

Application Type Renewal
 Facility Type Non-Municipal
 Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0081043
 APS ID 571718
 Authorization ID 1424680

Applicant and Facility Information

Applicant Name	<u>Guardian Elder Care Inc.</u>	Facility Name	<u>Bridges at Brookline</u>
Applicant Address	<u>8796 U S 219</u> <u>Brockway, PA 15824</u>	Facility Address	<u>2 Manor Boulevard</u> <u>Mifflintown, PA 17059-8757</u>
Applicant Contact	<u>Eddy Inzana</u>	Facility Contact	<u>Steve Sauers</u>
Applicant Phone	<u>(717) 436-2178</u>	Facility Phone	<u>(717) 436-2178</u>
Client ID	<u>86369</u>	Site ID	<u>444085</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Fermanagh Township</u>
Connection Status		County	<u>Juniata</u>
Date Application Received	<u>January 25, 2023</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>February 2, 2023</u>	If No, Reason	
Purpose of Application	<u>NPDES Renewal</u>		

Summary of Review

Guardian Elder Care (GEC) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit for the Bridges at Brookline STP. The permit was last reissued to GEC on August 30, 2018. The permit expired on August 31, 2023 but the terms and conditions of the permit have been administratively extended since that time.

Based on the review outlined in this fact sheet, it is recommended that the permit be drafted and a notice of the draft permit be published in the *Pennsylvania Bulletin* for public comments for 30 days. A file review of documents associated with the discharge or permittee may be available at the PA DEP southcentral regional office (SCRO), 909 Elmerton Avenue, Harrisburg, PA 17110. To make an appointment for file reviews, contact the SCRO file review coordinator at 717.705.4700.

Sludge use and disposal description and location(s): Hauled offsite to Granville Township

Public Participation

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

Approve	Deny	Signatures	Date
x		Aaron Baar Aaron Baar / Project Manager	April 17, 2024
x		Maria D. Bebenek for Daniel W. Martin, P.E. / Environmental Engineer Manager	April 22, 2024

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	.024
Latitude	40° 36' 24.21"	Longitude	-77° 21' 47.79"
Quad Name	Mexico	Quad Code	1427
Wastewater Description: Sewage Effluent			
Receiving Waters	Big Run (CWF)	Stream Code	12312
NHD Com ID	66204475	RMI	0.3
Drainage Area	5.52 sq. mi	Yield (cfs/mi ²)	0.049
Q ₇₋₁₀ Flow (cfs)	0.271	Q ₇₋₁₀ Basis	
Elevation (ft)	513.56	Slope (ft/ft)	
Watershed No.	12-A	Chapter 93 Class.	CWF
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 Water System		
PWS Waters	Juniata River	Flow at Intake (cfs)	
PWS RMI	12.72	Distance from Outfall (mi)	28.19

Changes Since Last Permit Issuance: No changes since the last issuance of the GEC's NPDES permit.

Drainage Area

The discharge is to Big Run at RMI 0.30. A drainage area upstream of the discharge is determined to be 5.52 sq.mi. according to USGS PA StreamStats available at <https://streamstats.usgs.gov/ss/>.

Stream Flow

According to StreamStats, the watershed has a Q₇₋₁₀ of 0.271 cfs. This information was used to obtain a LFY, a chronic 30-day (Q₃₀₋₁₀) and acute (Q₁₋₁₀) exposure stream flows for the discharge point as follows (Guidance No. 391-2000-023).

$$\begin{aligned}
 Q_{7-10} &= 0.271 \text{ cfs} \\
 Q_{30-10} &= 1.36 * 0.271 \text{ cfs} = 0.369 \text{ cfs} \\
 Q_{1-10} &= 0.64 * 0.271 \text{ cfs} = 0.173 \text{ cfs} \\
 LFY &= 0.271 \text{ cfs}/5.52 \text{ mi}^2 = 0.049 \text{ cfs/mi}^2
 \end{aligned}$$

Big Run

25 Pa Code §93.9 classifies the receiving water, Big Run, with a CWF/MF Existing Use designation. No special protection waters are impacted by this discharge. The discharge is in a stream segment listed as not attaining use (impaired recreation) in the 2024 Integrated Report; the source of the impairment has been identified as pathogens (source unknown). Effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected.

