Pennsylvania
Department of
Environmental Protection

Application Type	**Renewal**	Application No.	**PA0023566**
Facility Type	**Non-Municipal**	APS ID	**1096273**
Major / Minor	**Minor**	Authorization ID	**1453816**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Aqua PA Inc.**	Facility Name	**Emlenton Area STP**
Applicant Address	665 S Dock Street	Facility Address	E Main Street
	Sharon, PA 16146-1835		Emlenton, PA 16373-0448
Applicant Contact	Zach Martin	Facility Contact	William Young
Applicant Phone	(724) 981-1200	Facility Phone	(724) 867-1652
Client ID	309251	Site ID	238634
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	Emlenton Borough
Connection Status	Dept. Imposed Connection Prohibitions	County	Venango
Date Application Received	August 29, 2023	EPA Waived?	Yes
Date Application Accepted	April 5, 2025	If No, Reason	

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

Summary of Review

The application submitted by the applicant requests a NPDES renewal permit for the Emlenton Area STP located at E Main Street, Emlenton, PA 16373 in Venango County, municipality of Emlenton Borough. The existing permit became effective on March 1, 2019 and expired on February 29, 2024. The application for renewal was received by DEP Northwest Regional Office (NWRO) on August 29, 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 0.2 MGD average annual flow treatment facility. The hydraulic capacity of the treatment plant is 0.50 MGD. At the time of the application, the facility reported that the upgrade would be to replace a damaged outfall. A WQM permit was issued on December 30, 2024 to address the repaired outfall. The NPDES application has been processed as a Minor Sewage Facility (Level 2) due to the type of sewage and the design flow rate for the facility. The applicant disclosed the Act 14 requirement to Clarion County and Borough Council (Emlenton) and the notice was received by the parties on July 12, 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 Richey Run. The sequence of receiving streams that the Richey Run discharges into are the Allegheny River, the Ohio River then travels

Approve	Deny	Signatures	Date
X		Nicholas Hong, P.E. / Environmental Engineer Nick Hong (via electronic signature)	May 10, 2025
X		Adam Olesnanik, P.E. / Environmental Engineer Manager Adam Olesnanik	May 13, 2025

Summary of Review

south through several states eventually draining into the Gulf of America. The receiving water has protected water usage for cold water fishes (CWF). 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 Richey Run is a Category 5 stream listed in the 2024 Integrated List of All Waters (formerly 303d Listed Streams). This stream is an impaired stream for aquatic life due to an unknown cause from acid mine drainage. The receiving waters is not subject to a 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:

- **Ammonia-nitrogen shall include an effluent limit of 3.0 mg/l during summer months and 9.0 mg/l during winter months.**
- **Monitoring for chloride, copper, and zinc shall be 1x/quarter**
- **Monitoring for nickel shall be 2x/month. Effluent limits shall be 0.085 mg/l as an average monthly.**
- **TRC has been reduced to 0.15 mg/l as an average monthly and 1.2 mg/ as an instantaneous max.**
- **Due to the EPA triennial review, monitoring for E. coli shall be required.**

Sludge use and disposal description and location(s): Biosolids/sewage sludge disposed at the Greentree Landfill located at 635 Toby Road, Kersey, PA 15846.

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.

Any additional information or public review of documents associated with the discharge or facility may be available at PA DEP Northwest Regional Office (NWRO), 230 Chestnut Street, Meadville, PA 16335. To make an appointment for file review, contact the NWRO File Review Coordinator at 814-332-6945.

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:	Emlenton Area STP
NPDES Permit #	PA0023566
Physical Address:	E Main St Emlenton, PA 16373
Mailing Address:	665 S. Dock Street Sharon, PA 16146
Contact:	William Young Plant Supervisor 644 N. Water Avenue Sharon, PA 16146 wdyoung@aquaamerica.com (724) 347-7418 Zach Martin Western Area Manager 665 S. Dock Street Sharon, PA 16146 zfmartin@aquaamerica.com (742) 981-1200
Consultant:	Roger Varner Project Engineer KLH Engineering, Inc. 5173 Capbells Run Road Pittsburgh, PA 15205 (412) 494-0510

1.2 Permit History

Description of Facility

On September 20, 2022, DEP water pollution biologists examined the location of the current and proposed outfall locations. The current outfall is located at the mouth of Richey Run within the floodplain of the Allegheny River.

The Biologist's report stated the new outfall location would be approximately 40 meters upstream on Richey Run.

Submission of the WQM amendment in December 2024 confirmed that the re-constructed outfall is located near the original outfall location. The current outfall location is believed to be located at 41°10'34.00"N -

79°42'0.30"W. The biologist report for the relocated outfall location is superceded by the WQM permit which locates the re-constructed outfall near the original outfall location.

The facility has bypasses/overflows of raw or partially treated sewage within the sewage collection system and/or treatment facility. The facility has a SSO manhole located at 41^0 10'36" and -79^0 42"00".

Discharges from an SSO are prohibited (92a.47.c)

Permit submittal included the following information.

