pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0082759**
Facility Type	**Municipal**	APS ID	**277977**
Major / Minor	**Minor**	Authorization ID	**1406885**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Hopewell Township Huntingdon County**	Facility Name	**Shy Beaver Lakeview Estates**
Applicant Address	1115 Dorman Road	Facility Address	Timberlake Drive
	James Creek, PA 16657-9512		James Creek, PA 16657
Applicant Contact	Roy Smuda	Facility Contact	Roy Smuda
Applicant Phone	(814) 658-3769	Facility Phone	(814) 658-3769
Client ID	44221	Site ID	453261
Ch 94 Load Status	Not Overloaded	Municipality	Hopewell Township
Connection Status	No Limitations	County	Huntingdon
Date Application Received	August 17, 2022	EPA Waived?	Yes
Date Application Accepted	August 18, 2022	If No, Reason	

Purpose of Application: NPDES permit renewal.

Summary of Review

GHD, Inc., on behalf of Hopewell Township Huntingdon County, applied to the Pennsylvania Department of Environmental Protection (DEP) for issuance of the NPDES permit. The permit was reissued on June 22, 2018 and became effective on July 1, 2018. The permit expires on June 30, 2023.

The facility has an average annual design flow and a hydraulic design capacity of 0.0063 MGD. The authorizing discharge of treated sewages from the existing treatment plant located in Hopewell Township, Huntingdon County into Unnamed Tributary to Shy Beaver Creek. This facility serves 100% of Hopewell Township.

The WQM Part II Permit No. 3190402 was issued on July 23, 1990.

Sludge use and disposal description and location(s): N/A due to the sludge is hauled by Lake's Septic to Huntingdon Borough WWTP.

Changes from the previous permit: The E. Coli. monitoring and report requirements will add to the permit.

Based on the review outline in this fact sheet, it is recommended that the permit be drafted and published in the Pennsylvania Bulletin for public comments for 30 days.

Approve	Deny	Signatures	Date
X		*Hilaryle* Hilary H. Le / Environmental Engineering Specialist	May 5, 2023
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	May 26, 2023

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.0063
Latitude	40º 17' 52.00"	Longitude	-78º 12' 42.00"
Quad Name	Entriken	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Shy Beaver Creek/Shy Beaver Creek (WWF & MF)	Stream Code	13677 / 13673
NHD Com ID	65841309 / 65841211	RMI	0.18 / 1.4 miles
Drainage Area	10.3 mi.^{2}	Yield (cfs/mi^2)	0.02
Q_{7-10} Flow (cfs)	0.212	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	783.8 / 786.5	Slope (ft/ft)	
Watershed No.	11-D	Chapter 93 Class.	WWF, MF
Existing Use	**none**	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	Mifflintown Water Systems, Juniata County		
PWS Waters	Juniata River	Flow at Intake (cfs)	
PWS RMI	37.37 miles	Distance from Outfall (mi)	Approximate 85.0 miles

Changes Since Last Permit Issuance:

Drainage Area
The discharge is to Shy Beaver Creek at RMI 1.4 miles. A drainage area upstream of the discharge is estimated to be 10.3 mi.^{2}, according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
According to StreamStats, the point of first use has a Q_{7-10} of 0.212 cfs and a drainage area of 10.3 mi.^{2}, which results in a Q_{7-10} low flow yield of 0.02 cfs/mi.^{2}. This information is used to obtain a chronic or 30-day (Q_{30-10}), and an acute or 1-day (Q_{1-10}) exposure stream flow for the discharge point as follows (Guidance No. 391-2000-023):

Q_{7-10} = 0.21 cfs
Low Flow Yield = 0.21 cfs / 10.3 mi.^{2} = 0.02 cfs/mi.^{2}
Q_{30-10} = 1.36 * 0.21 cfs = 0.29 cfs
Q_{1-10} = 0.64 * 0.21 cfs = 0.13 cfs

The resulting dilution ratio (under Q_{7-10} conditions) = 0.212 cfs / [0.0063 MGD * (1.55 cfs/MGD)] = 21.7:1

UNT to Shy Beaver Creek to Raystown Branch Juniata River
25 Pa. Code § 93.9n classifies UNT to Shy Beaver Creek to Raystown Branch Juniata River as warm water & migratory fishes (WWF & MF) surface water. Based on the 2022 Integrated Report, Raystown Branch Juniata River, assessment unit ID 6973, is not impaired. A TMDL currently does not exist for this stream segment, therefore, no TMDL has been taken into consideration during this review.

