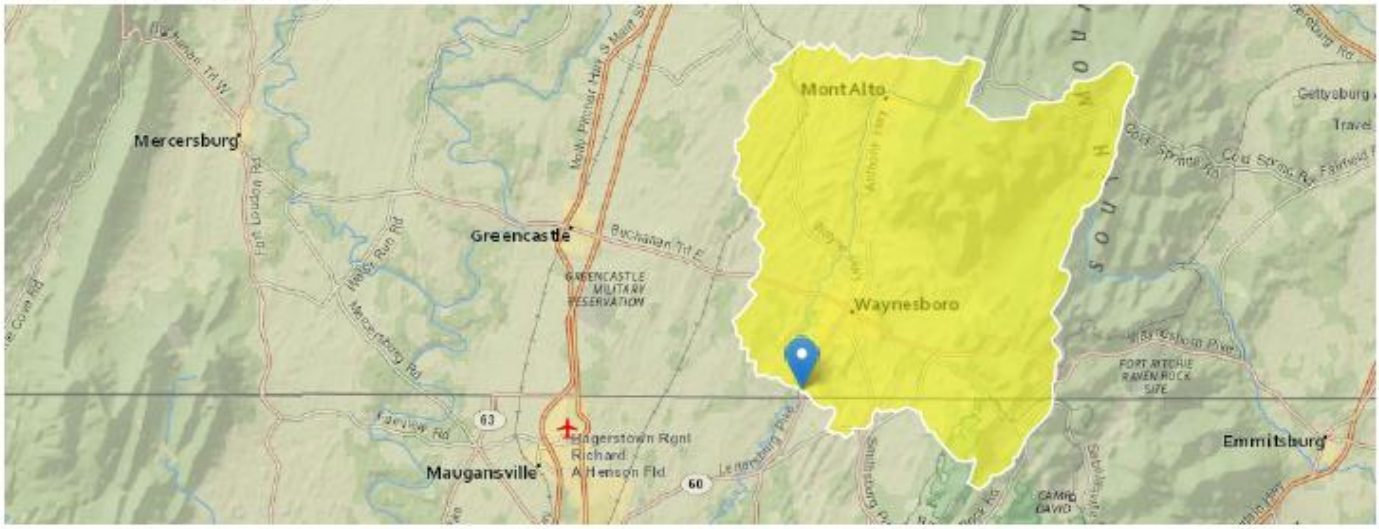
Low Flow Statistics Citations

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/)

Application Version: 4.19.4
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report

Region ID: PA
Workspace ID: PA20240214130311512000
Clicked Point (Latitude, Longitude): 39.72419, -77.60566
Time: 2024-02-14 08:03:32 -0500



Waynesboro WWTP PA0020621 Modeling Point #3 February 2023

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	51.86	percent
DRNAREA	Area that drains to a point on a stream	93.2	square miles
PRECIP	Mean Annual Precipitation	42	inches
ROCKDEP	Depth to rock	5.4	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.47	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	93.2	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	42	inches	35	50.4
STRDEN	Stream Density	1.47	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	5.4	feet	3.32	5.65
CARBON	Percent Carbonate	51.86	percent	0	99

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

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	39.7	ft^3/s	38	38
30 Day 2 Year Low Flow	43.2	ft^3/s	33	33
7 Day 10 Year Low Flow	30.6	ft^3/s	51	51
30 Day 10 Year Low Flow	32.3	ft^3/s	46	46
90 Day 10 Year Low Flow	34.6	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/)

Application Version: 4.19.4
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment B

WQM 7.0 Modeling Output Values
Toxics Management Spreadsheet Output Values

- Run #1
- Run #2

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
13C	59291	EAST BRANCH ANTIETAM 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)
0.980	Waynesboro	PA0020621	1.600	CBOD5	25		
				NH3-N	9.82	19.64	
				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)
0.940	Washington WWTP	PA0080225	1.850	CBOD5	25		
				NH3-N	3.39	6.78	
				Dissolved Oxygen			5

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
13C	59291	EAST BRANCH ANTIETAM 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
0.980	Waynesboro	15.64	50	15.64	50	0	0
0.940	Washington WW	15.5	8.4	14.79	8.4	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.980	Waynesboro	1.8	12.16	1.8	9.82	2	19
0.940	Washington WW	1.79	4.2	1.73	3.39	2	19

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)		
0.98	Waynesboro	25	25	9.82	9.82	5	5	0	0
0.94	Washington WWTP	25	25	3.39	3.39	5	5	0	0

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
13C	59291	EAST BRANCH ANTIETAM CREEK	0.980	567.00	51.30	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	0.250	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Waynesboro	PA0020621	1.6000	1.6000	1.6000	0.000	25.00	7.00

Parameter Data

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

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
13C	59291	EAST BRANCH ANTIETAM CREEK	0.940	564.00	51.40	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	0.250	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Washington WWTP	PA0080225	1.8500	1.8500	1.8500	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	4.20	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
13C	59291	EAST BRANCH ANTIETAM CREEK	0.000	550.00	93.20	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	0.250	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	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
13C	59291	EAST BRANCH ANTIETAM CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.980	1.600	20.808	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
42.796	0.806	53.111	0.444
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.72	1.059	1.59	0.745
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.719	43.883	Tsivoglou	5
Reach Travel Time (days)			
0.006			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.001	5.71	1.59	7.74
0.001	5.71	1.59	7.76
0.002	5.71	1.58	7.79
0.002	5.70	1.58	7.81
0.003	5.70	1.58	7.83
0.003	5.70	1.58	7.85
0.004	5.69	1.58	7.87
0.004	5.69	1.58	7.89
0.005	5.69	1.58	7.91
0.006	5.68	1.58	7.93

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.940	3.450	21.466	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
53.956	0.789	68.390	0.428
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
8.71	1.234	1.86	0.784
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.467	8.522	Tsivoglou	5
Reach Travel Time (days)			
0.134			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.013	8.56	1.84	7.32
0.027	8.41	1.82	7.20
0.040	8.26	1.80	7.09
0.054	8.12	1.79	7.00
0.067	7.98	1.77	6.93
0.081	7.84	1.75	6.86
0.094	7.70	1.73	6.81
0.107	7.56	1.71	6.77
0.121	7.43	1.69	6.73
0.134	7.30	1.68	6.71

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
13C	59291	EAST BRANCH ANTIETAM 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												
0.980	12.84	0.00	12.84	2.4752	0.01420	.806	42.8	53.11	0.44	0.006	20.81	7.00
0.940	12.87	0.00	12.87	5.3371	0.00282	.789	53.96	68.39	0.43	0.134	21.47	7.00
Q1-10 Flow												
0.980	12.33	0.00	12.33	2.4752	0.01420	NA	NA	NA	0.44	0.006	20.84	7.00
0.940	12.35	0.00	12.35	5.3371	0.00282	NA	NA	NA	0.42	0.137	21.51	7.00
Q30-10 Flow												
0.980	14.25	0.00	14.25	2.4752	0.01420	NA	NA	NA	0.47	0.005	20.74	7.00
0.940	14.28	0.00	14.28	5.3371	0.00282	NA	NA	NA	0.45	0.129	21.36	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	0.96	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.11	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

RUN #1

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Waynesboro WWTP** NPDES Permit No.: **PA0020621** Outfall No.: **001**