Local Watershed Total Maximum Daily Loads (TMDLs)

According to PA's 2024 Integrated Water Quality Monitoring and Assessment Report, Big Run in the vicinity of the point of discharge is impaired for recreation (pathogens). The impairment is listed as Category 5 in the 2024

integrated report, indicating that UNT to the Big Run is impaired for one or more uses by a pollutant that require the development of a TMDL. A TMDL for this waterway has not been developed to date.

Public Water Supply Intake

The nearest downstream public water supply intake is the Newport Borough Water System intake located on the Juniata River approximately 12.7 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.

Treatment Facility Summary				
Treatment Facility Name: Bridges At Brookline STP				
WQM Permit No.	Issuance Date			
3489404	1990			
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.024
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.024		Not Overloaded	Aerobic Digestion	Other WWTP

GEC owns and operates the sanitary wastewater treatment facility located in Fermanagh Township, Juniata County. The facility only serves the Bridges at Brookline Retirement Home, all wastes are residential/commercial in nature, and all sewer systems are 100% separated. With having both annual average design flow and hydraulic design capacity of 0.024 MGD, this facility utilizes an extended aeration system consisting of:

- One Comminutor
- One EQ tank
- Two aeration tanks
- One settling tank
- One chlorine contact tank
- One sludge holding tank

Calcium Hypochlorite is used for disinfection; no other treatment additives are identified in the application.

Compliance History	
Summary of DMRs:	DMR results for the past year are presented below.
Summary of Inspections:	<p>Since the last renewal of the facility's NPDES permit, the following inspections have been logged:</p> <p>May 13, 2020: An Administrative Inspection was conducted by telephone/email by Michael Benham. No violations were noted.</p> <p>November 17, 2020: An Administrative Inspection was conducted by telephone/email by Michael Benham. No violations were noted.</p> <p>May 17, 2023: A Compliance Evaluation Inspection was conducted by Brandon Bettinger. No violations were noted.</p>

Other Comments: As of April 27, 2024, there are no open violations associated with this facility.

Existing Effluent Limitations and Monitoring Requirements

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		
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
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50	2/month	24-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Nitrate-Nitrite (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Calculation
Total Nitrogen (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Ammonia	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	21.0	XXX	XXX	2/month	24-Hr Composite
Ammonia (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation
TKN	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
TKN (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation

Compliance Sampling Location: 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		
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 001

Compliance History

DMR Data for Outfall 001 (from March 1, 2023 to February 29, 2024)

Parameter	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23
Flow (MGD) Average Monthly	0.0012	0.013	0.012	0.010	0.013	0.021	0.018	0.016	0.013	0.0131	0.011	0.0233
Flow (MGD) Daily Maximum	0.0031	0.03	0.032	0.032	0.019	0.025	0.058	0.036	0.024	0.0309	0.016	0.097
pH (S.U.) Daily Minimum	6.43	6.39	6.38	6.73	6.99	6.95	6.39	6.91	6.93	6.94	6.47	6.18
pH (S.U.) Daily Maximum	8.67	7.97	8.62	9.0	8.79	8.37	8.75	8.87	8.41	8.46	8.27	8.12
DO (mg/L) Daily Minimum	8.67	7.31	7.48	7.78	8.17	7.94	7.2	7.67	7.46	8.17	8.66	8.81
TRC (mg/L) Average Monthly	0.4	0.3	0.3	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.3
TRC (mg/L) Instantaneous Maximum	1.0	0.83	0.95	0.41	0.26	0.7	0.48	0.75	0.35	0.31	1.34	1.18
CBOD5 (mg/L) Average Monthly	< 3.4	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 5.7	< 3.0	< 3.0	< 3.0	< 3.0	8.6
TSS (mg/L) Average Monthly	< 3.2	< 2.2	3.4	5.6	3.0	< 1.6	< 1.6	< 1.8	6.8	3.4	6.0	< 2.6
Fecal Coliform (No./100 ml) Geometric Mean	< 2	2	< 1	4	< 1	< 1	< 1	< 1	< 1	2	2	< 3
Fecal Coliform (No./100 ml) Instantaneous Maximum	4.1	4.1	< 1	14.5	< 1	1	< 1	< 1	< 1	5.2	3.1	6.3
Nitrate-Nitrite (mg/L) Average Quarterly			< 18.64			< 2.4			< 13.76			< 6.344
Nitrate-Nitrite (lbs) Total Quarterly			< 62.6			< 8.1			< 44.8			< 30.8
Total Nitrogen (mg/L) Average Quarterly			< 19.14			< 4.355			< 14.26			< 6.844
Total Nitrogen (lbs) Total Quarterly			< 64.3			< 14.6			< 46.4			< 33.3
Total Nitrogen (lbs) Total Annual						< 33.3						
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1412	< 0.1	< 0.186	< 0.214	< 0.302