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

2.0 Treatment Facility Summary

2.1.1 Site location

The physical address for the facility is E Main St, Emlenton, PA 16373

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

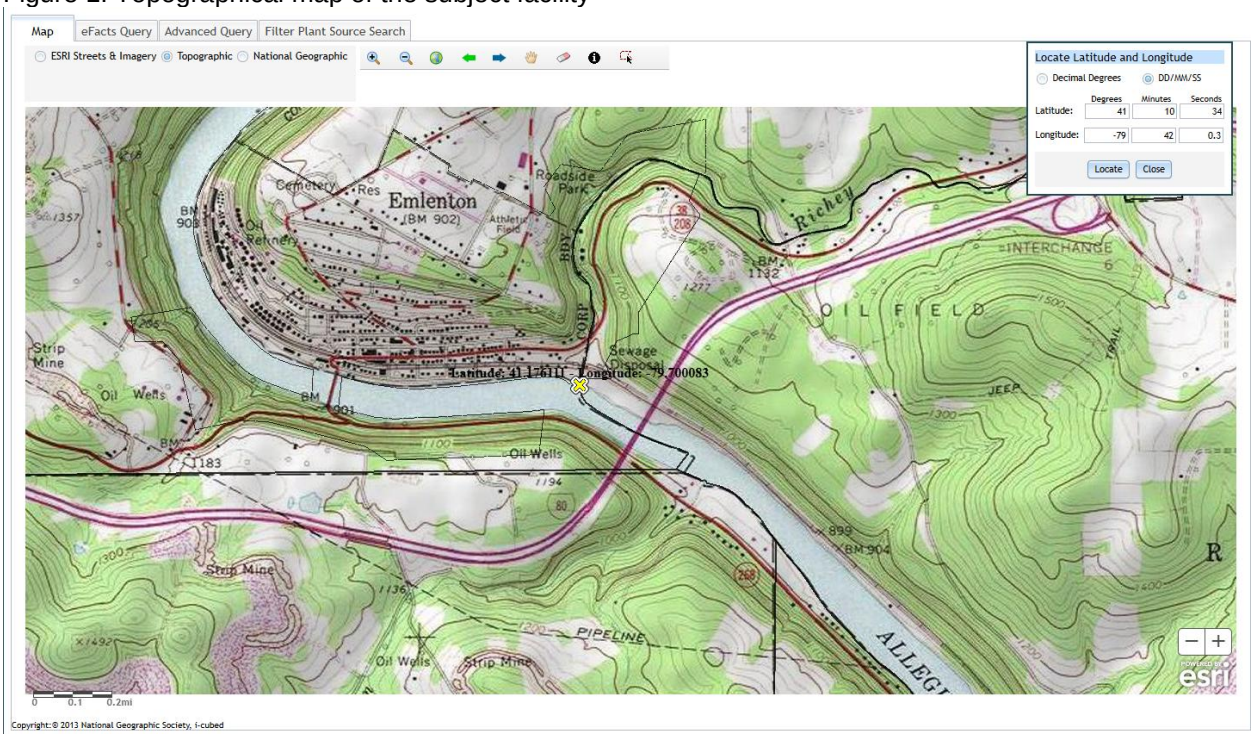
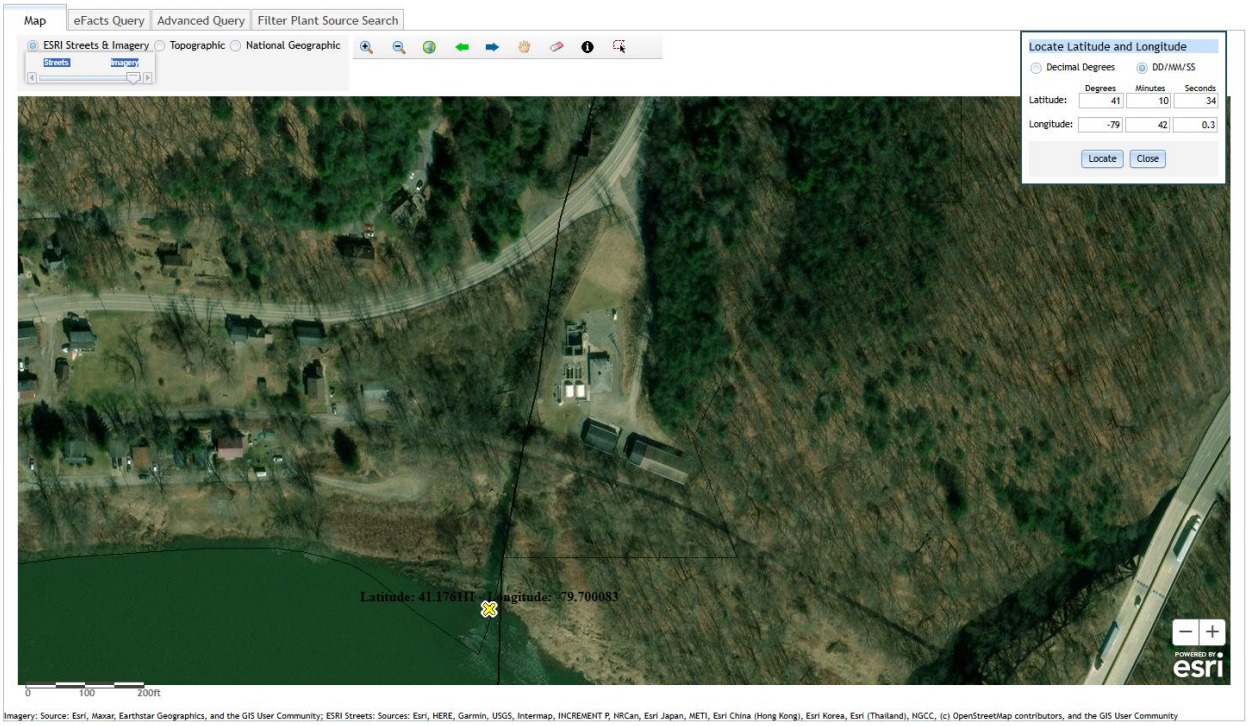


Figure 2: Aerial Photograph of the subject facility



2.1.2 Sources of Wastewater/Stormwater

The facility receives 100% of their wastewater contribution from Emlenton Borough.

The facility reported that they received hauled in wastes in the last three years. They also anticipated that they will receive hauled in wastes in the next five years. The annual average volume of hauled in wastes was 35,100 gallons. This volume is also the same amount anticipated in the next five years.

2.2 Description of Wastewater Treatment Process

The subject facility is a 0.2 MGD annual average design flow facility. The subject facility treats wastewater using a communitor, a manual bar screen, a primary clarifier, a rotating biological contractor (RBC), a final clarifier, a chlorine unit, and a dechlorination unit prior to discharge through the outfall. The facility is being evaluated for flow, pH, dissolved oxygen, CBOD5, TSS, TRC, fecal coliform, nitrogen, species, phosphorus, nickel, and chloride. The existing permits limits for the facility is summarized in Section 2.4.

The treatment process is summarized in the table.

Treatment Facility Summary

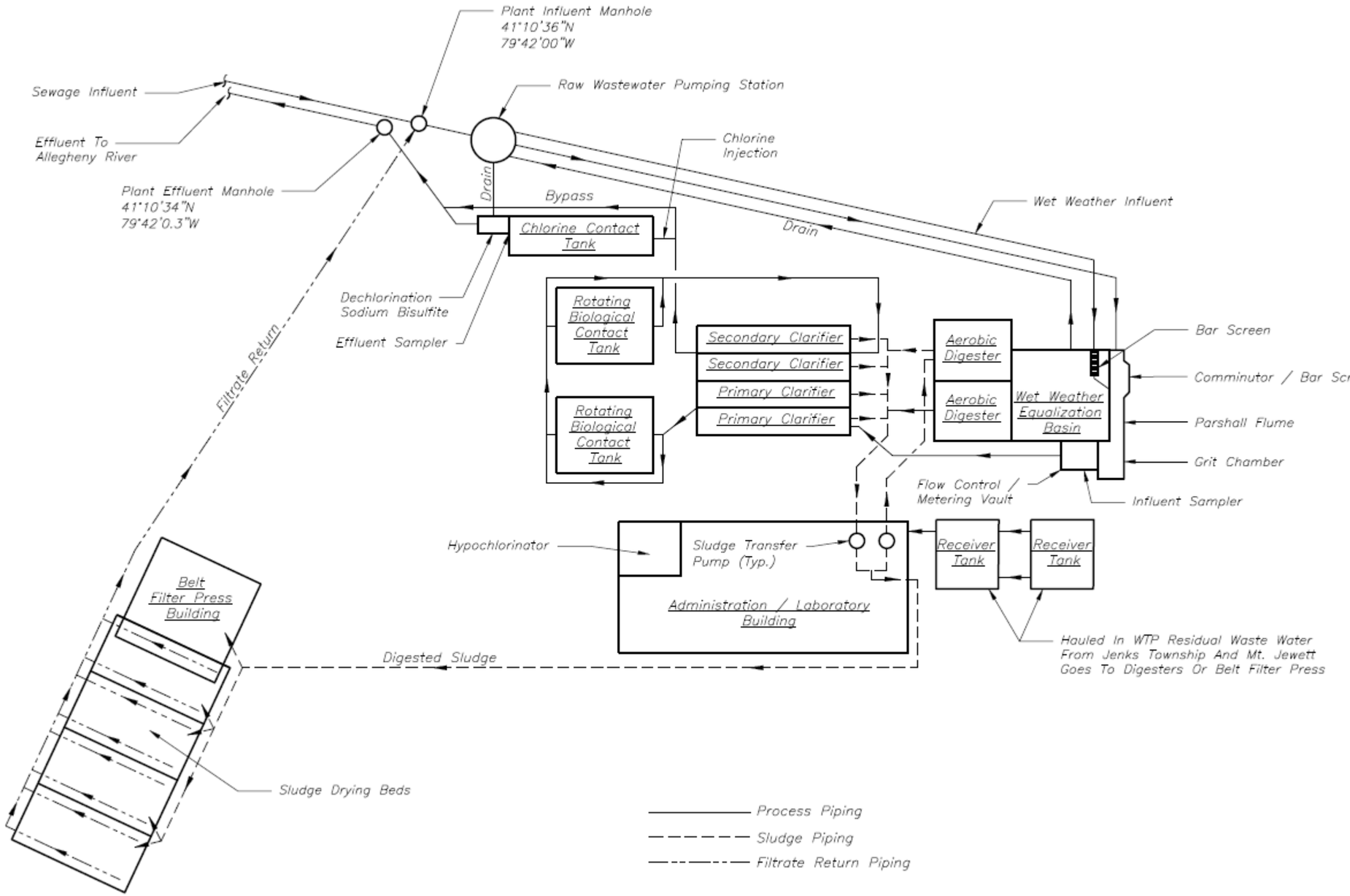
Treatment Facility Name: Emlenton Area STP