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

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
1.6	109	7.67						

					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		338									
	Chloride (PWS)	mg/L		74									
	Bromide	mg/L	<	0.07									
	Sulfate (PWS)	mg/L		45									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		218									
	Total Antimony	µg/L		3.1									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L	<	9.6									
	Total Beryllium	µg/L	<	0.68									
	Total Boron	µg/L		426									
	Total Cadmium	µg/L	<	0.12									
	Total Chromium (III)	µg/L		2.2									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L		0.34									
	Total Copper	µg/L		50									
	Free Cyanide	µg/L		8									
	Total Cyanide	µg/L	<	6									
	Dissolved Iron	µg/L		110									
	Total Iron	µg/L		130									
	Total Lead	µg/L		0.27									
	Total Manganese	µg/L		23									
	Total Mercury	µg/L		0.19									
	Total Nickel	µg/L		2.4									
	Total Phenols (Phenolics) (PWS)	µg/L		4									
	Total Selenium	µg/L		10									
	Total Silver	µg/L	<	1.37									
	Total Thallium	µg/L	<	0.07									
	Total Zinc	µg/L		30									
	Total Molybdenum	µg/L		0.56									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	0.51									
	Benzene	µg/L	<	0.43									
	Bromoform	µg/L	<	0.34									
	Carbon Tetrachloride	µg/L	<	0.51									
	Chlorobenzene	µg/L	<	0.21									
	Chlorodibromomethane	µg/L	<	0.39									
	Chloroethane	µg/L	<	0.42									
	2-Chloroethyl Vinyl Ether	µg/L	<	4									

Group 3	Chloroform	µg/L	<	0.51										
	Dichlorobromomethane	µg/L	<	0.32										
	1,1-Dichloroethane	µg/L	<	0.42										
	1,2-Dichloroethane	µg/L	<	0.39										
	1,1-Dichloroethylene	µg/L	<	0.33										
	1,2-Dichloropropane	µg/L	<	0.42										
	1,3-Dichloropropylene	µg/L	<	0.59										
	1,4-Dioxane	µg/L	<	3										
	Ethylbenzene	µg/L	<	0.27										
	Methyl Bromide	µg/L	<	0.46										
	Methyl Chloride	µg/L	<	0.36										
	Methylene Chloride	µg/L	<	0.45										
	1,1,2,2-Tetrachloroethane	µg/L	<	0.36										
	Tetrachloroethylene	µg/L	<	0.39										
	Toluene	µg/L	<	0.33										
	1,2-trans-Dichloroethylene	µg/L	<	0.39										
	1,1,1-Trichloroethane	µg/L	<	0.38										
	1,1,2-Trichloroethane	µg/L	<	0.24										
	Trichloroethylene	µg/L	<	0.46										
	Vinyl Chloride	µg/L	<	0.46										
Group 4	2-Chlorophenol	µg/L	<	0.13										
	2,4-Dichlorophenol	µg/L	<	0.25										
	2,4-Dimethylphenol	µg/L	<	0.26										
	4,6-Dinitro-o-Cresol	µg/L	<	0.9										
	2,4-Dinitrophenol	µg/L	<	0.86										
	2-Nitrophenol	µg/L	<	0.25										
	4-Nitrophenol	µg/L		0.21										
	p-Chloro-m-Cresol	µg/L		0.41										
	Pentachlorophenol	µg/L	<	0.97										
	Phenol	µg/L		1.97										
	2,4,6-Trichlorophenol	µg/L		0.27										
Group 5	Acenaphthene	µg/L	<	0.26										
	Acenaphthylene	µg/L	<	0.22										
	Anthracene	µg/L		0.6										
	Benzidine	µg/L	<	0.35										
	Benzo(a)Anthracene	µg/L		1.91										
	Benzo(a)Pyrene	µg/L		1.04										
	3,4-Benzofluoranthene	µg/L		1.23										
	Benzo(ghi)Perylene	µg/L		1										
	Benzo(k)Fluoranthene	µg/L		1.3										
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.15										
	Bis(2-Chloroethyl)Ether	µg/L		1.92										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.34										
	Bis(2-Ethylhexyl)Phthalate	µg/L		0.95										
	4-Bromophenyl Phenyl Ether	µg/L		0.61										
	Butyl Benzyl Phthalate	µg/L		1.04										
	2-Chloronaphthalene	µg/L	<	0.28										
	4-Chlorophenyl Phenyl Ether	µg/L		0.4										
	Chrysene	µg/L		2.01										
	Dibenzo(a,h)Anthrancene	µg/L		0.75										
	1,2-Dichlorobenzene	µg/L	<	0.32										
	1,3-Dichlorobenzene	µg/L	<	0.17										
	1,4-Dichlorobenzene	µg/L	<	0.15										
	3,3-Dichlorobenzidine	µg/L		0.14										
	Diethyl Phthalate	µg/L		0.7										
	Dimethyl Phthalate	µg/L		0.41										
	Di-n-Butyl Phthalate	µg/L		1.2										
	2,4-Dinitrotoluene	µg/L	<	0.77										
	2,6-Dinitrotoluene	µg/L		0.44										
	Di-n-Octyl Phthalate	µg/L		0.45										
	1,2-Diphenylhydrazine	µg/L		0.45										
	Fluoranthene	µg/L		2.5										
	Fluorene	µg/L		0.39										
	Hexachlorobenzene	µg/L		0.92										
	Hexachlorobutadiene	µg/L	<	0.27										
	Hexachlorocyclopentadiene	µg/L	<	0.22										
	Hexachloroethane	µg/L	<	0.26										
	Indeno(1,2,3-cd)Pyrene	µg/L		0.88										

	Isophorone	µg/L	<	0.23										
	Naphthalene	µg/L	<	0.25										
	Nitrobenzene	µg/L	<	0.26										
	n-Nitrosodimethylamine	µg/L	<	0.4										
	n-Nitrosodi-n-Propylamine	µg/L	<	0.31										
	n-Nitrosodiphenylamine	µg/L		0.53										
	Phenanthrene	µg/L		1.27										
	Pyrene	µg/L		2.39										
	1,2,4-Trichlorobenzene	µg/L	<	0.17										
Group 6	Aldrin	µg/L	<	0.02										
	alpha-BHC	µg/L	<	0.03										
	beta-BHC	µg/L	<	0.06										
	gamma-BHC	µg/L	<	0.01										
	delta BHC	µg/L	<	0.03										
	Chlordane	µg/L	<	0.63										
	4,4-DDT	µg/L	<	0.02										
	4,4-DDE	µg/L	<	0.02										
	4,4-DDD	µg/L	<	0.02										
	Dieldrin	µg/L	<	0.02										
	alpha-Endosulfan	µg/L	<	0.08										
	beta-Endosulfan	µg/L	<	0.01										
	Endosulfan Sulfate	µg/L	<	0.02										
	Endrin	µg/L	<	0.03										
	Endrin Aldehyde	µg/L	<	0.07										
	Heptachlor	µg/L	<	0.03										
	Heptachlor Epoxide	µg/L	<	0.01										
	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		1.04										
	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												

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Waynesboro WWTP, NPDES Permit No. PA0020621, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **East Branch Antietam Creek**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	059291	0.98	567	51.3			Yes
End of Reach 1	059291	0	550	93.2			Yes

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

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	0.98	0.2503										109	7		
End of Reach 1	0	0.2503										109	7		

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	0.98														
End of Reach 1	0														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Waynesboro WWTP, NPDES Permit No. PA0020621, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.490 Analysis Hardness (mg/l): 109 Analysis pH: 7.11

Pollutants	Stream Conc	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	2,655	
Total Antimony	0	0		0	1,100	1,100	3,893	
Total Arsenic	0	0		0	340	340	1,203	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	74,330	
Total Boron	0	0		0	8,100	8,100	28,670	
Total Cadmium	0	0		0	2.190	2.33	8.24	Chem Translator of 0.94 applied
Total Chromium (III)	0	0		0	611.430	1,935	6,849	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	57.7	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	336	
Total Copper	0	0		0	14.576	15.2	53.7	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	77.9	
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	70.925	91.1	322	Chem Translator of 0.778 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	5.83	Chem Translator of 0.85 applied
Total Nickel	0	0		0	503.648	505	1,786	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	3.731	4.39	15.5	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	230	
Total Zinc	0	0		0	126.057	129	456	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	10.6	
Acrylonitrile	0	0		0	650	650	2,301	
Benzene	0	0		0	640	640	2,265	

