pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0020648**
Facility Type	**Municipal**	APS ID	**258**
Major / Minor	**Minor**	Authorization ID	**1472732**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Port Royal Municipal Authority**	Facility Name	**Port Royal Bergstresser WWTP**
Applicant Address	804 W 8th Street	Facility Address	804 W 8th Street
	Port Royal, PA 17082-9400		Port Royal, PA 17082-9400
Applicant Contact	Roger E. Burd	Facility Contact	Duane Hart
Applicant Phone	(717) 527-2711	Facility Phone	(717) 527-2711
Client ID	64009	Site ID	251553
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	Port Royal Borough
Connection Status	No Exceptions Allowed	County	Juniata
Date Application Received	February 12, 2024	EPA Waived?	Yes
Date Application Accepted	February 20, 2024	If No, Reason	N/A

Purpose of Application: Renewal of Existing NPDES Permit

Summary of Review

The Port Royal Municipal Authority (PRMA) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on March 22, 2019 and became effective on April 1, 2019. The permit expired on March 31, 2024. It has been administratively extended since that time.

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 the following information:

1. A description of the facility
2. Type and Quantity of Wastewater or Pollutants Evaluated in the Permit
3. Facility NPDES Compliance History
4. Receiving Waters and Water Supply Information Detail Summary
5. Development of Effluent Limitations and Monitoring Requirements
6. Proposed NPDES Parameter Details

The applicant disclosed the Act 14 requirement to Juniata County – Planning & Community Development, and Port Royal Borough and the notice was received by the parties on January 20, 2024. A planning approval letter was not necessary as the facility is neither new or expanding.

Based on the review in this report, it is recommended that the permit be drafted. The proposed permit will expire five (5) years from the effective date.

Approve	Deny	Signatures	Date
X		*Steven C. Roselle* Steven C. Roselle, P.E. / Environmental Engineer	March 25, 2024
x		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	April 15, 2024
x		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Program Manager	April 15, 2024

Summary of Review

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

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. Description of the Facility

1.1 Site location

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

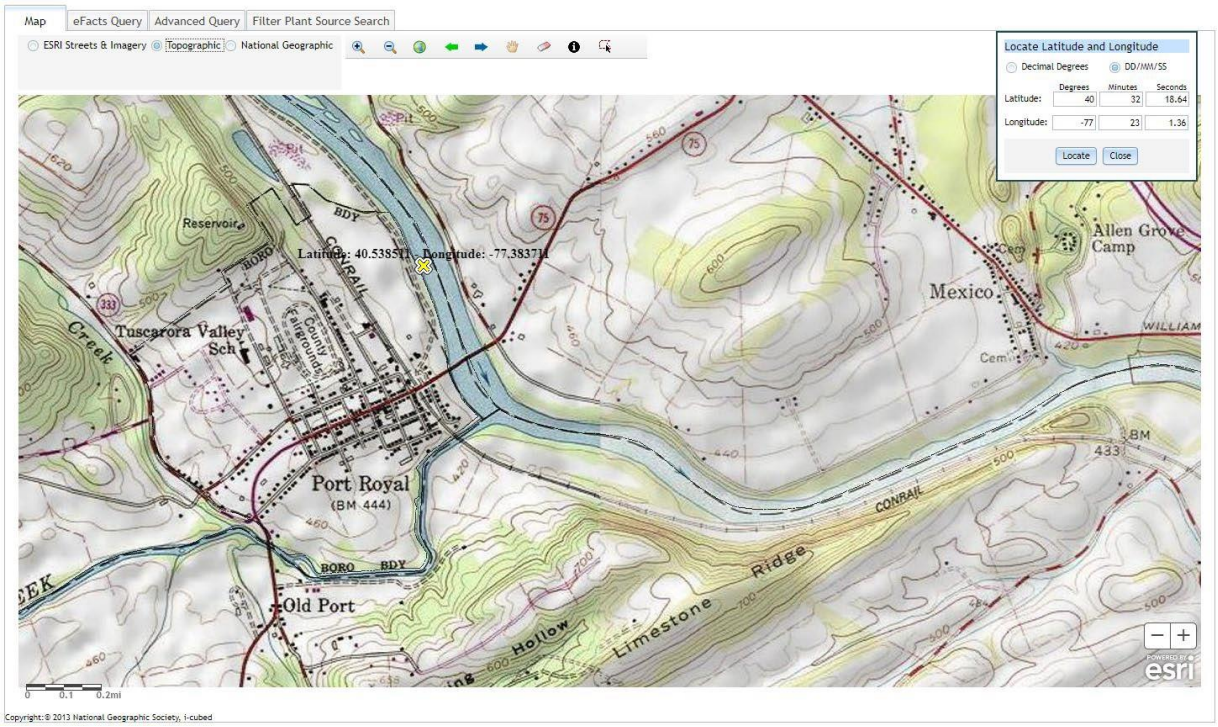
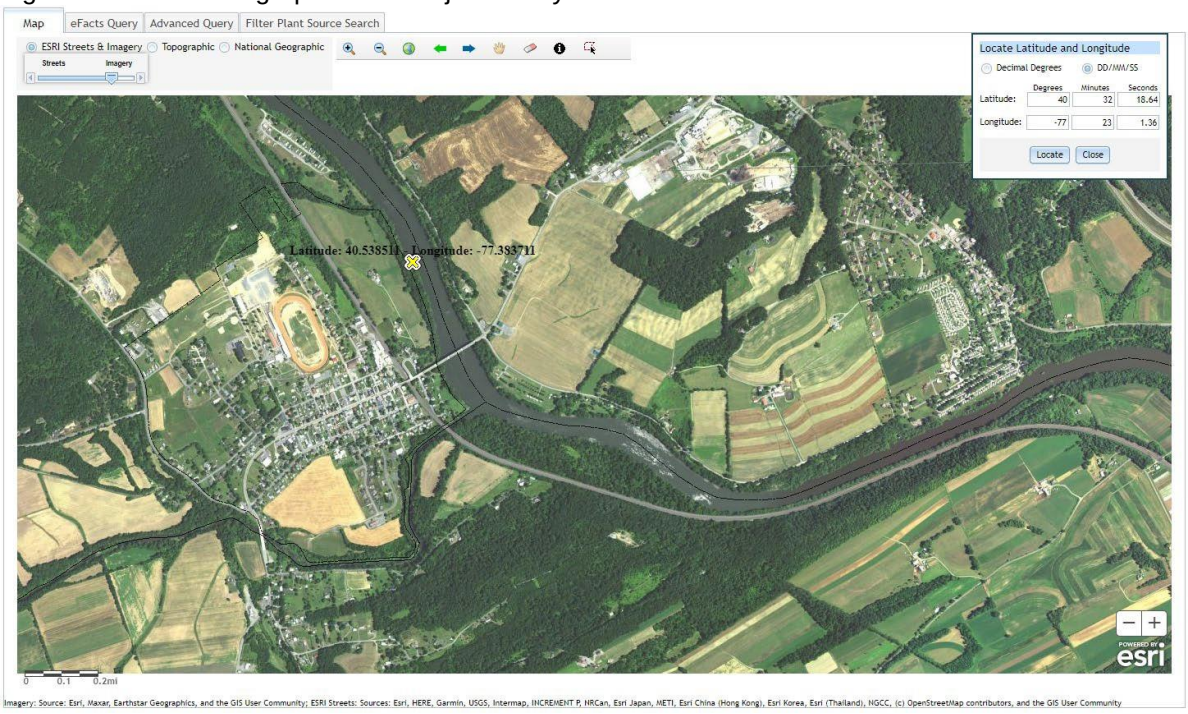