WQM Permit No.	Issuance Date
6183401	08/24/2017
6183401	01/24/2018
6183401	02/21/2020
6183401	12/30/2024

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Rotating Biological Contactors	Gas Chlorine	0.2

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.5	333.6	Existing Hydraulic Overload	Aerobic Digestion	Landfill

A schematic of the treatment process is depicted.



2.3 Facility Outfall Information

The facility has the following outfall information for wastewater.

Outfall No.	001	**Design Flow (MGD)**	.2
Latitude	41º 10' 34"	**Longitude**	-79º 42' 0.30"
Wastewater Description:	Sewage Effluent		

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.

- Sodium hypochlorite for disinfection
- Sodium bisulfite for dechlorination
- Polymer for sludge press dewatering

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. B. For Outfall 001 , **Latitude** 41º 10' 32.22" , **Longitude** 79º 42' 8.30" , **River Mile Index** 89.89 , **Stream Code** 42122

Receiving Waters: Allegheny River

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **March 1, 2020** 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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab

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

at Outfall 001 (after disinfection)

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

I. C. For Outfall 001 , **Latitude** 41º 10' 32.22" , **Longitude** 79º 42' 8.30" , **River Mile Index** 89.89 , **Stream Code** 42122

Receiving Waters: Allegheny River

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	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	42	67	XXX	25	40	50	1/week	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids	50	75	XXX	30	45	60	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2)	Required
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum	Measurement Frequency	Sample Type
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Nickel, Total	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Chloride	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite

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

at Outfall 001 (after disinfection)

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.

06/16/2020:

- Approximately 92% of the collection system has been lined and televised. Manhole repairs and additional manholes were also being added for repair. Micrometering on the system was to begin soon in addition to more camera work.
- Since the last inspection the following items have been addressed:
    - all 4 clarifiers have had chains and flights replaced;
    - transitioned from gas chlorine to liquid;
    - wet well has been redone;
    - electrical system upgraded;
    - SCADA installed;
    - RBC units cleaned and any repairs made;
    - dechlorination system added.
- Permit compliance schedule overdue list was showing biosolids reports were due by 3/31/2020. Report was received on 3/31/2020.

03/04/2024:

- Kevin O'neil indicated he believed an unknown substance was dumped down the drain and was having an adverse effect on the plant. Effluent samples collected by Mr. O'neil were inherently cloudy not from suspended solids. It was indicated that the substance appeared to emulsify the grease and created an unusual foam in the Chlorine Contact tank. It was also indicated that it appeared to cause some biomass die off. Emlenton is a small Borough consisting mainly of domestic sewage and it was discussed about possible restaurants that could be performing some high strength cleaning that would use degreaser. Mr. O'neil indicated he would check with some of the local owners. It was also suggested that some illicit drug labs can wreak havoc given some of the toxic chemicals that are used.
- A local oilfield services outfit recently opened in one of the downtown garages. Given that they tend to use surfactants to further separate the oil and water to produce a better product it would be

reasonable to investigate the garages and make them aware of their responsibility to the sewage plant

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 0.121 MGD in April 2024. The design capacity of the treatment system is 0.5 MGD.

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

DMR Data for Outfall 001 (from March 1, 2024 to February 28, 2025)

Parameter	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24
Flow (MGD) Average Monthly	0.091	0.061	0.077	0.066	0.051	0.057	0.070	0.053	0.048	0.067	0.121	0.104
Flow (MGD) Daily Maximum	0.195	0.153	0.148	0.132	0.117	0.134	0.224	0.207	0.075	0.202	0.225	0.206
pH (S.U.) Daily Minimum	6.63	6.31	6.41	6.34	6.62	6.32	6.32	6.15	6.54	6.24	6.51	6.35
pH (S.U.) Daily Maximum	7.34	7.38	7.35	7.34	7.77	7.40	7.27	7.06	7.03	7.27	7.19	7.09
DO (mg/L) Daily Minimum	5.01	4.95	4.99	5.29	6.63	7.43	7.55	6.78	5.26	5.10	6.00	5.67
TRC (mg/L) Average Monthly	0.12	0.08	0.13	0.12	0.10	0.11	0.11	0.08	0.12	0.10	0.06	0.10
TRC (mg/L) Instantaneous Maximum	0.60	0.32	1.09	0.82	0.92	0.45	0.74	0.27	0.50	0.55	0.38	1.00
CBOD5 (lbs/day) Average Monthly	< 4	< 1	< 1	< 1	< 1	< 2	< 1	< 1	< 1	< 1	< 5	< 2
CBOD5 (lbs/day) Weekly Average	< 6	< 2	< 2	< 2	< 1	< 3	< 4	< 1	< 1	< 2	< 10	< 2
CBOD5 (mg/L) Average Monthly	< 5	< 2	< 2	< 2	< 2	< 3	< 2	< 2	< 2	< 2	< 5	< 2
CBOD5 (mg/L) Weekly Average	< 7	< 3	< 2	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 10	< 2
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	63	82	75	< 97	64	42	62	72	58	122	< 84	93
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	95	109	135	< 136	119	66	129	93	94	263	< 104	149
BOD5 (mg/L) Raw Sewage Influent Average Monthly	93	174	142	< 163	187	84	100	184	141	190	< 101	105
TSS (lbs/day) Average Monthly	< 7	3	5	3	2	5	4	2	4	5	11	< 3