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Brookline Manor Retirement**

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Ammonia (mg/L) Average Quarterly			< 0.1			0.1704			< 0.1			< 0.1
Ammonia (lbs) Total Quarterly			< 0.3			0.6			< 0.3			< 0.5
Ammonia (lbs) Total Annual						< 0.5						
TKN (mg/L) Average Quarterly			< 0.5			1.955			< 0.5			< 0.5
TKN (lbs) Total Quarterly			< 1.7			6.6			< 1.6			< 2.4
Total Phosphorus (mg/L) Average Quarterly			1.55			2.13			2.82			1.71
Total Phosphorus (lbs) Total Quarterly			5.2			7.2			9.2			8.3
Total Phosphorus (lbs) Total Annual						8.3						

Development of Effluent Limitations

Outfall No. <u>001</u>	Design Flow (MGD) <u>.024</u>
Latitude <u>40° 36' 33.54"</u>	Longitude <u>-77° 21' 34.76"</u>
Wastewater Description: <u>Sewage Effluent</u>	

Technology-Based Limitations

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

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

Comments: These standards apply, subject to water quality analysis and BPJ where applicable.

Water Quality-Based Limitations

CBOD₅, NH₃-N and Dissolved Oxygen (DO)

WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD₅, NH₃-N and DO. DEP's guidance no. 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. The model was utilized, and the model output indicated that existing TBEL of 25 mg/L for CBOD₅ is still appropriate. However, the output indicated that the existing summer WQBELs for NH₃-N is no longer protective of water quality. This permit proposes a new summertime limit of 20 mg/L for NH₃-N. A review of the facility's DMR records indicates that the existing facility is already able to meet the proposed stricter limit. Winter reporting limits for ammonia will continue as in the previous permit.

The model indicates that the existing DO limit of 5.0 mg/L is still protective of water quality.

Toxics

DEP's NPDES permit application for minor sewage facilities (less than 0.1 MGD) does not require sampling for heavy metals including Total Copper, Total Lead, and Total Zinc unless the facility receives commercial or industrial wastewater. According to the description of the services provided to residents of Bridges at Brookline, commercial-equivalent laundry and kitchen/restaurant facilities are operated onsite and contribute flows to the STP. The permittee was asked to sample for Total Copper, Total Iron, and Total Zinc; the test results were analyzed with the Toxics Management Spreadsheet. The results (below) indicate no need for monitoring or limits for Total Copper, Total Iron, and Total Zinc at this time.

Other Pollutants without Limits or Monitoring

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)		mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)		mg/L	Discharge Conc ≤ 10% WQBEL
Sulfate (PWS)		mg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	74.5	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	637	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	74.5	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	26.4	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	637	µg/L	Discharge Conc ≤ 10% WQBEL

Best Professional Judgment (BPJ) Limitations

Total Phosphorus & Total Nitrogen

DEP’s SOP no. BPNPSM-PMT-033 (Establishing Effluent Limitations for Individual Sewage Permits) recommends monitoring requirements for Total Phosphorus and Total Nitrogen for all sewage facilities. Therefore, a routine monitoring for TKN, Nitrate-Nitrite, and TN are recommended to be continued in this permit. Sampling frequency for TKN, Nitrate-Nitrite, TN, and TP are currently required 1/quarter. No change is proposed in this renewal.

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 was utilized to determine if the existing limits are still appropriate. The worksheet indicated that existing limits for TRC (0.6 mg/L AVG/1.6 mg/L Peak Instant) are still protective of water quality. No change is proposed.

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).

E. Coli Monitoring

In conformity with the Department’s *Establishing Effluent Limitations for Individual Sewage Permits* (SOP No. BCW-PMT-033) and as authorized by § 92a.61 of the PA Code, annual E. Coli monitoring has been proposed in this permit. The collection method will be via grab sample.

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 0.2mgd) 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, Phase 2 in March 2012 and Phase 3 in December 2019. In accordance with the Phase 3 WIP, 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 3 WIP categorizes this facility as a phase 5 non-significant sewage facility that has a design flow less than 0.2 MGD but greater than 0.002 MGD. The WIP recommends monitoring and reporting for Total Nitrogen and

Total Phosphorus throughout the permit term at a frequency no less than annual. As discussed previously, twice monthly testing of these pollutants is proposed in this permit.