Figure 2: Aerial Photograph of the subject facility



1.2 Description of Exiting Wastewater Treatment Process

PRMA owns and operates the Bergstresser Wastewater Treatment Plant (WWTP) in Port Royal Borough, Juniata County. The facility serves the entirety of Port Royal Borough (306 EDU's) and a comparatively small population (34 EDU's) in Milford and Turbett Townships.All wastes are residential in nature, and all sewer systems are 100% separated. With having both annual average design flow and hydraulic design capacity of 0.2 MGD, this facility consists of a comminutor, two (2) sequencing batch reactors, two (2) aerobic sludge digesters, a belt filter press (w/ polymer feed), sludge storage area, a chlorine contact tank, and the outfall (i.e., Outfall 001). A sodium hypochlorite solution is used for disinfection, and a sodium thiosulfate solution is used for de-chlorination. No other chemicals are reported to be in use at the WWTP.

Currently, PRMA has an outfall (Outfall 002) for an influent pump station bypass. The overflow pipe is located along WWTP access road 300 ft. north of the Influent PS.

Treatment Facility Summary

Treatment Facility Name: Port Royal STP

WQM Permit No.	Issuance Date
3492401 A-3	May 12, 2017

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Sequencing Batch Reactor	Hypochlorite	0.2

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.2	389	Existing Hydraulic Overload	Aerobic Digestion	Land Application

1.3 WWTP Proposed Upgrades

In conjunction with its application for an NPDES Renewal, PRMA has applied for a Water Quality Management Permit to address operational issues at the WWTP which have resulted in numerous violations, and to address its Consent Order and Agreement (COA) entered into with DEP on May 9, 2017, which requires the elimination of PRMA's sanitary sewer overflow (SSO) into the Juniata River. Compliance history will be discussed in more detail in Section 3.

Proposed upgrades to the facility include replacement of the 1st St., Pump Station with increased volume and flow capacity, installation of fine screening, modifications to the 3rd St. Pump Station, upgrading of SBR tanks valving, retrofitting the chlorine disinfection system to new UV disinfection facilities, and addition of an effluent meter and sampling chamber.

Particularly noteworthy is the retrofit of the existing chlorine disinfection system to new UV disinfection facilities. This is intended to address the numerous effluent violations associated with Total Residual Chlorine (TRC), and Fecal Coliform.