Bromoform	0	0		0	1,800	1,800	6,371	
Carbon Tetrachloride	0	0		0	2,800	2,800	9,911	
Chlorobenzene	0	0		0	1,200	1,200	4,247	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	63,712	
Chloroform	0	0		0	1,900	1,900	6,725	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	53,093	
1,1-Dichloroethylene	0	0		0	7,500	7,500	26,546	
1,2-Dichloropropane	0	0		0	11,000	11,000	38,935	
1,3-Dichloropropylene	0	0		0	310	310	1,097	
Ethylbenzene	0	0		0	2,900	2,900	10,265	
Methyl Bromide	0	0		0	550	550	1,947	
Methyl Chloride	0	0		0	28,000	28,000	99,107	
Methylene Chloride	0	0		0	12,000	12,000	42,474	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	3,540	
Tetrachloroethylene	0	0		0	700	700	2,478	
Toluene	0	0		0	1,700	1,700	6,017	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	24,069	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	10,619	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	12,034	
Trichloroethylene	0	0		0	2,300	2,300	8,141	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,982	
2,4-Dichlorophenol	0	0		0	1,700	1,700	6,017	
2,4-Dimethylphenol	0	0		0	660	660	2,336	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	283	
2,4-Dinitrophenol	0	0		0	660	660	2,336	
2-Nitrophenol	0	0		0	8,000	8,000	28,316	
4-Nitrophenol	0	0		0	2,300	2,300	8,141	
p-Chloro-m-Cresol	0	0		0	160	160	566	
Pentachlorophenol	0	0		0	9.734	9.73	34.5	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,628	
Acenaphthene	0	0		0	83	83.0	294	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	1,062	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.77	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	106,186	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	15,928	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	956	
Butyl Benzyl Phthalate	0	0		0	140	140	496	
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	2,902	
1,3-Dichlorobenzene	0	0		0	350	350	1,239	
1,4-Dichlorobenzene	0	0		0	730	730	2,584	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	14,158	
Dimethyl Phthalate	0	0		0	2,500	2,500	8,849	
Di-n-Butyl Phthalate	0	0		0	110	110	389	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	5,663	
2,6-Dinitrotoluene	0	0		0	990	990	3,504	
1,2-Diphenylhydrazine	0	0		0	15	15.0	53.1	
Fluoranthene	0	0		0	200	200	708	
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	35.4	
Hexachlorocyclopentadiene	0	0		0	5	5.0	17.7	
Hexachloroethane	0	0		0	60	60.0	212	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	35,395	
Naphthalene	0	0		0	140	140	496	
Nitrobenzene	0	0		0	4,000	4,000	14,158	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	60,172	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	1,062	
Phenanthrene	0	0		0	5	5.0	17.7	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	460	
Aldrin	0	0		0	3	3.0	10.6	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	0.95	0.95	3.36	
Chlordane	0	0		0	2.4	2.4	8.49	
4,4-DDT	0	0		0	1.1	1.1	3.89	
4,4-DDE	0	0		0	1.1	1.1	3.89	
4,4-DDD	0	0		0	1.1	1.1	3.89	
Dieldrin	0	0		0	0.24	0.24	0.85	
alpha-Endosulfan	0	0		0	0.22	0.22	0.78	
beta-Endosulfan	0	0		0	0.22	0.22	0.78	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.086	0.086	0.3	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.52	0.52	1.84	
Heptachlor Epoxide	0	0		0	0.5	0.5	1.77	
Toxaphene	0	0		0	0.73	0.73	2.58	

☑ ***CFC*** CCT (min): 62.592 PMF: 1 Analysis Hardness (mg/l): 109 Analysis pH: 7.06

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total 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	1,361	
Total Arsenic	0	0		0	150	150	928	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	25,369	
Total Boron	0	0		0	1,600	1,600	9,900	
Total Cadmium	0	0		0	0.261	0.29	1.78	Chem Translator of 0.905 applied
Total Chromium (III)	0	0		0	79.535	92.5	572	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	64.3	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	118	
Total Copper	0	0		0	9.640	10.0	62.1	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	32.2	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	9,281	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.764	3.55	22.0	Chem Translator of 0.778 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	5.61	Chem Translator of 0.85 applied
Total Nickel	0	0		0	55.940	56.1	347	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	30.9	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	80.4	
Total Zinc	0	0		0	127.088	129	798	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	18.6	
Acrylonitrile	0	0		0	130	130	804	
Benzene	0	0		0	130	130	804	
Bromoform	0	0		0	370	370	2,289	
Carbon Tetrachloride	0	0		0	560	560	3,465	
Chlorobenzene	0	0		0	240	240	1,485	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	21,657	
Chloroform	0	0		0	390	390	2,413	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	19,182	
1,1-Dichloroethylene	0	0		0	1,500	1,500	9,281	
1,2-Dichloropropane	0	0		0	2,200	2,200	13,613	
1,3-Dichloropropylene	0	0		0	61	61.0	377	
Ethylbenzene	0	0		0	580	580	3,589	
Methyl Bromide	0	0		0	110	110	681	
Methyl Chloride	0	0		0	5,500	5,500	34,032	
Methylene Chloride	0	0		0	2,400	2,400	14,850	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	1,299	
Tetrachloroethylene	0	0		0	140	140	866	

Toluene	0	0		0	330	330	2,042	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	8,663	
1,1,1-Trichloroethane	0	0		0	610	610	3,774	
1,1,2-Trichloroethane	0	0		0	680	680	4,208	
Trichloroethylene	0	0		0	450	450	2,784	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	681	
2,4-Dichlorophenol	0	0		0	340	340	2,104	
2,4-Dimethylphenol	0	0		0	130	130	804	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	99.0	
2,4-Dinitrophenol	0	0		0	130	130	804	
2-Nitrophenol	0	0		0	1,600	1,600	9,900	
4-Nitrophenol	0	0		0	470	470	2,908	
p-Chloro-m-Cresol	0	0		0	500	500	3,094	
Pentachlorophenol	0	0		0	7.468	7.47	46.2	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	563	
Acenaphthene	0	0		0	17	17.0	105	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	365	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.62	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	37,126	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	5,631	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	334	
Butyl Benzyl Phthalate	0	0		0	35	35.0	217	
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	990	
1,3-Dichlorobenzene	0	0		0	69	69.0	427	
1,4-Dichlorobenzene	0	0		0	150	150	928	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	4,950	
Dimethyl Phthalate	0	0		0	500	500	3,094	
Di-n-Butyl Phthalate	0	0		0	21	21.0	130	
2,4-Dinitrotoluene	0	0		0	320	320	1,980	
2,6-Dinitrotoluene	0	0		0	200	200	1,238	
1,2-Diphenylhydrazine	0	0		0	3	3.0	18.6	
Fluoranthene	0	0		0	40	40.0	248	
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	12.4	
Hexachlorocyclopentadiene	0	0		0	1	1.0	6.19	
Hexachloroethane	0	0		0	12	12.0	74.3	

Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	12,994	
Naphthalene	0	0		0	43	43.0	266	
Nitrobenzene	0	0		0	810	810	5,012	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	21,038	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	365	
Phenanthrene	0	0		0	1	1.0	6.19	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	161	
Aldrin	0	0		0	0.1	0.1	0.62	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0043	0.004	0.027	
4,4-DDT	0	0		0	0.001	0.001	0.006	
4,4-DDE	0	0		0	0.001	0.001	0.006	
4,4-DDD	0	0		0	0.001	0.001	0.006	
Dieldrin	0	0		0	0.056	0.056	0.35	
alpha-Endosulfan	0	0		0	0.056	0.056	0.35	
beta-Endosulfan	0	0		0	0.056	0.056	0.35	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.036	0.036	0.22	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.0038	0.004	0.024	
Heptachlor Epoxide	0	0		0	0.0038	0.004	0.024	
Toxaphene	0	0		0	0.0002	0.0002	0.001	

☑ ***THH*** CCT (min): 62.592 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	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	34.7	
Total Arsenic	0	0		0	10	10.0	61.9	
Total Barium	0	0		0	2,400	2,400	14,850	
Total Boron	0	0		0	3,100	3,100	19,182	
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	24.8	
Dissolved Iron	0	0		0	300	300	1,856	
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	6,188	
Total Mercury	0	0		0	0.050	0.05	0.31	
Total Nickel	0	0		0	610	610	3,774	
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	1.49	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	18.6	
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	619	
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	35.3	
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	204	
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	421	
Methyl Bromide	0	0		0	100	100.0	619	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	353	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	619	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	61,876	
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	186	
2,4-Dichlorophenol	0	0		0	10	10.0	61.9	
2,4-Dimethylphenol	0	0		0	100	100.0	619	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	12.4	
2,4-Dinitrophenol	0	0		0	10	10.0	61.9	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	24,750	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	433	
Anthracene	0	0		0	300	300	1,856	

Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	1,238	
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	0.62	
2-Chloronaphthalene	0	0		0	800	800	4,950	
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	6,188	
1,3-Dichlorobenzene	0	0		0	7	7.0	43.3	
1,4-Dichlorobenzene	0	0		0	300	300	1,856	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	3,713	
Dimethyl Phthalate	0	0		0	2,000	2,000	12,375	
Di-n-Butyl Phthalate	0	0		0	20	20.0	124	
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	124	
Fluorene	0	0		0	50	50.0	309	
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	24.8	
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	210	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	61.9	
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	124	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.43	
Aldrin	0	0		0	N/A	N/A	N/A	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	4.2	4.2	26.0	
Chlordane	0	0		0	N/A	N/A	N/A	
4,4-DDT	0	0		0	N/A	N/A	N/A	
4,4-DDE	0	0		0	N/A	N/A	N/A	
4,4-DDD	0	0		0	N/A	N/A	N/A	
Dieldrin	0	0		0	N/A	N/A	N/A	

alpha-Endosulfan	0	0		0	20	20.0	124	
beta-Endosulfan	0	0		0	20	20.0	124	
Endosulfan Sulfate	0	0		0	20	20.0	124	
Endrin	0	0		0	0.03	0.03	0.19	
Endrin Aldehyde	0	0		0	1	1.0	6.19	
Heptachlor	0	0		0	N/A	N/A	N/A	
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 29.983 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	
Acrylonitrile	0	0		0	0.06	0.06	1.74	
Benzene	0	0		0	0.58	0.58	16.8	
Bromoform	0	0		0	7	7.0	203	
Carbon Tetrachloride	0	0		0	0.4	0.4	11.6	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	23.2	
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	27.5	

1,2-Dichloroethane	0	0		0	9.9	9.9	287	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	26.0	
1,3-Dichloropropylene	0	0		0	0.27	0.27	7.81	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	579	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	5.79	
Tetrachloroethylene	0	0		0	10	10.0	289	
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	15.9	
Trichloroethylene	0	0		0	0.6	0.6	17.4	
Vinyl Chloride	0	0		0	0.02	0.02	0.58	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	0.87	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	43.4	
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	0.003	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.029	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.003	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.029	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.29	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.87	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	9.26	
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	3.47	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.003	
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	1.45	
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	1.45	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	1.45	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.87	
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	0.002	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.29	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	2.89	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.029	
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	0.02	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.14	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	95.5	
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	
Aldrin	0	0		0	0.0000008	8.00E-07	0.00002	
alpha-BHC	0	0		0	0.0004	0.0004	0.012	
beta-BHC	0	0		0	0.008	0.008	0.23	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0003	0.0003	0.009	
4,4-DDT	0	0		0	0.00003	0.00003	0.0009	
4,4-DDE	0	0		0	0.00002	0.00002	0.0006	
4,4-DDD	0	0		0	0.0001	0.0001	0.003	
Dieldrin	0	0		0	0.000001	0.000001	0.00003	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000006	0.000006	0.0002	
Heptachlor Epoxide	0	0		0	0.00003	0.00003	0.0009	
Toxaphene	0	0		0	0.0007	0.0007	0.02	

☑ ***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
Total Aluminum	Report	Report	Report	Report	Report	µg/L	1,702	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	0.46	0.72	34.4	53.7	86.1	µg/L	34.4	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Free Cyanide	Report	Report	Report	Report	Report	µg/L	24.8	THH	Discharge Conc > 25% WQBEL (no RP)

Total Mercury	0.004	0.006	0.31	0.48	0.77	µg/L	0.31	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Selenium	Report	Report	Report	Report	Report	µg/L	30.9	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Silver	Report	Report	Report	Report	Report	µg/L	9.96	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	292	AFC	Discharge Conc > 10% WQBEL (no RP)
Benzo(a)Anthracene	0.0004	0.0006	0.029	0.045	0.072	µg/L	0.029	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Pyrene	0.00004	0.00006	0.003	0.005	0.007	µg/L	0.003	CRL	Discharge Conc ≥ 50% WQBEL (RP)
3,4-Benzofluoranthene	0.0004	0.0006	0.029	0.045	0.072	µg/L	0.029	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(k)Fluoranthene	0.004	0.006	0.29	0.45	0.72	µg/L	0.29	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Bis(2-Chloroethyl)Ether	0.012	0.018	0.87	1.35	2.17	µg/L	0.87	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Butyl Benzyl Phthalate	0.008	0.013	0.62	0.97	1.55	µg/L	0.62	THH	Discharge Conc ≥ 50% WQBEL (RP)
Chrysene	0.046	0.072	3.47	5.42	8.68	µg/L	3.47	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Dibenzo(a,h)Anthrancene	0.00004	0.00006	0.003	0.005	0.007	µg/L	0.003	CRL	Discharge Conc ≥ 50% WQBEL (RP)
2,6-Dinitrotoluene	Report	Report	Report	Report	Report	µg/L	1.45	CRL	Discharge Conc > 25% WQBEL (no RP)
1,2-Diphenylhydrazine	0.012	0.018	0.87	1.35	2.17	µg/L	0.87	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Hexachlorobenzene	0.00003	0.00005	0.002	0.004	0.006	µg/L	0.002	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Indeno(1,2,3-cd)Pyrene	0.0004	0.0006	0.029	0.045	0.072	µg/L	0.029	CRL	Discharge Conc ≥ 50% WQBEL (RP)
beta-BHC	Report	Report	Report	Report	Report	µg/L	0.23	CRL	Discharge Conc > 25% WQBEL (no RP)
Toxaphene	0.00002	0.00003	0.001	0.002	0.003	µg/L	0.001	CFC	Discharge Conc ≥ 50% WQBEL (RP)

☑ ***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 Antimony	34.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	14,850	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	9,900	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	1.78	µg/L	Discharge Conc < TQL
Total Chromium (III)	572	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	37.0	µg/L	Discharge Conc < TQL
Total Cobalt	118	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	1,856	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	9,281	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	22.0	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	6,188	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	347	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Thallium	1.49	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	6.81	µg/L	Discharge Conc < TQL