Monitoring Frequency and Sample Type

Unless discussed otherwise above, the permit's monitoring frequency and sample type for all parameters will remain unchanged from the last permit renewal.

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 renewal. This approach is in accordance with 40 CFR §122.44(l)(1).

Annual Fees

An annual fee clause was added to the permit in accordance with 25 Pa. Code § 92a.62. The facility covered by the permit is classified in the Minor Sewage Facility <0.05 MGD fee category, which has an annual fee of \$500.

eDMR Reporting

A requirement has been added to the permit requiring the submission of all DMRs and Supplemental Forms through the eDMR system. The facility has already been utilizing the eDMR system since 2017.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	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
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50	2/month	24-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Nitrate-Nitrite (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Calculation
Total Nitrogen (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Ammonia	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	20.0	XXX	XXX	2/month	24-Hr Composite
Ammonia (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation
TKN	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
TKN (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation

Compliance Sampling Location: Outfall 001

Proposed Effluent Limitations and Monitoring Requirements

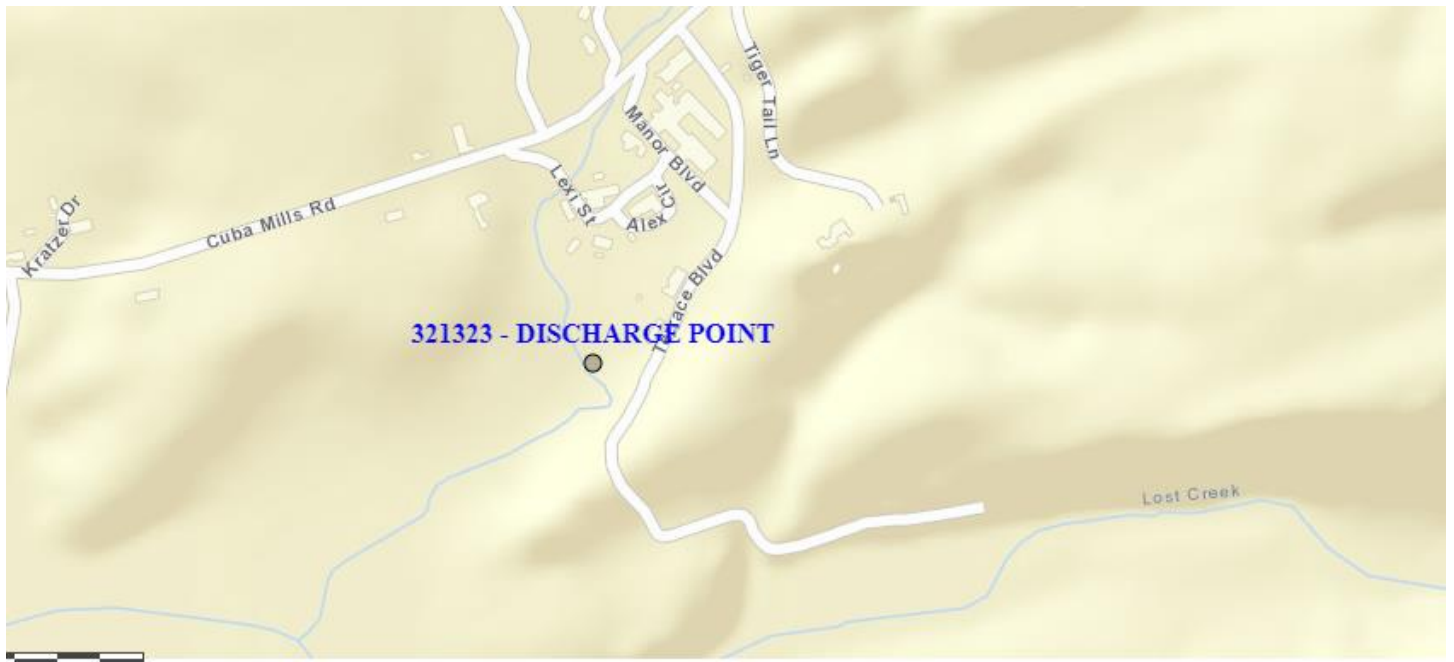
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

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

Compliance Sampling Location: Outfall 001

Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment [redacted])
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment [redacted])
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input checked="" type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 386-2000-002, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Design Stream Flows, 386-2000-003, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input type="checkbox"/>	SOP: [redacted]
<input type="checkbox"/>	Other: [redacted]