2. Type and Quantity of Wastewater or Pollutants Evaluated in the Permit

2.1 Existing Permit Requirements

The facility has the following Effluent Limitations, Monitoring, Recordkeeping and Reporting Requirements:

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

I. A. For Outfall 001, **Latitude** 40° 32' 18.64", **Longitude** 77° 23' 1.36", **River Mile Index** 31.48, **Stream Code** 11414

Receiving Waters: Juniata River

Type of Effluent: Sewage Effluent

1. The permittee is authorized to discharge during the period from **April 1, 2019** through **March 31, 2024**.
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	Report Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	42.0	67.0	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	50.0	75.0	XXX	30.0	45.0	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 (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

Outfall001, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia-Nitrogen Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite

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

at Outfall 001

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	1/week	8-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite

3. Facility NPDES Compliance History

3.1 Summary of Inspections

A summary of inspections during the existing permit review cycle follows.

Inspection Summary
10/08/2019: Michael Benham, DEP Water Quality Specialist, conducted a compliance evaluation inspection. Identified was a list of items which need to be repaired, including a decant valve, pumping station check valve, chart recorder, influent mag-meter, and sludge blower motor. **02/04/2022**: Brandon Bettinger, DEP Water Quality Specialist, conducted a compliance evaluation inspection. One (1) violation was noted: Laboratory meters were not operated and maintained in accordance with the manufacturers' specifications. Five (5) non-compliances were observed. 1) pH meter not calibrated due to a faulty probe. 2) Failure to use current pH buffers or reagent standards. The facility's pH 10 buffer is expired. 3) Failure to submit a required DMR supplemental report. 4) Failure to provide information or records required by the permit or otherwise needed to determine compliance. 5) Discharges from an SSO are prohibited. An SSO occurred from the 1st Street Pump station during Hurricane Ida. **09/21/2022**: Brandon Bettinger, DEP Water Quality Specialist, and Cody Hoy, DEP Environmental Trainee, conducted an incident inspection as a follow up to a phone conversation from PRMA staff that SBR #2 is experiencing septic conditions. Three (3) violations were noted. 1) Failure to immediately report to DEP a pollution incident. Failure to immediately report septic conditions in SBR #2 that led to numerous effluent violations. 2) Failure to properly operate and maintain all facilities which are installed or used by the permittee to achieve compliance. SBR #2's mixer was observed as non-functional during the inspection. 3) Violation of effluent limits in Part A of permit. The facility reported 17 effluent violations from April-July of 2022. **09/22/2022**: Brandon Bettinger, DEP Water Quality Specialist, conducted a follow up inspection to observe the status of the treatment facility after the inspection conducted on 09/21/2022. Schedule for cleaning out the two aerated digesters, and SBR #2 was discussed. Repair of faulty mixer in SBR #2 was discussed. The Department requested a notification via phone call or email upon completion of the digester cleanout, SBR #2 cleanout, and mixer repair. **09/27/2022**: Brandon Bettinger, DEP Water Quality Specialist, conducted an inspection to follow up on an issue reported via phone call on 9/26/2022. It was determined that the SBR basin influent valves were reversed on the facility's PLC. This resulted in SBR #2 receiving influent/filling despite being taken offline during the inspection on 9/21/2022. SBR #1's influent valve was nearly closed but still allowed for a small amount of flow to enter the basin. A number of corrective action attempts were made. It was determined that SBR #1's influent actuator valve was broken. In a

follow up conversation on 9/28/2022, PRMA informed DEP that SBR #2's influent valve was manually closed approximately 95% and SBR #1's influent actuator was fixed and decants from SBR #1 were able to be performed.

10/20/2022: Brandon Bettinger, DEP Water Quality Specialist, conducted a follow up inspection to observe the status of the treatment facility. SBR #2 was returned to service on 10/19/2022, thus returning the plant to two SBR basin operation. The Licking Creek pump station was observed. The pump station contained copious amounts of floating grease particles. PRMA staff stated that the grease buildup will be removed from the pump station before winter 2022. The pump station's emergency generator currently had a dead battery. The generator is scheduled to undergo service and will be restored to an operational condition.

02/08/2023: Brandon Bettinger, DEP Water Quality Specialist, conducted a routine partial inspection. The purpose of the inspection was to discuss the facility's recent decision to receive technical guidance from the Pennsylvania Rural Water Association (PRWA). A PRWA representative was on-site with PRMA staff on 1/26/2023. The facility's goal is to receive guidance for the optimization of the treatment facility's function and processes.

10/20/2023: Brandon Bettinger, DEP Water Quality Specialist, conducted an incident inspection to observe the status of treatment facility. The purpose of the inspection was to observe the condition of the treatment facility after PRMA staff notified DEP that the facility was operating on one SBR Basin. The cause was determined to be a faulty pressure transducer. Recommendations were made: 1) Replace expiring pH 10 buffer with a new unexpired pH 10 buffer. 2) update DEP via when repairs are made and the new pressure transducer is installed. 3) update DEP when health of SBR #2's MLSS is determined and plan for reinstating is formulated.

10/27/2023: Patrick McGee, DEP Water Quality Specialist, and Adam Nothstein, DEP Environmental Trainee conducted a follow-up inspection. Violations were noted. 1) At time of inspection, floating scum and turbidity was observed in both the collected grab samples and in the effluent manhole following a discharge from SBR #1. This is a violation of Part A of the NPDES permit. 2) TSS result of 2370 mg/L, from an effluent grab sample collected during the inspection, exceeds the permitted instantaneous maximum limit of 60 mg/L. 3) Failure to collect representative samples, while there are changes in treatment plant performance, is a violation of Part A.III.A of the NPDES permit.