Acrylonitrile	1.74	µg/L	Discharge Conc < TQL
Benzene	16.8	µg/L	Discharge Conc < TQL
Bromoform	203	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	11.6	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	619	µg/L	Discharge Conc < TQL
Chlorodibromomethane	23.2	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	21,657	µg/L	Discharge Conc < TQL
Chloroform	35.3	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	27.5	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	287	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	204	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	26.0	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	7.81	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	421	µg/L	Discharge Conc < TQL
Methyl Bromide	619	µg/L	Discharge Conc < TQL
Methyl Chloride	34,032	µg/L	Discharge Conc < TQL
Methylene Chloride	579	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	5.79	µg/L	Discharge Conc < TQL
Tetrachloroethylene	289	µg/L	Discharge Conc < TQL
Toluene	353	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	619	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	3,774	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	15.9	µg/L	Discharge Conc < TQL
Trichloroethylene	17.4	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.58	µg/L	Discharge Conc < TQL
2-Chlorophenol	186	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	61.9	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	619	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	12.4	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	61.9	µg/L	Discharge Conc < TQL
2-Nitrophenol	9,900	µg/L	Discharge Conc < TQL
4-Nitrophenol	2,908	µg/L	Discharge Conc ≤ 25% WQBEL
p-Chloro-m-Cresol	363	µg/L	Discharge Conc ≤ 25% WQBEL
Pentachlorophenol	0.87	µg/L	Discharge Conc < TQL
Phenol	24,750	µg/L	Discharge Conc ≤ 25% WQBEL
2,4,6-Trichlorophenol	43.4	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthene	105	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	1,856	µg/L	Discharge Conc ≤ 25% WQBEL
Benzidine	0.003	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroisopropyl)Ether	1,238	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	9.26	µg/L	Discharge Conc ≤ 25% WQBEL
4-Bromophenyl Phenyl Ether	334	µg/L	Discharge Conc ≤ 25% WQBEL

2-Chloronaphthalene	4,950	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
1,2-Dichlorobenzene	990	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	43.3	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	928	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	1.45	µg/L	Discharge Conc ≤ 25% WQBEL
Diethyl Phthalate	3,713	µg/L	Discharge Conc ≤ 25% WQBEL
Dimethyl Phthalate	3,094	µg/L	Discharge Conc ≤ 25% WQBEL
Di-n-Butyl Phthalate	124	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrotoluene	1.45	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
Fluoranthene	124	µg/L	Discharge Conc ≤ 25% WQBEL
Fluorene	309	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobutadiene	0.29	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	6.19	µg/L	Discharge Conc < TQL
Hexachloroethane	2.89	µg/L	Discharge Conc < TQL
Isophorone	210	µg/L	Discharge Conc < TQL
Naphthalene	266	µg/L	Discharge Conc < TQL
Nitrobenzene	61.9	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.02	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.14	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	95.5	µg/L	Discharge Conc ≤ 25% WQBEL
Phenanthrene	6.19	µg/L	Discharge Conc ≤ 25% WQBEL
Pyrene	124	µg/L	Discharge Conc ≤ 25% WQBEL
1,2,4-Trichlorobenzene	0.43	µg/L	Discharge Conc < TQL
Aldrin	0.00002	µg/L	Discharge Conc < TQL
alpha-BHC	0.012	µg/L	Discharge Conc < TQL
gamma-BHC	2.16	µg/L	Discharge Conc < TQL
delta BHC	N/A	N/A	No WQS
Chlordane	0.009	µg/L	Discharge Conc < TQL
4,4-DDT	0.0009	µg/L	Discharge Conc < TQL
4,4-DDE	0.0006	µg/L	Discharge Conc < TQL
4,4-DDD	0.003	µg/L	Discharge Conc < TQL
Dieldrin	0.00003	µg/L	Discharge Conc < TQL
alpha-Endosulfan	0.35	µg/L	Discharge Conc ≤ 25% WQBEL
beta-Endosulfan	0.35	µg/L	Discharge Conc < TQL
Endosulfan Sulfate	124	µg/L	Discharge Conc < TQL
Endrin	0.19	µg/L	Discharge Conc < TQL
Endrin Aldehyde	6.19	µg/L	Discharge Conc ≤ 25% WQBEL
Heptachlor	0.0002	µg/L	Discharge Conc < TQL
Heptachlor Epoxide	0.0009	µg/L	Discharge Conc < TQL

RUN #1

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Waynesboro WWTP** NPDES Permit No.: **PA0020621** Outfall No.: **001**

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

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
1.6	109	7.67						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc	0 if left blank: Stream Conc	0.5 if left blank: Daily CV	0.5 if left blank: Hourly CV	0 if left blank: Stream CV	0 if left blank: Fate Coeff	0 if left blank: FOS	1 if left blank: Criteria Mod	1 if left blank: Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		338									
	Chloride (PWS)	mg/L		74									
	Bromide	mg/L	<	0.07									
	Sulfate (PWS)	mg/L		45									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		218									
	Total Antimony	µg/L		3.1									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L	<	9.6									
	Total Beryllium	µg/L	<	0.68									
	Total Boron	µg/L		426									
	Total Cadmium	µg/L	<	0.12									
	Total Chromium (III)	µg/L		2.2									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L		0.34									
	Total Copper	µg/L		50									
	Free Cyanide	µg/L		8									
	Total Cyanide	µg/L	<	6									
	Dissolved Iron	µg/L		110									
	Total Iron	µg/L		130									
	Total Lead	µg/L		0.27									
	Total Manganese	µg/L		23									
	Total Mercury	µg/L	<	0.19									
	Total Nickel	µg/L		2.4									
	Total Phenols (Phenolics) (PWS)	µg/L		4									
	Total Selenium	µg/L		10									
	Total Silver	µg/L	<	1.37									
	Total Thallium	µg/L	<	0.07									
	Total Zinc	µg/L		30									
	Total Molybdenum	µg/L		0.56									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	0.51									
	Benzene	µg/L	<	0.43									
	Bromoform	µg/L	<	0.34									
	Carbon Tetrachloride	µg/L	<	0.51									
	Chlorobenzene	µg/L	<	0.21									
	Chlorodibromomethane	µg/L	<	0.39									
	Chloroethane	µg/L	<	0.42									
	2-Chloroethyl Vinyl Ether	µg/L	<	4									