TSS (lbs/day) Raw Sewage Influent Average Monthly	79	88	102	116	73	68	69	88	88	150	106	82
TSS (lbs/day) Raw Sewage Influent Daily Maximum	171	122	217	154	152	103	105	133	172	294	179	136
TSS (lbs/day) Weekly Average	< 14	5	8	4	4	7	13	3	7	14	23	< 4
TSS (mg/L) Average Monthly	< 10	7	6	6	7	9	5	5	9	8	10	< 4
TSS (mg/L) Raw Sewage Influent Average Monthly	108	185	142	201	210	132	134	226	203	251	133	96
TSS (mg/L) Weekly Average	< 13	10	8	7	11	12	7	8	15	12	13	< 6
Fecal Coliform (No./100 ml) Geometric Mean	13	4	< 3	< 3	< 2	3	< 10	< 22	2	5	6	< 4
Fecal Coliform (No./100 ml) Instantaneous Maximum	327	6	< 10	< 10	4	10	< 10	2420	4	10	9	11
Total Nitrogen (mg/L) Daily Maximum			16.98									
Ammonia (lbs/day) Average Monthly	0.378	0.201	0.329	0.119	0.035	0.059	< 0.128	0.099	0.154	< 0.096	0.123	0.746
Ammonia (mg/L) Average Monthly	0.454	0.365	0.748	0.186	0.107	0.157	< 0.144	0.285	0.510	< 0.263	0.100	0.706
Total Phosphorus (mg/L) Daily Maximum			1.42									
Total Nickel (mg/L) Average Quarterly			< 0.05			< 0.05			< 0.05			< 0.05
Chloride (mg/L) Average Monthly	104.0	95.2	47.9	50.9	49.4	50.9	31.7	51.5	48.1	51.3	26.5	50.8

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 March 1, 2019 to April 5, 2025, the following were observed effluent non-compliances.

Summary of Non-Compliance w/ NPDES Effluent Limits
Beginning March 1, 2019 and ending April 5, 2025

MONITORING_PERIOD_BEGIN_DATE	MONITORING_PERIOD_END_DATE	SUBMISSION_DATE	OUTFALL_NUMBER	NON_COMPLIANCE_DATE	NON_COMPL_TYPE_DESC	NON_COMPL_CATEGORY_DESC	PARAMETER	SAMPLE_VALUE	VIOLATION_CONDITION	PERMIT_VALUE	UNIT_OF_MEASURE	STAT_BASE_CODE	FACILITY_COMMENTS
8/1/2019	8/31/2019	9/27/2019	001	9/27/2019	Violation of permit condition	Effluent	Dissolved Oxygen	3.44	<	4.0	mg/L	Daily Minimum	new operator did not swirl DO. probe when taking reading.
9/1/2023	9/30/2023	10/24/2023	001	10/24/2023	Violation of permit condition	Effluent	Fecal Coliform	1553	>	1000	No./100 ml	Instantaneous Maximum	
7/1/2024	7/31/2024	8/27/2024	001	8/27/2024	Violation of permit condition	Effluent	Fecal Coliform	2420	>	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 on March 1, 2019 to April 5, 2025, 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.

2024

Sewage Sludge / Biosolids Production Information

Hauled Off-Site			
2024	Tons Dewatered	% Solids	Dry Tons
January			
February			
March			
April	16.6	21.3	3.54
May			
June	15.36	18.5	2.84
July			
August			
September	14.96	14.7	2.2
October			
November			
December	16.94	21.2	3.59

Notes:

Biosolids/sewage sludge disposed at the Greentree Landfill located at 635 Toby Road, Kersey, PA 15846.

3.5 Open Violations

For the client Aqua PA, open violations existed as of April 2025. Violations are active in the Safe Drinking Water Program and the WPC State Water Pollution Program. The open violations do not appear to be related to the subject facility. The final executed permit may be withheld until the client addresses the open violations.

4.0 Receiving Waters and Water Supply Information Detail Summary

4.1 Receiving Waters

The receiving waters has been determined to be Richey Run. The sequence of receiving streams that the Richey Run discharges into are the Allegheny River, the Ohio River then travels south through several states eventually draining into the Gulf of America.

4.2 Public Water Supply (PWS) Intake

The closest PWS to the subject facility is Parker Area Water Authority (PWS ID #5030011) located approximately 6 miles downstream of the subject facility on the Allegheny 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 5 waterbody. The surface waters is an impaired for aquatic life due to an unknown cause from acid mine drainage. The designated use has been classified as protected waters for cold water fishes (CWF).

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 Allegheny River at Parker, PA (USGS station number 3031500). This gauge station is located approximately 6 miles downstream of the subject facility.

For WQM modeling, median background data was used from WQN 867. The data set had sampling data from 1998 to 2016. pH was estimated to be 7.9. The hardness values utilized was 59 mg/l $CaCO_3$.

The default stream water temperature data of 20 C was used.

The low flow yield and the Q710 for the subject facility was estimated using StreamStats.

The low flow yield is 0.0407 $ft^3/s/mi^2$ and the Q710 is 0.299 ft^3/s.

4.6 Summary of Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.2
Latitude	41º 10' 32.17"	Longitude	-79º 42' 0.92"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		

Receiving Waters	Richey Run	Stream Code	51144
NHD Com ID	100479839	RMI	0.02
Drainage Area	7.34	Yield (cfs/mi^2)	0.0407
Q_{7-10} Flow (cfs)	0.299	Q_{7-10} Basis	Streamstats
Elevation (ft)	869	Slope (ft/ft)	
Watershed No.	16-G	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired for aquatic life		
Cause(s) of Impairment	Unknown source		
Source(s) of Impairment	Acid Mine Drainage		
TMDL Status	Not applicable	Name	

Background/Ambient Data		Data Source
pH (SU)	7.9	WQN867; median 7/1999 to 9/2016
Temperature (°C)	20	Default
Hardness (mg/L)	59	WQN867; historical median 10/1998 to 12/2016
Other:	0.02	WQN; median 7/1999 to 09/2016

Nearest Downstream Public Water Supply Intake		Parker Area Water Authority	
PWS Waters	Allegheny River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	6

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.

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

General Data 1	***(Modeling Point #1); Subject Facility***	***(Modeling Point #2) Point at confluence of Richey Run and Allegheny River***	***Units***
Stream Code	51144	51144	
River Mile Index	0.03	0	miles
Elevation	868	866	feet
Latitude	41.176667	41.176235	
Longitude	-79.7	-79.699961	
Drainage Area	7.33	7.34	sq miles
Low Flow Yield	0.0408	0.0407	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 following pollutants: TDS, chloride, bromide, and nickel. The number of samples for TDS and bromide was three samples. DMR data was reviewed for chloride and nickel.

The facility reported that they do not receive wastewater contributions from industrial/commercial sources. Thus, there were no sample results for total copper, total lead, and total zinc.

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)

The facility is not subject to WET.

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 facility does not discharge into the Chesapeake Bay watershed.