3.2 Summary of Effluent Non-Compliances

A summary of effluent non-compliances during the existing permit review cycle follows.

Month	Parameter	Limit	DMR	Permit	Unit
Nov-19	pH	Instant. Min.	5.9	6.0	S.U.
Aug-23	Total Residual Cl2 (TRC)	Avg. Monthly	0.7	0.5	mg/L
May-23	Total Residual Cl2 (TRC)	Avg. Monthly	0.6	0.5	mg/L
Apr-23	Total Residual Cl2 (TRC)	Avg. Monthly	0.6	0.5	mg/L
Mar-23	Total Residual Cl2 (TRC)	Avg. Monthly	0.7	0.5	mg/L
Nov-21	Total Residual Cl2 (TRC)	Instant. Max.	2.2	1.6	mg/L
Dec-22	Total Residual Cl2 (TRC)	Instant. Max.	2.2	1.6	mg/L
Nov-22	Total Residual Cl2 (TRC)	Instant. Max.	1.7	1.6	mg/L
Apr-21	Total Residual Cl2 (TRC)	Instant. Max.	1.7	1.6	mg/L
Mar-20	Total Residual Cl2 (TRC)	Instant. Max.	2.2	1.6	mg/L
Jul-19	Total Residual Cl2 (TRC)	Instant. Max.	2.0	1.6	mg/L

Jul-22	CBOD Demand	Avg. Monthly	78.6	25.0	mg/L
May-20	CBOD Demand	Avg. Monthly	115	42.0	lbs/day
Sep-22	CBOD Demand	Weekly Avg.	41.1	40.0	mg/L
Jul-22	CBOD Demand	Weekly Avg.	46.4	40.0	mg/L
Jun-22	CBOD Demand	Weekly Avg.	41.6	40.0	mg/L
Apr-22	CBOD Demand	Weekly Avg.	41.7	40.0	mg/L
Jul-22	Total Suspended Solids	Avg. Monthly	344	30.0	mg/L
May-22	Total Suspended Solids	Avg. Monthly	98.0	30.0	mg/L
Sep-21	Total Suspended Solids	Avg. Monthly	53.5	30.0	mg/L
Jul-20	Total Suspended Solids	Avg. Monthly	63.5	30.0	mg/L
Jul-22	Total Suspended Solids	Avg. Monthly	182	50.0	lbs/day
Jun-20	Total Suspended Solids	Avg. Monthly	69.0	50.0	lbs/day
Oct-23	Total Suspended Solids	Weekly Avg.	98.0	45.0	mg/L
Jul-22	Total Suspended Solids	Weekly Avg.	1200	45.0	mg/L
Jun-22	Total Suspended Solids	Weekly Avg.	49.0	45.0	mg/L
May-22	Total Suspended Solids	Weekly Avg.	430	45.0	mg/L
Sep-21	Total Suspended Solids	Weekly Avg.	154	45.0	mg/L
Jul-20	Total Suspended Solids	Weekly Avg.	242	45.0	mg/L
Jul-22	Total Suspended Solids	Weekly Avg.	651	75.0	lbs/day
May-22	Total Suspended Solids	Weekly Avg.	172	75.0	lbs/day
Sep-21	Total Suspended Solids	Weekly Avg.	105	75.0	lbs/day
Jul-20	Total Suspended Solids	Weekly Avg.	97.0	75.0	lbs/day
Sep-22	Fecal Coliform	Geom. Mean	232	200	No./100 ml
Aug-22	Fecal Coliform	Geom. Mean	89177	200	No./100 ml
Jul-22	Fecal Coliform	Geom. Mean	181273	200	No./100 ml
Jun-22	Fecal Coliform	Geom. Mean	2509	200	No./100 ml
Aug-20	Fecal Coliform	Geom. Mean	674	200	No./100 ml
Jan-23	Fecal Coliform	Instant. Max.	77010	10000	No./100 ml
Dec-22	Fecal Coliform	Instant. Max.	26130	10000	No./100 ml
Nov-22	Fecal Coliform	Instant. Max.	11990	10000	No./100 ml
Sep-22	Fecal Coliform	Instant. Max.	9678	1000	No./100 ml
Aug-22	Fecal Coliform	Instant. Max.	1986300	1000	No./100 ml
Jul-22	Fecal Coliform	Instant. Max.	960600	1000	No./100 ml
Jun-22	Fecal Coliform	Instant. Max.	68670	1000	No./100 ml
May-22	Fecal Coliform	Instant. Max.	24196	1000	No./100 ml
Aug-21	Fecal Coliform	Instant. Max.	2419	1000	No./100 ml
May-21	Fecal Coliform	Instant. Max.	1011	1000	No./100 ml
Aug-20	Fecal Coliform	Instant. Max.	9678	1000	No./100 ml
Sep-19	Fecal Coliform	Instant. Max.	2419.6	1000	No./100 ml