Group 3	Chloroform	µg/L	<	0.51									
	Dichlorobromomethane	µg/L	<	0.32									
	1,1-Dichloroethane	µg/L	<	0.42									
	1,2-Dichloroethane	µg/L	<	0.39									
	1,1-Dichloroethylene	µg/L	<	0.33									
	1,2-Dichloropropane	µg/L	<	0.42									
	1,3-Dichloropropylene	µg/L	<	0.59									
	1,4-Dioxane	µg/L	<	3									
	Ethylbenzene	µg/L	<	0.27									
	Methyl Bromide	µg/L	<	0.46									
	Methyl Chloride	µg/L	<	0.36									
	Methylene Chloride	µg/L	<	0.45									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.36									
	Tetrachloroethylene	µg/L	<	0.39									
	Toluene	µg/L	<	0.33									
	1,2-trans-Dichloroethylene	µg/L	<	0.39									
	1,1,1-Trichloroethane	µg/L	<	0.38									
	1,1,2-Trichloroethane	µg/L	<	0.24									
	Trichloroethylene	µg/L	<	0.46									
	Vinyl Chloride	µg/L	<	0.46									
Group 4	2-Chlorophenol	µg/L	<	0.13									
	2,4-Dichlorophenol	µg/L	<	0.25									
	2,4-Dimethylphenol	µg/L	<	0.26									
	4,6-Dinitro-o-Cresol	µg/L	<	0.9									
	2,4-Dinitrophenol	µg/L	<	0.86									
	2-Nitrophenol	µg/L	<	0.25									
	4-Nitrophenol	µg/L		0.21									
	p-Chloro-m-Cresol	µg/L		0.41									
	Pentachlorophenol	µg/L	<	0.97									
	Phenol	µg/L		1.97									
	2,4,6-Trichlorophenol	µg/L		0.27									
Group 5	Acenaphthene	µg/L	<	0.26									
	Acenaphthylene	µg/L	<	0.22									
	Anthracene	µg/L		0.6									
	Benzidine	µg/L	<	0.35									
	Benzo(a)Anthracene	µg/L	<	1.91									
	Benzo(a)Pyrene	µg/L	<	1.04									
	3,4-Benzofluoranthene	µg/L	<	1.23									
	Benzo(ghi)Perylene	µg/L		1									
	Benzo(k)Fluoranthene	µg/L	<	1.3									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.15									
	Bis(2-Chloroethyl)Ether	µg/L	<	1.92									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.34									
	Bis(2-Ethylhexyl)Phthalate	µg/L		0.95									
	4-Bromophenyl Phenyl Ether	µg/L		0.61									
	Butyl Benzyl Phthalate	µg/L	<	1.04									
	2-Chloronaphthalene	µg/L	<	0.28									
	4-Chlorophenyl Phenyl Ether	µg/L		0.4									
	Chrysene	µg/L	<	2.01									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.75									
	1,2-Dichlorobenzene	µg/L	<	0.32									
	1,3-Dichlorobenzene	µg/L	<	0.17									
	1,4-Dichlorobenzene	µg/L	<	0.15									
	3,3-Dichlorobenzidine	µg/L		0.14									
	Diethyl Phthalate	µg/L		0.7									
	Dimethyl Phthalate	µg/L		0.41									
	Di-n-Butyl Phthalate	µg/L		1.2									
	2,4-Dinitrotoluene	µg/L	<	0.77									
	2,6-Dinitrotoluene	µg/L	<	0.44									
	Di-n-Octyl Phthalate	µg/L		0.45									
	1,2-Diphenylhydrazine	µg/L	<	0.45									
	Fluoranthene	µg/L		2.5									
	Fluorene	µg/L		0.39									
	Hexachlorobenzene	µg/L	<	0.92									
	Hexachlorobutadiene	µg/L	<	0.27									
	Hexachlorocyclopentadiene	µg/L	<	0.22									
	Hexachloroethane	µg/L	<	0.26									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.88									

	Isophorone	µg/L	<	0.23										
	Naphthalene	µg/L	<	0.25										
	Nitrobenzene	µg/L	<	0.26										
	n-Nitrosodimethylamine	µg/L	<	0.4										
	n-Nitrosodi-n-Propylamine	µg/L	<	0.31										
	n-Nitrosodiphenylamine	µg/L		0.53										
	Phenanthrene	µg/L		1.27										
	Pyrene	µg/L		2.39										
	1,2,4-Trichlorobenzene	µg/L	<	0.17										
Group 6	Aldrin	µg/L	<	0.02										
	alpha-BHC	µg/L	<	0.03										
	beta-BHC	µg/L	<	0.06										
	gamma-BHC	µg/L	<	0.01										
	delta BHC	µg/L	<	0.03										
	Chlordane	µg/L	<	0.63										
	4,4-DDT	µg/L	<	0.02										
	4,4-DDE	µg/L	<	0.02										
	4,4-DDD	µg/L	<	0.02										
	Dieldrin	µg/L	<	0.02										
	alpha-Endosulfan	µg/L	<	0.08										
	beta-Endosulfan	µg/L	<	0.01										
	Endosulfan Sulfate	µg/L	<	0.02										
	Endrin	µg/L	<	0.03										
	Endrin Aldehyde	µg/L	<	0.07										
	Heptachlor	µg/L	<	0.03										
	Heptachlor Epoxide	µg/L	<	0.01										
	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	<	1.04										
	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												

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Waynesboro WWTP, NPDES Permit No. PA0020621, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **East Branch Antietam 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	059291	0.98	567	51.3			Yes
End of Reach 1	059291	0	550	93.2			Yes

Q $_{7\text{-}10}$

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	0.98	0.2503										109	7		
End of Reach 1	0	0.2503										109	7		

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	0.98														
End of Reach 1	0														

☑ ***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
Total Aluminum	Report	Report	Report	Report	Report	µg/L	1,702	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	0.46	0.72	34.4	53.7	86.1	µg/L	34.4	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Free Cyanide	Report	Report	Report	Report	Report	µg/L	24.8	THH	Discharge Conc > 25% WQBEL (no RP)

Total Selenium	Report	Report	Report	Report	Report	µg/L	30.9	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Silver	Report	Report	Report	Report	Report	µg/L	9.96	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	292	AFC	Discharge Conc > 10% WQBEL (no RP)
beta-BHC	Report	Report	Report	Report	Report	µg/L	0.23	CRL	Discharge Conc > 25% WQBEL (no RP)
Toxaphene	0.00002	0.00003	0.001	0.002	0.003	µg/L	0.001	CFC	Discharge Conc ≥ 50% WQBEL (RP)

Attachment C

TRC Evaluation

PA0020621: Waynesboro
February 2024

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	12.839	= Q stream (cfs)		0.5	= CV Daily	
5	3.45	= Q discharge (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	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 0.786		1.3.2.iii	WLA cfc = 0.759
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 0.293		5.1d	LTA_cfc = 0.441
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) = 0.361		AFC	
18			INST MAX LIMIT (mg/l) = 1.180			

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

Attachment D WETT Testing Results

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.15
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 11/7/2017

Replicate No.	Control	TIWC
1	9	8
2	10	10
3	8	7
4	10	8
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.250	8.250
Std Dev.	0.957	1.258
# Replicates	4	4

T-Test Result	1.7330
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.15
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 11/7/2017

Replicate No.	Control	TIWC
1	0.251	0.268
2	0.32	0.273
3	0.225	0.235
4	0.279	0.288
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.269	0.266
Std Dev.	0.041	0.022
# Replicates	4	4

T-Test Result	3.4086
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.15
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

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:

Replicate No.	Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.000	0.000
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Test Completion Date:

Replicate No.	Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.000	0.000
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Test Completion Date:

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.15
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 11/7/2017

Replicate No.	Control	TIWC
1	16	32
2	22	39
3	38	28
4	32	34
5	24	35
6	31	20
7	24	36
8	23	36
9	24	42
10	30	34
11		
12		
13		
14		
15		
Mean	26.400	33.600
Std Dev.	6.293	6.077
# Replicates	10	10

T-Test Result	5.6714
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	**PASS**

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.16
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 7/16/2019

Replicate No.	Control	TIWC
1	7	8
2	10	10
3	8	10
4	10	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	8.750	9.250
Std Dev.	1.500	0.957
# Replicates	4	4

T-Test Result	3.4132
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.16
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Wanyesboro WWTP

Permit No.: PA0020621

Test Completion Date: 7/16/2019

Replicate No.	Control	TIWC
1	0.277	0.38
2	0.359	0.444
3	0.355	0.376
4	0.352	0.34
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.336	0.385
Std Dev.	0.039	0.043
# Replicates	4	4

T-Test Result: 5.0905
Deg. of Freedom: 5
Critical T Value: 0.7267
Pass or Fail: PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.16
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 7/15/2019

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

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

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

Test Completion Date

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

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

Test Completion Date

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.16
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 7/15/2019

Replicate No.	Control	TIWC
1	36	33
2	41	37
3	30	16
4	34	39
5	33	35
6	30	29
7	35	25
8	37	39
9	37	34
10	33	37
11		
12		
13		
14		
15		
Mean	34.600	32.400
Std Dev.	3.373	7.260
# Replicates	10	10

T-Test Result	2.6529
Deg. of Freedom	13
Critical T Value	0.8702
Pass or Fail	PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.16
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 6/9/2020