The facility is not subject to Chesapeake Bay WIP.

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.

5.7 Threatened and Endangered Mussel Species

The Allegheny River from the confluence of French Creek to the Interstate 80 bridge near Emlenton was designated by the United States Fish and Wildlife Services (USFWS) as "Critical Habitat" for the rabbitsfoot mussel, a federally listed threatened species, and is known to also contain other threatened and endangered mussel species. Due to this being a direct discharge to the Allegheny River, potential impacts were evaluated (Courtesy from the Fact Sheet dated for 2019).

The USFWS has indicated in comment letters on other NPDES permits that in order to protect threatened and endangered mussel species, wastewater discharges containing ammonia-nitrogen (NH_3-N), chloride (Cl^-) and nickel, where mussels or their habitat exist, can be no more than 1.9 mg/l, 78 mg/l and 7.3 µg/l, respectively. (Courtesy from the Fact Sheet dated for 2019)

From March 2024 to February 2025, the following maximum concentrations for ammonia-nitrogen, chloride, and nickel were as follows.

Ammonia-Nitrogen	0.748	mg/l
Chloride	104	mg/l
Nickel	< 0.050	mg/l

Ammonia nitrogen did not exceed the threshold for protection of threatened/endangered mussel species.

The results show that chloride and nickel exceeded the thresholds for protection of threatened/endangered mussel species.

Nickel was non-detect at < 0.050 mg/l. Important to note that the detection limits may need to be lowered by the lab in future sampling. This will aid in determining if the threshold was exceeded.

Monitoring for ammonia nitrogen shall be at least 1x/week.

Chloride, copper, and nickel shall be monitored on a 1x/quarterly basis.

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

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, and (d) Chapter 92a.61 targeted parameters.

6.1.1 Conventional Pollutants and Disinfection

TRC has been reduced to 0.15 mg/l as an average monthly and 1.2 mg/ as an instantaneous max.

Summary of Proposed NPDES Parameter Details for Conventional Pollutants and Disinfection
Aqua PA - Emlenton Area STP; PA0023566

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 = 6.0 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).
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 4.0 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 1x/week as an 8-hr composite sample (Table 6-3).
		Effluent Limit:	Effluent limits shall not exceed 42 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 1x/week as an 8-hr composite sample (Table 6-3).
		Effluent Limit:	Effluent limits shall not exceed 50 lbs/day 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	WQBEL	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 0.15 mg/l and/or 1.2 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.	
Fecal Coliform	TBEL	Monitoring:	The monitoring frequency shall be 1x/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 0.20 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

Ammonia-nitrogen shall be reduced to 3.0 mg/l during the summer and 9.0 mg/l during the winter. Based upon the DMR data from March 2024 to February 2025 the facility should not have issues meeting the reduced effluent limit.

Aqua PA - Emlenton Area STP; PA0023566			
Parameter	**Permit Limitation Required by[1]:**	**Recommendation**	
Ammonia-Nitrogen	WQBEL	Monitoring:	The monitoring frequency shall be 1x/week as an 8-hr composite sample
		Effluent Limit:	During the months of May 1 to Oct 31, the effluent limits shall not exceed 5.0 lbs/day and 3.0 mg/l as an average monthly. During the months of Nov 1 to Apr 30, the effluent limits shall not exceed 15.0 lbs/day and 9.0 mg/l as an average monthly.
		Rationale:	Water quality modeling recommends effluent limits
Total Nitrogen	Anti-backsliding	Monitoring:	The monitoring frequency shall be 1x/year as an 8-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to anti-backsliding regulations, monitoring shall continue to the proposed permit
Total Phosphorus	Anti-backsliding	Monitoring:	The monitoring frequency shall be 1x/year as an 8-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to anti-backsliding regulations, monitoring shall continue to the proposed permit
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 0.20 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

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

6.1.3 Toxics

Toxics modeling was conducted to examine reasonable potential for TDS, chloride, bromide, and nickel.

The influent stream showed presence of nickel.

From the NPDES application, a maximum concentration of chloride of 98.4 mg/l from 24 samples. Nickel was not monitored.

DMR monitoring data for chloride and nickel were reviewed. The data from March 2019 to 2025 was tabulated.

The maximum data point for chloride from the DMR data was 104 mg/l and for nickel was <0.055 mg/l. The DMR data were used to model toxics.

Nickel was cited for reasonable potential. Monitoring shall be 2x/month.

Due to discharge to a critical habitat sensitive to rabbitsfoot mussels, monitoring for chloride, copper, and zinc shall be 1x/quarter.

Summary of Proposed NPDES Parameter Details for Toxics

Aqua PA - Emlenton Area STP; PA0023566

Parameter	Permit Limitation Required by[1]:	Recommendation	
Chloride	Critical Habitat Sensitive to Rabbitsfoot Mussels	Monitoring:	The monitoring frequency shall be 1x/quarter as an 8-hr composite sample
		Effluent Limit:	No effluent requirements
		Rationale:	Water quality modeling showed no reasonable potential. Monitoring is recommended because of discharge to a critical habitat sensitive to rabbitsfoot mussels.
Copper	Critical Habitat Sensitive to Rabbitsfoot Mussels	Monitoring:	The monitoring frequency shall be 1x/quarter as an 8-hr composite sample
		Effluent Limit:	No effluent requirements
		Rationale:	Water quality modeling showed no reasonable potential. Monitoring is recommended because of discharge to a critical habitat sensitive to rabbitsfoot mussels.
Nickel	WQBEL	Monitoring:	The monitoring frequency shall be 2x/month as an 8-hr composite sample
		Effluent Limit:	Effluent limits shall not exceed 0.14 lbs/day and 0.085 mg/l as an average monthly.
		Rationale:	Influent stream showed detections of nickel. Using effluent data, water quality modeling showed reasonable potential.
Zinc	Critical Habitat Sensitive to Rabbitsfoot Mussels	Monitoring:	The monitoring frequency shall be 1x/quarter as an 8-hr composite sample
		Effluent Limit:	No effluent requirements
		Rationale:	Water quality modeling showed no reasonable potential. Monitoring is recommended because of discharge to a critical habitat sensitive to rabbitsfoot mussels.

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 0.20 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.

Summary of Proposed NPDES Parameter Details for polluants monitored under Chapter 92a.61
Aqua PA - Emlenton Area STP; PA0023566

Parameter	Permit Limitation Required by[1]:	Recommendation	
E. Coli	SOP; Chapter 92a.61	Monitoring:	The monitoring frequency shall be 1x/quarter as a grab sample (Table 6-3).
		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.

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 0.20 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

6.2 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.

- **Ammonia-nitrogen shall include an effluent limit of 3 mg/l during summer months and 9 mg/l during winter months.**
- **Monitoring for chloride, copper, and zinc shall be 1x/quarter**
- **Monitoring for nickel shall be 2x/month. Effluent limits shall be 0.085 mg/l as an average monthly.**
- **TRC has been reduced to 0.15 mg/l as an average monthly and 1.2 mg/ as an instantaneous max.**
- **Due to the EPA triennial review, monitoring for E. coli shall be required.**

Effluent limits have been lowered for ammonia-nitrogen. Based upon the DMR from March 2024 to February 2025, the facility should be capable of meeting the reduced effluent limit for the ammonia-nitrogen.