PWS Intake:
The nearest downstream public water supply intake is Mifflintown Water Systems in Juniata County at RMI 85.0 miles downstream of the discharge. The discharge will not impact the intake because of the distance, dilution, and effluent limits.

Treatment Facility Summary

Treatment Facility Name: Hopewell Township Shy Beaver STP

WQM Permit No.	Issuance Date
3190402	7/23/1990

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Phosphorus Reduction	Extended Aeration	Hypochlorite	0.0063

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0063	12	Not Overloaded	Aerobic Digestion	Combination of methods

Changes Since Last Permit Issuance:

Other Comments:

Per DEP's recent visit to the WWTP on April 14, 2022, the treatment facility is a Dutchland manufactured Norweco® package extended aeration plant consisting of the following units:

- One comminutor
- One EQ tank
- Three aeration tanks
- One clarifier
- One sand filter
- One chlorine contact tank
- Three blowers

The following chemicals are used in the treatment process: Aluminum Sulfate for Coagulant & Flocculating agent, and Chlorine for disinfection.

The treatment plant started operation in early 90's. The STP serves a residential development at the Shy Beaver Boat Launch area on the Raystown Lake. On April 10, 1986, the aquatic biologist checked the original STP site, which was upstream of existing STP, and determined the Point of First Use (POFU) was at discharge point. On May 19, 1986, the hydrogeologist evaluated the site and determined that a potential groundwater problem could result for the downstream lot owners if these lots were built on with private wells. He also determined that the stream was a "losing stream" and that it would probably be dry during dry summer months.

By 1990, the developer relocated the STP and outfall downstream of any proposed building site to avoid contaminating wells. A POFU survey was again conducted for new location and concluded that the receiving stream, UNT to Shy Beaver Creek, is a dry stream and POFU was at the confluence with Shy Beaver Creek, which is approximately 0.18 mile downstream and the beginning of the Shy Beaver embayment of the Raystown Lake.

The discharge limits were based on DEP's Dry Stream guidance (391-2000-014). The average annual design flow (AADF) is 0.0063 MGD but the planning approval was for 0.015 MGD. The limits will be based on AADF.

The existing permit was amended on March 25, 2014 to change the sample type from 24-hr composite to grab due to difficulty in composite sampling. The intermittent flow from the plant made composite sampling very difficult. Grab sampling will be carried over in this renewal since the flow condition has not changed.

Industrial/Commercial Users:
The permit application indicated there is no industrial/commercial contributor to the treatment plant.

Biosolids:
The total sewage sludge /biosolids production within the facility for the previous year was 0.211 dry tons.

Compliance History	
Summary of DMRs:	A summary of past 12-month DMRs is presented on page 5 & 6.
Summary of Inspections:	**4/14/2022:** Mr. Clark, DEP's WQS, conducted a compliance evaluation inspection. The field test results were within permitted limits. The recommendations were to resubmit the Biosolids Disposal supplemental form of May 2020 DMR, and the hauler's receipts. **5/8/2021:** Mr. Clark, DEP's WQS, conducted a compliance evaluation inspection. The field test results were within permitted limits. The recommendations were to revise the December 2020 & January 2021 eDMR & correct the phosphorus value reported on the DMR and effluent supplemental form, post a valid operator certification in the control building, and keep a copy of the NPDES permit at the treatment plant. **6/24/2019:** Mr. Clark, DEP's WQS, conducted a compliance evaluation inspection. The field test results were within permitted limits. There were no violations noted during inspection.
Other Comments:	There are two open violations against the facility or the permittee. - 04/14/2022: violation code 271.918 – Biosolids-Permittee violated the record keeping requirements. - 1/31/2023: violation Code 92A.44 - NPDES violation of effluent limits in Part A of permit.

Other Comments:

- TSS concentration (mg/L) monthly average & weekly average were exceeded on April, May, June, July, September, October, November, and December 2022.
- $CBOD_5$ concentration (mg/L) monthly average & weekly average were exceeded on May 2022.
- Phosphorus mass (lbs/day) monthly average was exceeded on July 2022.

However, the Department was received a letter from GHD's Hopewell Township Shy Beaver WWTF consultant dated on 2/15/2023 to response the NOV from the Department dated 1/31/2023 (please see screen print, this factsheet page 15).