Replicate No.	Control	TIWC
1	10	10
2	10	10
3	10	9
4	9	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.500
Std Dev.	0.500	0.577
# Replicates	4	4

T-Test Result	5.3848
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.16
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Wanyesboro WWTP

Permit No.: PA0020621

Test Completion Date: 6/9/2020

Replicate No.	Control	TIWC
1	0.391	0.473
2	0.348	0.501
3	0.447	0.469
4	0.358	0.412
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.386	0.464
Std Dev.	0.045	0.037
# Replicates	4	4

T-Test Result	6.9519
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.16
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 6/8/2020

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	0
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	0.900
Std Dev.	0.000	0.316
# Replicates	10	10

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

Test Completion Date

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

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

Test Completion Date

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

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

Test Completion Date

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.16
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 6/8/2020

Replicate No.	Control	TIWC
1	34	42
2	33	34
3	40	33
4	41	6
5	35	33
6	35	41
7	43	32
8	34	37
9	24	24
10	40	36
11		
12		
13		
14		
15		
Mean	35.900	31.800
Std Dev.	5.466	10.369
# Replicates	10	10

T-Test Result	1.3826
Deg. of Freedom	13
Critical T Value	0.8702
Pass or Fail	PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.16
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 8/2/2022

Replicate No.	Control	TIWC
1	9	10
2	10	10
3	9	10
4	10	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.500	9.750
Std Dev.	0.577	0.500
# Replicates	4	4

T-Test Result: 6.9275
Deg. of Freedom: 5
Critical T Value: 0.7267
Pass or Fail: PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.16
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Wanyesboro WWTP

Permit No.: PA0020621

Test Completion Date: 8/2/2022

Replicate No.	Control	TIWC
1	0.396	0.366
2	0.418	0.398
3	0.43	0.494
4	0.374	0.353
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.405	0.403
Std Dev.	0.025	0.064
# Replicates	4	4

I-Test Result: 2.9955
Deg. of Freedom: 4
Critical T Value: 0.7407
Pass or Fail: PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.16
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 8/1/2022

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	0
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	0.900
Std Dev.	0.000	0.316
# Replicates	10	10

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

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.16
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 8/1/2022

Replicate No.	Control	TIWC
1	35	35
2	34	24
3	38	0
4	38	22
5	43	38
6	34	26
7	32	17
8	43	29
9	35	24
10	32	28
11		
12		
13		
14		
15		
Mean	36.400	24.300
Std Dev.	4.033	10.489
# Replicates	10	10
T-Test Result	-0.8691	
Deg. of Freedom	12	
Critical T Value	0.8726	
Pass or Fail	FAIL	

Test Completion Date:

Replicate No.	Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.000	0.000
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Test Completion Date:

Replicate No.	Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.000	0.000
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Test Completion Date:

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.16
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 9/13/2022

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

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

Test Completion Date

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

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

Test Completion Date

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

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

Test Completion Date

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.16
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Waynesboro WWTP

Permit No.: PA0020621

Test Completion Date: 9/13/2022

Replicate No.	Control	TIWC
1	17	33
2	26	35
3	24	36
4	34	33
5	26	40
6	34	34
7	31	41
8	32	37
9	27	42
10	33	42
11		
12		
13		
14		
15		
Mean	28.400	37.300
Std Dev.	5.441	3.653
# Replicates	10	10
T-Test Result	9.2385	
Deg. of Freedom	17	
Critical T Value	0.8633	
Pass or Fail	PASS	

Test Completion Date:

Replicate No.	Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.000	0.000
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Test Completion Date:

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

Test Completion Date:

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

Attachment E – Copper DMR results

Summary of Copper DMR Results
Beginning October 1, 2018 and Ending January 23, 2024

Monitoring Period	Monitoring Period End Date	DMR Value		Permit Limit	Units	Statistical Base Code
10/01/2018	10/31/2018	<	0.005	0.053	mg/L	Average Monthly
11/01/2018	11/30/2018	<	0.005	0.053	mg/L	Average Monthly
12/01/2018	12/31/2018	<	0.005	0.053	mg/L	Average Monthly
01/01/2019	01/31/2019	<	0.005	0.053	mg/L	Average Monthly
02/01/2019	02/28/2019	<	0.005	0.053	mg/L	Average Monthly
03/01/2019	03/31/2019	<	0.005	0.053	mg/L	Average Monthly
04/01/2019	04/30/2019	<	0.007	0.053	mg/L	Average Monthly
05/01/2019	05/31/2019	<	0.005	0.053	mg/L	Average Monthly
06/01/2019	06/30/2019	<	0.006	0.053	mg/L	Average Monthly
07/01/2019	07/31/2019	<	0.005	0.053	mg/L	Average Monthly
08/01/2019	08/31/2019	<	0.006	0.053	mg/L	Average Monthly
09/01/2019	09/30/2019		0.007	0.053	mg/L	Average Monthly
10/01/2019	10/31/2019		0.007	0.053	mg/L	Average Monthly
11/01/2019	11/30/2019		0.010	0.053	mg/L	Average Monthly
12/01/2019	12/31/2019		0.011	0.053	mg/L	Average Monthly
01/01/2020	01/31/2020	<	0.008	0.053	mg/L	Average Monthly
02/01/2020	02/29/2020	<	0.006	0.053	mg/L	Average Monthly
03/01/2020	03/31/2020		0.009	0.053	mg/L	Average Monthly
04/01/2020	04/30/2020	<	0.007	0.053	mg/L	Average Monthly
05/01/2020	05/31/2020	<	0.005	0.053	mg/L	Average Monthly
06/01/2020	06/30/2020	<	0.007	0.053	mg/L	Average Monthly
07/01/2020	07/31/2020	<	0.005	0.053	mg/L	Average Monthly
08/01/2020	08/31/2020	<	0.005	0.053	mg/L	Average Monthly
09/01/2020	09/30/2020	<	0.005	0.053	mg/L	Average Monthly
10/01/2020	10/31/2020	<	0.008	0.053	mg/L	Average Monthly
11/01/2020	11/30/2020	<	0.008	0.053	mg/L	Average Monthly
12/01/2020	12/31/2020	<	0.006	0.053	mg/L	Average Monthly
01/01/2021	01/31/2021	<	0.005	0.053	mg/L	Average Monthly
02/01/2021	02/28/2021		0.008	0.053	mg/L	Average Monthly
03/01/2021	03/31/2021	<	0.007	0.053	mg/L	Average Monthly
04/01/2021	04/30/2021	<	0.010	0.053	mg/L	Average Monthly
05/01/2021	05/31/2021	<	0.011	0.053	mg/L	Average Monthly
06/01/2021	06/30/2021	<	0.010	0.053	mg/L	Average Monthly
07/01/2021	07/31/2021	<	0.010	0.053	mg/L	Average Monthly
08/01/2021	08/31/2021	<	0.010	0.053	mg/L	Average Monthly
09/01/2021	09/30/2021	<	0.010	0.053	mg/L	Average Monthly
10/01/2021	10/31/2021	<	0.010	0.053	mg/L	Average Monthly
11/01/2021	11/30/2021	<	0.020	0.053	mg/L	Average Monthly
12/01/2021	12/31/2021	<	0.010	0.053	mg/L	Average Monthly
01/01/2022	01/31/2022	<	0.020	0.053	mg/L	Average Monthly
02/01/2022	02/28/2022	<	0.010	0.053	mg/L	Average Monthly
03/01/2022	03/31/2022	<	0.010	0.053	mg/L	Average Monthly
04/01/2022	04/30/2022	<	0.010	0.053	mg/L	Average Monthly
05/01/2022	05/31/2022	<	0.010	0.053	mg/L	Average Monthly
06/01/2022	06/30/2022	<	0.010	0.053	mg/L	Average Monthly
07/01/2022	07/31/2022	<	0.010	0.053	mg/L	Average Monthly
08/01/2022	08/31/2022	<	0.010	0.053	mg/L	Average Monthly
09/01/2022	09/30/2022	<	0.010	0.053	mg/L	Average Monthly
10/01/2022	10/31/2022	<	0.010	0.053	mg/L	Average Monthly
11/01/2022	11/30/2022	<	0.010	0.053	mg/L	Average Monthly
12/01/2022	12/31/2022	<	0.010	0.053	mg/L	Average Monthly
01/01/2023	01/31/2023	<	0.010	0.053	mg/L	Average Monthly
02/01/2023	02/28/2023		0.009	0.053	mg/L	Average Monthly
03/01/2023	03/31/2023		0.006	0.053	mg/L	Average Monthly
04/01/2023	04/30/2023	<	0.006	0.053	mg/L	Average Monthly
05/01/2023	05/31/2023	<	0.005	0.053	mg/L	Average Monthly
06/01/2023	06/30/2023	<	0.005	0.053	mg/L	Average Monthly
07/01/2023	07/31/2023	<	0.004	0.053	mg/L	Average Monthly
08/01/2023	08/31/2023	<	0.005	0.053	mg/L	Average Monthly
09/01/2023	09/30/2023	<	0.005	0.053	mg/L	Average Monthly
10/01/2023	10/31/2023	<	0.006	0.053	mg/L	Average Monthly
11/01/2023	11/30/2023		0.008	0.053	mg/L	Average Monthly
12/01/2023	12/31/2023	<	0.007	0.053	mg/L	Average Monthly