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** 41° 10' 34.00" , **Longitude** 79° 42' 0.30" , **River Mile Index** 0.03 , **Stream Code** 51144

Receiving Waters: Richey Run (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	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.15	XXX	1.2	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	42	67	XXX	25.0	40.0	50	1/week	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids	50	75	XXX	30.0	45.0	60	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab
Total Nitrogen	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Calculation
Ammonia-Nitrogen Nov 1 - Apr 30	15.0	XXX	XXX	9.0	XXX	XXX	1/week	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	5.0	XXX	XXX	3.0	XXX	XXX	1/week	8-Hr Composite
Total Phosphorus	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Copper, Total	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Nickel, Total	0.14	XXX	XXX	0.085	0.13 Daily Max	0.21	2/month	8-Hr Composite
Zinc, Total	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Chloride	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite

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

at Outfall 001

6.3.2 Summary of Proposed Permit Part C Conditions

The subject facility has the following Part C conditions.

- Chlorine Minimization
- Peak Flow Management Plan
- Hauled-in Waste Restrictions
- Solids Management for Non-Lagoon Treatment Systems

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:
☐	Other:

Attachment A

Stream Stats/Gauge Data

StreamStats Report

Region ID: PA
Workspace ID: PA20250503100113625000
Clicked Point (Latitude, Longitude): 41.17680, -79.70006
Time: 2025-05-03 06:01:45 -0400

Emlenton WWTP PA0023566 Modeling Point #1 May 2025

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	7.33	square miles
ELEV	Mean Basin Elevation	1371	feet
PRECIP	Mean Annual Precipitation	43	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	7.33	square miles	2.33	1720
ELEV	Mean Basin Elevation	1371	feet	898	2700
PRECIP	Mean Annual Precipitation	43	inches	38.7	47.9

Low-Flow Statistics Flow Report [Low Flow Region 3]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.696	ft^3/s	43	43
30 Day 2 Year Low Flow	1.01	ft^3/s	38	38
7 Day 10 Year Low Flow	0.299	ft^3/s	54	54
30 Day 10 Year Low Flow	0.429	ft^3/s	49	49

Statistic	Value	Unit	SE	ASEp
90 Day 10 Year Low Flow	0.635	ft^3/s	41	41

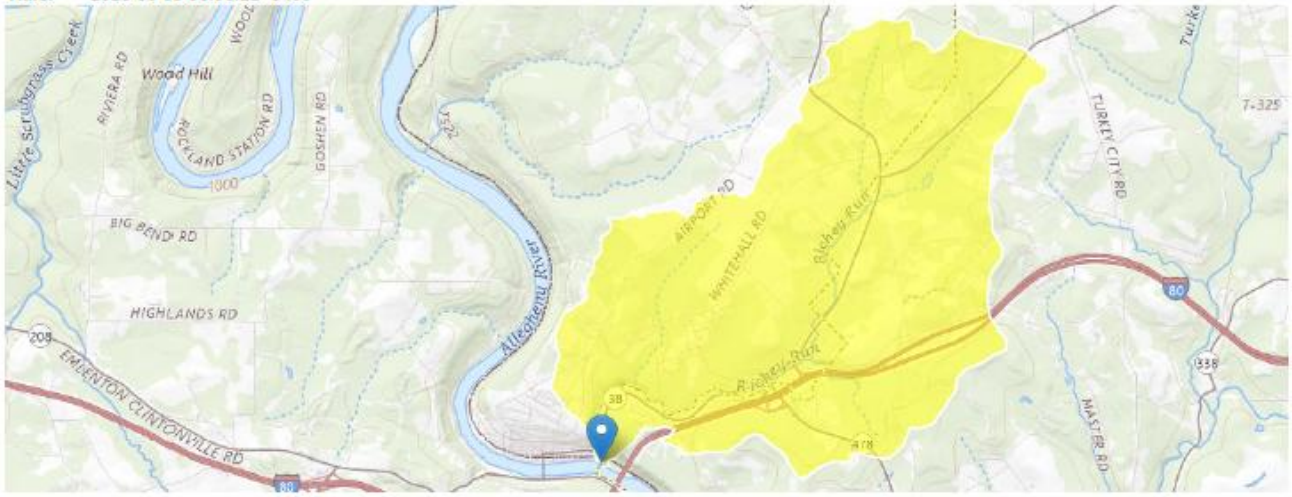
Low-Flow Statistics Citations

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: 4.28.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report

Region ID: PA
Workspace ID: PA20250503100453820000
Clicked Point (Latitude, Longitude): 41.17620, -79.70008
Time: 2025-05-03 06:05:22 -0400



Emlenton STP PA0023566 Modeling Point #2 May 2025

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	7.34	square miles
ELEV	Mean Basin Elevation	1370	feet
PRECIP	Mean Annual Precipitation	43	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	7.34	square miles	2.33	1720
ELEV	Mean Basin Elevation	1370	feet	898	2700
PRECIP	Mean Annual Precipitation	43	inches	38.7	47.9

Low-Flow Statistics Flow Report [Low Flow Region 3]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.697	ft^3/s	43	43
30 Day 2 Year Low Flow	1.01	ft^3/s	38	38
7 Day 10 Year Low Flow	0.299	ft^3/s	54	54
30 Day 10 Year Low Flow	0.43	ft^3/s	49	49

Statistic	Value	Unit	SE	ASEp
90 Day 10 Year Low Flow	0.635	ft^3/s	41	41

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: 4.28.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment B
WQM 7.0 Modeling Output Values
Toxics Management Spreadsheet

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16G	51144	RICHEY RUN

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)
0.030	Emlenton WWTP	PA0023566-5	0.200	CBOD5	25		
				NH3-N	3.27	6.54	
				Dissolved Oxygen			4

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16G	51144	RICHEY RUN

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
0.030	Emlenton WWTP	12.55	22.37	12.55	22.37	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
0.030	Emlenton WWTP	1.54	3.27	1.54	3.27	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
0.03	Emlenton WWTP	25	25	3.27	3.27	4	4	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
16G	51144	RICHEY RUN	0.030	868.00	7.33	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	0.041	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.90	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
Emlenton WWTP	PA0023566-5	0.2000	0.2000	0.2000	0.000	25.00	6.84

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	4.00	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
16G	51144	RICHEY RUN	0.000	866.00	7.34	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	0.041	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.90	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	0.00	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
16G	51144	RICHEY RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.030	0.200	22.542	7.099
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
11.541	0.476	24.262	0.111
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
13.70	1.391	1.66	0.851
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.085	20.869	Owens	5
Reach Travel Time (days)			
0.017			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.002	13.66	1.66	6.11
0.003	13.62	1.66	6.14
0.005	13.59	1.66	6.17
0.007	13.55	1.65	6.19
0.008	13.52	1.65	6.22
0.010	13.48	1.65	6.24
0.012	13.45	1.65	6.26
0.013	13.41	1.64	6.29
0.015	13.38	1.64	6.31
0.017	13.35	1.64	6.33