1A	B	C	D	E	F	G
2	TRC EVALUATION					
3	Input appropriate values in B4:B8 and E4:E7					
4	0.271	= Q stream (cfs)		0.5	= CV Daily	
5	0.024	= 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 Dischar		15	= AFC_Criteria Compliance Time (min)	
9	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 = 2.347		1.3.2.iii	WLA cfc = 2.281
#	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
#	PENTOXSD TRG	5.1b	LTA_afc= 0.875		5.1d	LTA_cfc = 1.326
#	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)				

StreamStats Report

Region ID: PA
 Workspace ID: PA20240416113845440000
 Clicked Point (Latitude, Longitude): 40.60913, -77.35961
 Time: 2024-04-16 07:39:06 -0400



[+ Collapse All](#)

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	5.52	square miles
PRECIP	Mean Annual Precipitation	43	inches
ROCKDEP	Depth to rock	4.1	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.36	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	5.52	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	43	inches	35	50.4
STRDEN	Stream Density	1.36	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.1	feet	3.32	5.65
CARBON	Percent Carbonate	0	percent	0	99

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

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.683	ft ³ /s	38	38
30 Day 2 Year Low Flow	0.958	ft ³ /s	33	33
7 Day 10 Year Low Flow	0.276	ft ³ /s	51	51
30 Day 10 Year Low Flow	0.395	ft ³ /s	46	46
90 Day 10 Year Low Flow	0.671	ft ³ /s	36	36

Low-Flow Statistics Citations

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

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StreamStats Report

Region ID: PA
 Workspace ID: PA20240416114036932000
 Clicked Point (Latitude, Longitude): 40.60674, -77.36313
 Time: 2024-04-16 07:40:59 -0400



[+ Collapse All](#)

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	5.56	square miles
PRECIP	Mean Annual Precipitation	43	inches
ROCKDEP	Depth to rock	4.1	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.4	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	5.56	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	43	inches	35	50.4
STRDEN	Stream Density	1.4	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.1	feet	3.32	5.65
CARBON	Percent Carbonate	0	percent	0	99

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

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.67	ft ³ /s	38	38
30 Day 2 Year Low Flow	0.942	ft ³ /s	33	33
7 Day 10 Year Low Flow	0.271	ft ³ /s	51	51
30 Day 10 Year Low Flow	0.387	ft ³ /s	46	46
90 Day 10 Year Low Flow	0.658	ft ³ /s	36	36

Low-Flow Statistics Citations

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

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WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
12A		12312		BIG 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)
0.300	Bridges at Broo	PA0081043	0.024	CBOD5	25		
				NH3-N	20.02	40.04	
				Dissolved Oxygen			5

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
12A	12312	BIG 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
	0.300 Bridges at Broo	15.58	50	15.58	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
	0.300 Bridges at Broo	1.83	20.02	1.83	20.02	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
	0.30 Bridges at Broo	25	25	20.02	20.02	5	5	0	0

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
12A	12312	BIG RUN		
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
0.300	0.024	20.602	7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
8.940	0.426	20.963	0.081	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
4.77	0.885	2.41	0.733	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
7.852	19.746	Owens	6	
<u>Reach Travel Time (days)</u>	Subreach Results			
0.226	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.023	4.67	2.37	8.02
	0.045	4.58	2.33	8.14
	0.068	4.49	2.30	8.15
	0.090	4.39	2.26	8.15
	0.113	4.31	2.22	8.15
	0.136	4.22	2.18	8.15
	0.158	4.13	2.15	8.15
	0.181	4.05	2.11	8.15
	0.203	3.97	2.08	8.15
	0.226	3.88	2.04	8.15

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	6		

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
12A		12312				BIG RUN						
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
Q7-10 Flow												
0.300	0.27	0.00	0.27	.0371	0.01308	.426	8.94	20.96	0.08	0.226	20.60	7.00
Q1-10 Flow												
0.300	0.17	0.00	0.17	.0371	0.01308	NA	NA	NA	0.07	0.280	20.88	7.00
Q30-10 Flow												
0.300	0.37	0.00	0.37	.0371	0.01308	NA	NA	NA	0.09	0.194	20.46	7.00

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
12A	12312	BIG RUN	0.300	513.56	5.52	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.100	0.00	0.27	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Bridges at Broo	PA0081043	0.0240	0.0240	0.0240	0.000	25.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
12A	12312	BIG RUN	0.001	492.91	5.56	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.100	0.00	0.28	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