3.3 Summary of DMR Data for Outfall 001 for 2022, and 2023

2022 DMR Data for Outfall 001

Parameter	Limit	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Flow (MGD) Average Monthly	Report	0.064	0.095	0.069	0.07	0.106	0.068	0.055	0.055	0.067	0.055	0.057	0.082
Flow (MGD) Daily Maximum	Report	0.160	0.488	0.109	0.182	0.612	0.166	0.099	0.083	0.216	0.105	0.141	0.470
pH (S.U.) Minimum	6.0	6.3	7.4	7.0	7.2	6.9	6.2	7.2	7.5	7.0	7.1	7.1	6.8
pH (S.U.) Maximum	9.0	8.9	8.4	8.1	8.4	7.9	7.8	7.8	8.3	7.9	7.8	7.5	8.1
Dissolved Oxygen Minimum	Report	6.5	7.3	6.3	7.0	6.2	5.5	6.1	6.1	6.1	6.9	7.1	8.6
TRC (mg/L) Average Monthly	0.5	0.08	0.34	0.12	0.28	0.13	0.14	0.04	0.02	0.28	0.1	0.35	0.42
TRC (mg/L) Instant Maximum	1.6	0.4	1.56	1.12	1.58	1.22	1.18	0.05	0.06	1.54	0.164	1.73	2.2
CBOD5 (mg/L) Average Monthly	25.0	11.9	4.5	11.3	12.7	19.7	24.1	78.6	24.5	18.4	4.0	6.8	3.0
Total Suspended Solids (mg/L) Average Monthly	30.0	8.6	6.7	12.8	10.3	98.0	24.9	343.8	19.6	9.2	10.5	15.1	5.2
Fecal Coliform (CFU/100 ml) May 1 - Sep 30 Geo Mean	200	X	X	X	X	177	2509	181273	89177	232	X	X	X
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30 Geo Mean	2000	197	2.0	99	6.0	X	X	X	X	X	118	1085	850
Fecal Coliform (CFU/100 ml) May 1 - Sep 30 Instant Maximum	1000	X	X	X	X	24196	68670	960600	1986300	24196	X	X	X
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30 Instant Maximum	10000	9678	4	9678	20	X	X	X	X	X	9678	11990	26130
Ammonia-Nitrogen (mg/L) May 1 - Oct 31 Average Monthly	Report	X	X	X	X	23.5	23.3	27.9	23.5	20.2	15.7	X	X
Ammonia-Nitrogen (mg/L) Nov 1 - Apr 30 Average Monthly	Report	10.6	19.2	24.7	< 19	X	X	X	X	X	X	4.3	< 2
Total Phosphorus (mg/L) Average Monthly	Report	1.1	1.7	2.8	4.2	5.8	5.7	5.4	5.8	3.3	1.7	2.2	2.1

Values in red are non—compliances.

2023 DMR Data for Outfall 001

Parameter	Limit	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
Flow (MGD) Average Monthly	Report	0.082	0.048	0.073	0.061	0.059	0.073	0.079	0.07	0.071	0.059	0.049	0.074
Flow (MGD) Daily Maximum	Report	0.318	0.080	0.110	0.179	0.199	0.126	0.253	0.248	0.277	0.169	0.202	0.321
pH (S.U.) Minimum	6.0	6.5	7.0	7.2	7.2	7.6	7.1	7.6	7.1	7.4	7.3	7.1	7.4
pH (S.U.) Maximum	9.0	8.2	7.9	8.7	8.9	8.9	8.5	8.9	8.9	7.7	7.9	8.4	7.9
Dissolved Oxygen Minimum	Report	8.8	7.4	8.6	7.7	7.2	6.1	5.6	7.1	6.6	6.7	6.6	6.2
TRC (mg/L) Average Monthly	0.5	0.11	0.032	0.72	0.57	0.62	0.48	0.48	0.70	0.49	0.41	0.49	0.45
TRC (mg/L) Instant Maximum	1.6	0.61	1.47	1.52	1.26	1.36	1.42	1.6	1.52	0.93	0.94	2.2	0.73
CBOD5 (mg/L) Average Monthly	25.0	8.4	5.6	5.2	3.7	3.0	1.0	1.0	4.0	3.0	4.3	3.0	3.0
Total Suspended Solids (mg/L) Average Monthly	30.0	4.2	9.1	2.6	5.8	5.3	1.7	4.5	5.6	2.7	25.6	5.5	2.9
Fecal Coliform (CFU/100 ml) May 1 - Sep 30 Geo Mean	200	X	X	X	X	15	3	5.0	3	3	X	X	X
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30 Geo Mean	2000	555	17	5	106	X	X	X	X	X	29	11	4
Fecal Coliform (CFU/100 ml) May 1 - Sep 30 Instant Maximum	1000	X	X	X	X	88	27	27	13	23	X	X	X
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30 Instant Maximum	10000	77010	100	8	1642	X	X	X	X	X	2420	31	10
Ammonia-Nitrogen (mg/L) May 1 - Oct 31 Average Monthly	Report	X	X	X	X	2.1	0.2	0.2	0.3	3.9	2.0	X	X
Ammonia-Nitrogen (mg/L) Nov 1 - Apr 30 Average Monthly	Report	< 0.2	0.1	< 0.2	< 0.6	X	X	X	X	X	X	1.0	1.5
Total Phosphorus (mg/L) Average Monthly	Report	2.9	4.0	3.0	3.6	34.5	4.4	4.6	4.7	2.5	2.2	6.0	24.2

Values in red are non—compliances.