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
16G	51144	RICHEY RUN

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												
0.030	0.30	0.00	0.30	.3094	0.01263	.476	11.54	24.26	0.11	0.017	22.54	7.10
Q1-10 Flow												
0.030	0.24	0.00	0.24	.3094	0.01263	NA	NA	NA	0.10	0.017	22.80	7.06
Q30-10 Flow												
0.030	0.35	0.00	0.35	.3094	0.01263	NA	NA	NA	0.12	0.016	22.35	7.13

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	0.81	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.17	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

Attachment C
TRC Evaluation

Aqua PA - Emlenton Area STP
PA0023566

April 2025

TRC EVALUATION

Input appropriate values in B4:B8 and E4:E7

4	0.299	= Q stream (cfs)	0.5	= CV Daily	
5	0.2	= 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)	

	Source	Reference	AFC Calculations	Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 0.327	1.3.2.iii	WLA cfc = 0.312
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 0.122	5.1d	LTA_cfc = 0.181
14					

	Source		Effluent Limit Calculations	
15				
16	PENTOXSD TRG	5.1f	AML MULT = 1.231	
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.150	AFC
18			INST MAX LIMIT (mg/l) = 0.491	

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- Correspondence

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

MEMO

SUBJECT: Site Visit Investigation, Emlenton Wastewater Treatment Facility

DATE: September 20, 2022

TO: Justin Dickey, Program Manager, Clean Water Program

FROM: Joe Brancato, Aquatic Biologist Supervisor, Clean Water Program
Joseph C Brancato

THROUGH: Eric Kicher, Environmental Group Manager, Clean Water Program
Eric C. Kicher

On September 16, 2022, a site visit was conducted at the Emlenton Wastewater Treatment Facility (WWTF), Borough of Emlenton, Venango County, Pennsylvania to examine placement of a potential new headwall and outfall structure. The current outfall structure is located at approximately 41°10'34.00"N -79°42'0.30"W and the proposed new outfall location is located at approximately 41°10'30.00"N -79°42'0.00"W (**Figure 1**). The current and proposed outfall structures are located at the confluence of Richey Run and the Allegheny River. Flow based on the Allegheny River USGS Gaging Station at Franklin was 2700 cfs, on the day of the site visit and slightly below normal flow for that period. **Figure 2** depicts an aerial view of the highwater mark of the Allegheny River in relationship to the current and proposed outfall locations.

Current Outfall Location. The current outfall is located at the mouth of Richey Run within the floodplain of the Allegheny River (**Photograph 1**). It appears that the headwall and last section of pipe has separated from the rest of the structure. The new proposed outfall location is approximately 40 meters upstream in Richey Run and can be subjectively categorized as on the outer edge of the high-water mark in the floodplain of the Allegheny River (**Photograph 2**). On the date of the site visit, the current outfall location was approximately 70-meters from the wetted channel of the Allegheny River (**Photograph 3**).

Proposed Outfall Location. **Photograph 4** shows the site of the proposed new headwall and outfall structure location on Richey Run (looking upstream). **Photograph 5** shows Richey Run looking downstream from the proposed new outfall location and the current outfall pipe. This location is very near the Allegheny River floodplain highwater mark.

Allegheny River Floodplain in relation to Richey Run. **Figure 3** is a series of Google Earth aerial images from April 1993 to the current period in relationship to the current and proposed discharge locations. These images show both high and low flow stages of the Allegheny River during that period. From the images, the current discharge can become inundated during high flow events on the Allegheny River. However, during low and normal flow events, the current discharge is almost entirely made up of flow from Richey Run. The proposed new discharge, which will be situated approximately 40-meters upstream on Richey Run would only be inundated with Allegheny River floodwater during extreme high flow events. The site visit

conducted on September 16, 2022 confirmed the Google Earth images. It appears that the high-water mark of the Allegheny River floodplain is very near the proposed new outfall location and headwall.

Discussion. Allegheny River flow did not mix with effluent discharged from the Emlenton WWTF during the site visit on September 16, 2022. It is evident that during the majority of the year, flow is probably not mixed with the Allegheny River immediately and effluent flows through rocks and a dry channel within the Allegheny River floodplain (for a distance of sometimes 70-meters or more) prior to entering the Allegheny River. The proposed new outfall location is further upstream on Richey Run and near the edge of the highwater mark of the Allegheny River floodplain. Based on the site visit and the series of Google Earth images shown in this memo, it can be concluded that both the current and proposed effluent outfalls should be considered discharges to Richey Run. Although during periods of very high flow events, both the proposed and current outfall locations may be inundated with the Allegheny River.

Attachment E- DMR Data

Summary of DMR Results - Nickel
Beginning April 1, 2019 and Ending October 1, 2024

Monitoring Period Begin Date	Monitoring Period End Date	DMR Received Date	DMR Value		Units	Statistical Base Code
04/01/2019	06/30/2019	05/28/2019	<	0.005	mg/L	Average Quarterly
07/01/2019	09/30/2019	09/28/2019		0.005	mg/L	Average Quarterly
10/01/2019	12/31/2019	01/21/2020		0.005	mg/L	Average Quarterly
01/01/2020	03/31/2020	03/28/2020	<	0.005	mg/L	Average Quarterly
04/01/2020	06/30/2020	06/27/2020		0.006	mg/L	Average Quarterly
07/01/2020	09/30/2020	09/28/2020	<	0.005	mg/L	Average Quarterly
10/01/2020	12/31/2020	01/26/2021		0.005	mg/L	Average Quarterly
01/01/2021	03/31/2021	03/28/2021		0.005	mg/L	Average Quarterly
04/01/2021	06/30/2021	06/28/2021	<	0.05	mg/L	Average Quarterly
07/01/2021	09/30/2021	10/28/2021	<	0.05	mg/L	Average Quarterly
10/01/2021	12/31/2021	11/26/2021	<	0.05	mg/L	Average Quarterly
01/01/2022	03/31/2022	03/19/2022		0.05	mg/L	Average Quarterly
04/01/2022	06/30/2022	06/28/2022		0.05	mg/L	Average Quarterly
07/01/2022	09/30/2022	09/28/2022		0.05	mg/L	Average Quarterly
10/01/2022	12/31/2022	12/28/2022		0.05	mg/L	Average Quarterly
01/01/2023	03/31/2023	04/24/2023	<	0.055	mg/L	Average Quarterly
04/01/2023	06/30/2023	06/28/2023	<	0.05	mg/L	Average Quarterly
07/01/2023	09/30/2023	09/27/2023		0.05	mg/L	Average Quarterly
10/01/2023	12/31/2023	01/25/2024	<	0.05	mg/L	Average Quarterly
01/01/2024	03/31/2024	04/26/2024	<	0.05	mg/L	Average Quarterly
04/01/2024	06/30/2024	06/27/2024	<	0.05	mg/L	Average Quarterly
07/01/2024	09/30/2024	09/24/2024	<	0.05	mg/L	Average Quarterly
10/01/2024	12/31/2024	01/27/2025	<	0.05	mg/L	Average Quarterly
Maximum			<	0.055	mg/L	
Average				0.035	mg/L	