Min	<	0.004	mg/L
Max		0.020	mg/L
Average		0.008	mg/L

Summary of Copper DMR Results
Beginning October 1, 2018 and Ending January 23, 2024

Monitoring Period	Monitoring Period End Date	DMR Value		Permit Limit	Units	Statistical Base Code
10/01/2018	10/31/2018		0.007	0.132	mg/L	Daily Maximum
11/01/2018	11/30/2018	<	0.005	0.132	mg/L	Daily Maximum
12/01/2018	12/31/2018	<	0.005	0.132	mg/L	Daily Maximum
01/01/2019	01/31/2019		0.005	0.132	mg/L	Daily Maximum
02/01/2019	02/28/2019		0.005	0.132	mg/L	Daily Maximum
03/01/2019	03/31/2019		0.006	0.132	mg/L	Daily Maximum
04/01/2019	04/30/2019		0.01	0.132	mg/L	Daily Maximum
05/01/2019	05/31/2019	<	0.005	0.132	mg/L	Daily Maximum
06/01/2019	06/30/2019		0.006	0.132	mg/L	Daily Maximum
07/01/2019	07/31/2019		0.005	0.132	mg/L	Daily Maximum
08/01/2019	08/31/2019		0.008	0.132	mg/L	Daily Maximum
09/01/2019	09/30/2019		0.009	0.132	mg/L	Daily Maximum
10/01/2019	10/31/2019		0.007	0.132	mg/L	Daily Maximum
11/01/2019	11/30/2019		0.013	0.132	mg/L	Daily Maximum
12/01/2019	12/31/2019		0.014	0.132	mg/L	Daily Maximum
01/01/2020	01/31/2020		0.01	0.132	mg/L	Daily Maximum
02/01/2020	02/29/2020		0.007	0.132	mg/L	Daily Maximum
03/01/2020	03/31/2020		0.011	0.132	mg/L	Daily Maximum
04/01/2020	04/30/2020	<	0.009	0.132	mg/L	Daily Maximum
05/01/2020	05/31/2020		0.006	0.132	mg/L	Daily Maximum
06/01/2020	06/30/2020		0.008	0.132	mg/L	Daily Maximum
07/01/2020	07/31/2020		0.006	0.132	mg/L	Daily Maximum
08/01/2020	08/31/2020	<	0.005	0.132	mg/L	Daily Maximum
09/01/2020	09/30/2020	<	0.005	0.132	mg/L	Daily Maximum
10/01/2020	10/31/2020		0.012	0.132	mg/L	Daily Maximum
11/01/2020	11/30/2020		0.01	0.132	mg/L	Daily Maximum
12/01/2020	12/31/2020		0.008	0.132	mg/L	Daily Maximum
01/01/2021	01/31/2021		0.005	0.132	mg/L	Daily Maximum
02/01/2021	02/28/2021		0.01	0.132	mg/L	Daily Maximum
03/01/2021	03/31/2021		0.011	0.132	mg/L	Daily Maximum
04/01/2021	04/30/2021	<	0.01	0.132	mg/L	Daily Maximum
05/01/2021	05/31/2021		0.014	0.132	mg/L	Daily Maximum
06/01/2021	06/30/2021		0.01	0.132	mg/L	Daily Maximum
07/01/2021	07/31/2021	<	0.01	0.132	mg/L	Daily Maximum
08/01/2021	08/31/2021	<	0.01	0.132	mg/L	Daily Maximum
09/01/2021	09/30/2021	<	0.01	0.132	mg/L	Daily Maximum
10/01/2021	10/31/2021	<	0.01	0.132	mg/L	Daily Maximum
11/01/2021	11/30/2021		0.0105	0.132	mg/L	Daily Maximum
12/01/2021	12/31/2021		0.01	0.132	mg/L	Daily Maximum
01/01/2022	01/31/2022	<	0.05	0.132	mg/L	Daily Maximum
02/01/2022	02/28/2022		0.011	0.132	mg/L	Daily Maximum
03/01/2022	03/31/2022		0.016	0.132	mg/L	Daily Maximum
04/01/2022	04/30/2022		0.0175	0.132	mg/L	Daily Maximum
05/01/2022	05/31/2022	<	0.01	0.132	mg/L	Daily Maximum
06/01/2022	06/30/2022	<	0.01	0.132	mg/L	Daily Maximum
07/01/2022	07/31/2022	<	0.01	0.132	mg/L	Daily Maximum
08/01/2022	08/31/2022	<	0.01	0.132	mg/L	Daily Maximum
09/01/2022	09/30/2022	<	0.01	0.132	mg/L	Daily Maximum
10/01/2022	10/31/2022	<	0.01	0.132	mg/L	Daily Maximum
11/01/2022	11/30/2022	<	0.01	0.132	mg/L	Daily Maximum
12/01/2022	12/31/2022		0.01	0.132	mg/L	Daily Maximum
01/01/2023	01/31/2023		0.0106	0.132	mg/L	Daily Maximum
02/01/2023	02/28/2023		0.01	0.132	mg/L	Daily Maximum
03/01/2023	03/31/2023		0.007	0.132	mg/L	Daily Maximum
04/01/2023	04/30/2023		0.006	0.132	mg/L	Daily Maximum
05/01/2023	05/31/2023		0.006	0.132	mg/L	Daily Maximum
06/01/2023	06/30/2023	<	0.005	0.132	mg/L	Daily Maximum
07/01/2023	07/31/2023	<	0.005	0.132	mg/L	Daily Maximum
08/01/2023	08/31/2023	<	0.005	0.132	mg/L	Daily Maximum
09/01/2023	09/30/2023	<	0.005	0.132	mg/L	Daily Maximum
10/01/2023	10/31/2023		0.007	0.132	mg/L	Daily Maximum
11/01/2023	11/30/2023		0.011	0.132	mg/L	Daily Maximum
12/01/2023	12/31/2023		0.009	0.132	mg/L	Daily Maximum

Min	<	0.005	mg/L
Max		0.050	mg/L
Average		0.009	mg/L

Attachment F- RMI Stem