4. Receiving Waters and Water Supply Information Detail Summary

4.1 Receiving Waters

The receiving waters has been determined to be the Juniata River. The sequence of receiving streams are the Juniata River and the Susquehanna River, which eventually drains into the Chesapeake Bay.

4.2 Public Water Supply (PWS) Intake

The nearest downstream public water supply intake is the Newport Borough intake located on the Juniata River approximately 18 miles from the discharge. Considering the distance and nature, the discharge is not expected to significantly affect the water supply.

4.3 Class A Wild Trout Streams

The receiving stream is not a Class A Wild Trout stream; therefore no Class A Wild Trout Fishery is impacted by this discharge.

4.4 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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.2
Latitude	40º 32' 19.56"	Longitude	-77º 23' 0.17"
Quad Name	Mifflintown	Quad Code	1426
Wastewater Description:	Sewage Effluent		
Receiving Waters	Juniata River	Stream Code	11414
NHD Com ID	66205977	RMI	31.48
Drainage Area	2840 mi^2	Yield (cfs/mi^2)	0.118
Q_{7-10} Flow (cfs)	336	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	404.37	Slope (ft/ft)	
Watershed No.	12-A	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Newport Borough		
PWS Waters	Juniata River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	~18 mi

Drainage Area

The discharge is to the Juniata River at RMI 31.48. A drainage area upstream of the discharge is determined to be 2840 sq.mi. according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/. See Attachment A.

Stream Flow

There is no USGS gauging station near the point of discharge that has recorded data recently. According to StreamStats, this area has a Q_{7-10} of 336 cfs and a drainage area of 2840 mi^2, which results in a LFY of 0.118 cfs/mi^2. This information was used to obtain a Q_{7-10}, a chronic 30-day (Q_{30-10}) and acute (Q_{1-10}) exposure stream flows for the discharge point as follows (Guidance No. 391-2000-023).

LFY = 336 cfs/2840 mi^2 = 0.118 cfs/mi^2
Q_{30-10} = 1.36 * 336 cfs = 457 cfs
Q_{1-10} = 0.64 * 336 cfs = 215 cfs

Juniata River

25 Pa Code §93.9 classifies The Juniata River as a WWF waterway. No special protection waters are impacted by this discharge. No local TMDL has been taken into consideration during this review.

Public Water Supply Intake

The nearest downstream public water supply intake is the Newport Borough intake located on the Juniata River approximately 18 miles from the discharge. Considering the distance and nature, the discharge is not expected to significantly affect the water supply.

Class A Wild Trout Streams

The receiving stream is not a Class A Wild Trout stream; therefore, no Class A Wild Trout Fishery is impacted by this discharge.

5. Development of Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements 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.

5.1 Technology Based Limits

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

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

5.2 Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen (DO)

WQM 7.0 is a water quality model DEP utilizes to establish appropriate effluent limits for CBOD5, NH3-N and DO in permits. The model simulates mixing and degradation of NH3-N in the stream and compares calculated instream NH3-N concentrations to NH3-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of CBOD5 and NH3N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits.

Total Residual Chlorine

Since chlorine is used for disinfection, Total Residual Chlorine (TRC) effluent levels must be regulated in accordance with 25 Pa Code §92a.48(b). DEP's TRC_CALC worksheet is utilized to determine if the existing BAT TBEL is still appropriate. The worksheet indicates that existing limits of 0.5 mg/L (average monthly) and 1.6 mg/L (IMAX) are still protective of water quality.

Toxics

DEP's NPDES permit application for minor sewages, such as Port Royal's facility, does not require sampling for heavy metals including Total Copper, Total Lead, and Total Zinc.

5.3 Best Professional Judgment (BPJ) Limitations

Dissolved Oxygen

The current permit requires reporting instantaneous minimum of DO daily. It is recommended that an instantaneous minimum of 5.0 mg/L be added to the draft permit for Dissolved Oxygen. This requirement has also been assigned to other sewage facilities in the region. 5.0 mg/L is taken directly from 25 Pa. Code § 93.7(a) and it is also determined to be appropriate according to water quality modeling. In reviewing, the facility's DMR's for the previous permit cycle, a minimum of 5.0 mg/l is consistently attainable.

Total Phosphorus & Total Nitrogen

DEP's SOP no. BPNPSM-PMT-033 recommends monitoring requirements for Total Phosphorus and Total Nitrogen for all sewage facilities. Therefore, a routine monitoring for TKN, Nitrate-Nitrite and Total Nitrogen is recommended to be continued in this permit renewal.

5.4 Additional Considerations

Flow Monitoring

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

Chesapeake Bay TMDL

The Department formulated a strategy in April 2007, to comply with the EPA's and Chesapeake Bay Foundation's requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers received annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) facilities were required to monitor and report TN and TP during permit renewal at a monitoring frequency following Table 6-3 of DEP's Technical Guidance for Development and Specification of effluent Limitations (No. 362-0400-001).

EPA published the Chesapeake Bay Total Maximum Daily Load (TMDL) in December of 2010. Despite extensive restoration efforts during the past 25 years, the TMDL was prompted by insufficient progress and continued poor water quality in the Chesapeake Bay and its tidal tributaries.