Summary of DMR Results - Chloride
Beginning March 1, 2019 and ending February 1, 2025

Monitoring Period Begin Date	Monitoring Period End Date	DMR Received Date	DMR Value	Units	Statistical Base Code
03/01/2019	03/31/2019	04/27/2019	59.6	mg/L	Average Monthly
04/01/2019	04/30/2019	05/28/2019	64.3	mg/L	Average Monthly
05/01/2019	05/31/2019	06/28/2019	44.9	mg/L	Average Monthly
06/01/2019	06/30/2019	07/25/2019	48.8	mg/L	Average Monthly
07/01/2019	07/31/2019	08/27/2019	49.5	mg/L	Average Monthly
08/01/2019	08/31/2019	09/27/2019	41	mg/L	Average Monthly
09/01/2019	09/30/2019	10/28/2019	59.8	mg/L	Average Monthly
10/01/2019	10/31/2019	11/20/2019	55.9	mg/L	Average Monthly
11/01/2019	11/30/2019	12/28/2019	31.2	mg/L	Average Monthly
12/01/2019	12/31/2019	01/21/2020	43.3	mg/L	Average Monthly
01/01/2020	01/31/2020	02/28/2020	52.9	mg/L	Average Monthly
02/01/2020	02/29/2020	03/28/2020	49.7	mg/L	Average Monthly
03/01/2020	03/31/2020	04/28/2020	49.6	mg/L	Average Monthly
04/01/2020	04/30/2020	05/28/2020	33.8	mg/L	Average Monthly
05/01/2020	05/31/2020	06/27/2020	37.9	mg/L	Average Monthly
06/01/2020	06/30/2020	07/27/2020	46.5	mg/L	Average Monthly
07/01/2020	07/31/2020	08/24/2020	48.8	mg/L	Average Monthly
08/01/2020	08/31/2020	09/28/2020	46.6	mg/L	Average Monthly
09/01/2020	09/30/2020	10/28/2020	51.4	mg/L	Average Monthly
10/01/2020	10/31/2020	11/28/2020	27	mg/L	Average Monthly
11/01/2020	11/30/2020	12/28/2020	48.9	mg/L	Average Monthly
12/01/2020	12/31/2020	01/22/2021	36.5	mg/L	Average Monthly
01/01/2021	01/31/2021	02/26/2021	49.6	mg/L	Average Monthly
02/01/2021	02/28/2021	03/28/2021	86.7	mg/L	Average Monthly
03/01/2021	03/31/2021	04/26/2021	87.9	mg/L	Average Monthly
04/01/2021	04/30/2021	05/28/2021	54.7	mg/L	Average Monthly
05/01/2021	05/31/2021	06/28/2021	44.3	mg/L	Average Monthly
06/01/2021	06/30/2021	07/28/2021	50.1	mg/L	Average Monthly
07/01/2021	07/31/2021	08/27/2021	53.6	mg/L	Average Monthly

08/01/2021	08/31/2021	09/27/2021	52.7	mg/L	Average Monthly
09/01/2021	09/30/2021	10/28/2021	49.3	mg/L	Average Monthly
10/01/2021	10/31/2021	11/26/2021	46.2	mg/L	Average Monthly
11/01/2021	11/30/2021	12/28/2021	46	mg/L	Average Monthly
12/01/2021	12/31/2021	01/28/2022	58	mg/L	Average Monthly
01/01/2022	01/31/2022	03/19/2022	50.4	mg/L	Average Monthly
02/01/2022	02/28/2022	03/28/2022	98.4	mg/L	Average Monthly
03/01/2022	03/31/2022	04/28/2022	45.2	mg/L	Average Monthly
04/01/2022	04/30/2022	05/28/2022	43.3	mg/L	Average Monthly
05/01/2022	05/31/2022	06/28/2022	28.9	mg/L	Average Monthly
06/01/2022	06/30/2022	07/26/2022	41.6	mg/L	Average Monthly
07/01/2022	07/31/2022	08/20/2022	39.7	mg/L	Average Monthly
08/01/2022	08/31/2022	09/28/2022	48.3	mg/L	Average Monthly
09/01/2022	09/30/2022	10/28/2022	37.9	mg/L	Average Monthly
10/01/2022	10/31/2022	11/28/2022	54.1	mg/L	Average Monthly
11/01/2022	11/30/2022	12/28/2022	51.4	mg/L	Average Monthly
12/01/2022	12/31/2022	01/28/2023	40.1	mg/L	Average Monthly
01/01/2023	01/31/2023	02/28/2023	54.3	mg/L	Average Monthly
02/01/2023	02/28/2023	03/28/2023	67.4	mg/L	Average Monthly
03/01/2023	03/31/2023	04/25/2023	54.2	mg/L	Average Monthly
04/01/2023	04/30/2023	05/26/2023	45.6	mg/L	Average Monthly
05/01/2023	05/31/2023	06/28/2023	39.3	mg/L	Average Monthly
06/01/2023	06/30/2023	07/27/2023	53.3	mg/L	Average Monthly
07/01/2023	07/31/2023	08/28/2023	49.5	mg/L	Average Monthly
08/01/2023	08/31/2023	09/27/2023	37.9	mg/L	Average Monthly
09/01/2023	09/30/2023	10/24/2023	53.1	mg/L	Average Monthly
10/01/2023	10/31/2023	11/28/2023	51.5	mg/L	Average Monthly
11/01/2023	11/30/2023	12/23/2023	48.1	mg/L	Average Monthly
12/01/2023	12/31/2023	01/25/2024	46.6	mg/L	Average Monthly
01/01/2024	01/31/2024	02/27/2024	51.9	mg/L	Average Monthly
02/01/2024	02/29/2024	03/26/2024	55	mg/L	Average Monthly
03/01/2024	03/31/2024	04/26/2024	50.8	mg/L	Average Monthly
04/01/2024	04/30/2024	05/28/2024	26.5	mg/L	Average Monthly
05/01/2024	05/31/2024	06/27/2024	51.3	mg/L	Average Monthly
06/01/2024	06/30/2024	07/25/2024	48.1	mg/L	Average Monthly
07/01/2024	07/31/2024	08/27/2024	51.5	mg/L	Average Monthly
08/01/2024	08/31/2024	09/24/2024	31.7	mg/L	Average Monthly
09/01/2024	09/30/2024	10/24/2024	50.9	mg/L	Average Monthly
10/01/2024	10/31/2024	11/25/2024	49.4	mg/L	Average Monthly
11/01/2024	11/30/2024	12/23/2024	50.9	mg/L	Average Monthly
12/01/2024	12/31/2024	01/27/2025	47.9	mg/L	Average Monthly
01/01/2025	01/31/2025	02/24/2025	95.2	mg/L	Average Monthly
02/01/2025	02/28/2025	03/20/2025	104	mg/L	Average Monthly
Maximum			**104**	**mg/l**	
Average			**50.725**	**mg/l**	