In order to address the TMDL, Pennsylvania developed, in addition to the Bay Strategy, a Chesapeake Watershed Implementation Plan (WIP) Phase 1 in January 2011 and Phase 2 in March 2012. In accordance with the Phase 2 WIP and its supplement, re-issuing permits for significant dischargers follow the same phased approach formulated in the original Bay strategy, whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewal.

The Phase 2 WIP categorizes this facility as a phase 4 non-significant sewage facility that has a design flow less than 0.4 MGD but greater than or equal to 0.2 MGD. The WIP recommends monitoring and reporting for Total Nitrogen and Total Phosphorus throughout the permit term at a frequency no less than bi-monthly. The existing weekly testing of these pollutants is proposed to continue in this permit.

Monitoring Frequency and Sample Type

The facility currently is required to collect weekly 8-hr composite effluent samples. The existing monitoring frequencies for all pollutants will remain the same as those specified in the existing permit.

Mass Loading Limitations

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

Antidegradation Requirements

All effluent limitations and monitoring requirements have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected.

Anti-backsliding Requirement

All effluent limits proposed in this fact sheet are as stringent as effluent limits specified in the existing permit

6. Proposed NPDES Parameter Details

The proposed effluent limitations and monitoring requirements listed below for the draft permit, are unchanged from the current permit limits, as shown in section 2.1 with the exception that an instantaneous minimum of 5.0 mg/L for Dissolved Oxygen be added to the draft permit. Refer to the tables below.

Proposed Effluent Limitations and Monitoring Requirements

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 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	0.5	XXX	1.6	1/day	Grab
CBOD5	42	67 Wkly Avg	XXX	25.0	40.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	50	75 Wkly Avg	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
Ammonia-Nitrogen Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Ammonia - May 1 - Oct 31	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite

Compliance Sampling Location: Outfall 001

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia –N	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Kjeldahl –N	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite

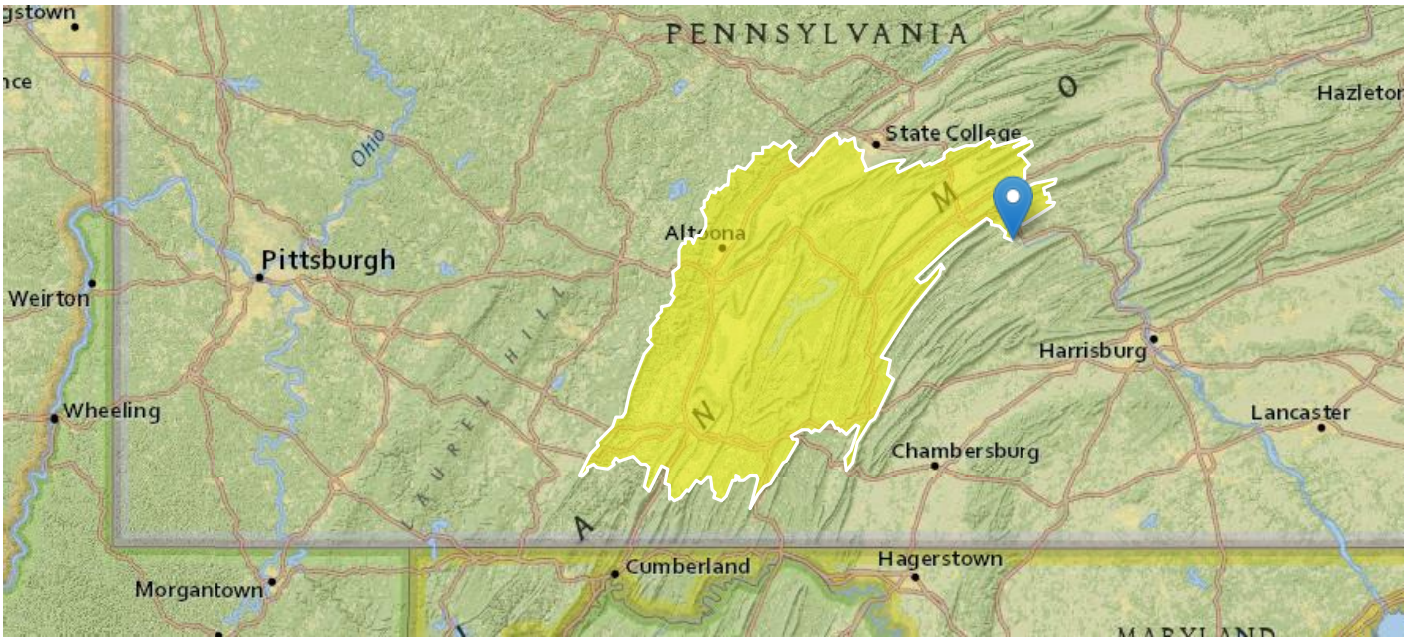
Compliance Sampling Location: Outfall 001

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

Attachment A

StreamStats Report Port Royal Municipal Authority, Juniata County, PA

Region ID: PA
Workspace ID: PA20240303150959693000
Clicked Point (Latitude, Longitude): 40.53843, -77.38328
Time: 2024-03-03 10:10:28 -0500



Outfall 001 NPDES PA0020648

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	18.68	percent
DRNAREA	Area that drains to a point on a stream	2840	square miles
PRECIP	Mean Annual Precipitation	39	inches
ROCKDEP	Depth to rock	4.5	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.94	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	2840	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
STRDEN	Stream Density	1.94	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	18.68	percent	0	99

Low-Flow Statistics Disclaimers [Low Flow Region 2]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	504	ft^3/s
30 Day 2 Year Low Flow	609	ft^3/s
7 Day 10 Year Low Flow	336	ft^3/s
30 Day 10 Year Low Flow	407	ft^3/s
90 Day 10 Year Low Flow	521	ft^3/s

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 Effluent Limits

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
31.480	Port Royal WWTP	PA0020648	0.200	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
11414	JUNIATA RIVER	**31.480**	404.37	2840.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.100	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 (ºC)	Disc pH
Port Royal WWTP	PA0020648	0.2000	0.2000	0.2000	0.000	25.00	7.00

Parameter Data

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

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
11414	JUNIATA RIVER	**31.030**	404.30	2842.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.100	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 (ºC)	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

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
11414	JUNIATA RIVER	**29.280**	404.00	2845.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.100	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 (ºC)	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

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
11414	JUNIATA RIVER	**28.500**	403.50	3850.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.100	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 (ºC)	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 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (ºC)	Analysis pH
Q7-10 Flow												
31.480	284.00	0.00	284.00	.3094	0.00003	1.279	342.16	267.5	0.65	0.042	20.01	7.00
31.030	284.20	0.00	284.20	.3094	0.00003	1.276	341.37	267.57	0.65	0.164	20.01	7.00
29.280	284.50	0.00	284.50	.3094	0.00012	1.232	328.86	266.84	0.70	0.068	20.01	7.00
Q1-10 Flow												
31.480	272.64	0.00	272.64	.3094	0.00003	NA	NA	NA	0.63	0.043	20.01	7.00
31.030	272.83	0.00	272.83	.3094	0.00003	NA	NA	NA	0.64	0.167	20.01	7.00
29.280	273.12	0.00	273.12	.3094	0.00012	NA	NA	NA	0.69	0.069	20.01	7.00
Q30-10 Flow												
31.480	315.24	0.00	315.24	.3094	0.00003	NA	NA	NA	0.69	0.040	20.00	7.00
31.030	315.46	0.00	315.46	.3094	0.00003	NA	NA	NA	0.69	0.154	20.00	7.00
29.280	315.80	0.00	315.80	.3094	0.00012	NA	NA	NA	0.74	0.064	20.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.96	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		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
12B	11414	JUNIATA RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
31.480	Port Royal WWT	16.75	50	16.75	50	0	0
31.030		NA	NA	16.75	NA	NA	NA
29.280		NA	NA	16.75	NA	NA	NA

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
31.480	Port Royal WWT	1.89	25	1.89	25	0	0
31.030		NA	NA	1.89	NA	NA	NA
29.280		NA	NA	1.89	NA	NA	NA

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
31.48	Port Royal WWTP	25	25	25	25	5	5	0	0
31.03		NA	NA	NA	NA	NA	NA	NA	NA
29.28		NA	NA	NA	NA	NA	NA	NA	NA

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
31.480	0.200	20.005	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
342.163	1.279	267.498	0.650
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.03	0.020	0.03	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.239	0.089	Tsivoglou	5
Reach Travel Time (days)			
0.042			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.004	2.02	0.03	8.24
0.008	2.02	0.03	8.24
0.013	2.02	0.03	8.24
0.017	2.02	0.03	8.24
0.021	2.02	0.03	8.24
0.025	2.02	0.03	8.24
0.030	2.02	0.03	8.24
0.034	2.02	0.03	8.24
0.038	2.02	0.03	8.24
0.042	2.02	0.03	8.24

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
31.030	0.200	20.005	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
341.371	1.276	267.575	0.653
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.02	0.017	0.03	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.237	0.099	Tsivoglou	5
Reach Travel Time (days)			
0.164			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.016	2.02	0.03	8.24
0.033	2.02	0.03	8.24
0.049	2.02	0.03	8.23
0.065	2.02	0.03	8.23
0.082	2.02	0.02	8.23
0.098	2.02	0.02	8.23
0.115	2.02	0.02	8.23
0.131	2.02	0.02	8.23
0.147	2.02	0.02	8.23
0.164	2.02	0.02	8.23

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
29.280	0.200	20.005	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
328.858	1.232	266.836	0.703
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.02	0.014	0.02	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.230	0.398	Tsivoglou	5
Reach Travel Time (days)			
0.068			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.007	2.02	0.02	8.23
0.014	2.02	0.02	8.23
0.020	2.02	0.02	8.24
0.027	2.02	0.02	8.24
0.034	2.02	0.02	8.24
0.041	2.02	0.02	8.24
0.047	2.02	0.02	8.24
0.054	2.02	0.02	8.24
0.061	2.02	0.02	8.24
0.068	2.02	0.02	8.24

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

336	= Q stream (cfs)	0.5	= CV Daily
0.2	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 346.444	1.3.2.iii	WLA cfc = 337.749
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 129.093	5.1d	LTA_cfc = 196.351

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

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)