Compliance History

DMR Data for Outfall 001 (from April 1, 2022 to March 31, 2023)

Parameter	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22
Flow (MGD) Average Monthly	0.0016	0.0008	0.0019	0.0011	0.0011	0.0012	0.0008	0.0021	0.0024	0.0012	0.0021	0.0014
Flow (MGD) Daily Maximum	0.0094	0.0024	0.0081	0.0036	0.0039	0.007	0.0013	0.0053	0.0054	0.0021	0.0155	0.0047
pH (S.U.) Daily Minimum	6.3	6.3	6.1	6.2	6.1	6.2	6.3	6.1	6.3	6.4	7.3	6.2
pH (S.U.) Daily Maximum	8.3	8.8	8.6	8.7	7.8	8.9	8.4	9.0	8.7	8.7	9.0	8.8
DO (mg/L) Daily Minimum	9.2	9.7	10	10.0	7.4	9.3	8.0	7.6	6.7	6.3	7.8	7.0
TRC (mg/L) Average Monthly	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
TRC (mg/L) IMAX	0.3	0.43	0.47	0.47	0.45	0.44	0.2	0.3	0.41	0.2	0.35	0.2
CBOD5 (lbs/day) Average Monthly	0.1	0.01	< 0.3	< 0.05	< 0.01	< 0.09	0.03	0.05	< 0.1	0.02	0.02	0.06
CBOD5 (lbs/day) Weekly Average	0.1	0.02	0.6	0.05	0.01	< 0.2	0.04	0.05	0.2	0.02	0.03	0.09
CBOD5 (mg/L) Average Monthly	6.5	4.8	< 5.6	< 5.4	< 3.2	< 0.09	5.7	< 3.0	< 5.6	< 4.2	10.6	7.9
CBOD5 (mg/L) Weekly Average	8.3	5.6	8.2	7.8	3.4	< 0.2	6.0	< 3.0	8.2	5.5	15.6	8.4
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	1	1	4	1	1	1	0.1	2	205	292	1	3
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	1	3	8	1	1	2	1	4	301	353	1	5
BOD5 (mg/L) Raw Sewage Influent Average Monthly	154	225	191	73	127	196	40	142	4	1	257	263
TSS (lbs/day) Average Monthly	0.2	0.04	0.5	0.2	0.05	0.2	0.1	0.1	0.4	0.2	0.03	0.1
TSS (lbs/day) Raw Sewage Influent Average Monthly	1	1	4	1	1	1	1	4	110	42	1	1
TSS (lbs/day) Raw Sewage Influent Daily Maximum	1	1	8	1	1	1	1	4	126	45	1	2

TSS (lbs/day) Weekly Average	0.2	0.07	1	0.2	0.05	0.4	0.1	0.1	0.6	0.4	0.03	0.2
TSS (mg/L) Average Monthly	10.3	12.4	12.8	28.2	14.2	13.2	16.3	9.2	25.8	45	12.2	15.1
TSS (mg/L) Raw Sewage Influent Average Monthly	34	57	79	35	57	53	58	218	2	1	80	123
TSS (mg/L) Weekly Average	10.4	12.4	14.8	35.6	15.6	19.2	17.6	12.8	29.6	82	14.8	15.2
Fecal Coliform (No./100 ml) Geometric Mean	28	< 2	< 49	< 1	< 3	< 1	< 10	10	12	< 3	< 1	168
Fecal Coliform (No./100 ml) IMAX	770.1	< 4	2419	< 1	7.5	< 1	105.4	93.2	74.9	10.9	< 1	193.5
Nitrate-Nitrite (mg/L) Annual Average							42.16					
Total Nitrogen (mg/L) Annual Average							< 44.74					
Total Nitrogen (lbs) Total Annual							< 140					
Ammonia (mg/L) Annual Average							< 2.505					
Ammonia (mg/L) Average Monthly	< 0.14	< 0.1	3.65	< 0.178	< 0.1	0.361	0.758	2.406	2.498	4.663	1.329	0.343
Ammonia (lbs) Total Annual							< 8					
TKN (mg/L) Annual Average							< 1.23					
Total Phosphorus (lbs/day) Average Monthly	0.006	0.002	0.02	0.007	0.002	0.01	0.003	0.006	0.40	0.002	0.0007	0.004
Total Phosphorus (mg/L) Annual Average							0.403					
Total Phosphorus (mg/L) Average Monthly	0.325	0.59	0.543	0.742	0.459	0.368	0.474	0.376	0.845	0.364	0.287	0.578
Total Phosphorus (lbs) Total Annual							2					

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0063
Latitude 40º 17' 52.00" **Longitude** -78º 12' 42.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Comments:

Water Quality-Based Limitations

NH_3-N:
NH_3-N calculations were based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the in-stream NH_3-N criteria used in the attached computer model of the stream:

*	Discharge pH	7.0	(Default per 391-2000-007)
*	Discharge Temperature	25°C	(Default per 391-2000-007)
*	Stream pH	7.0	(Default per 391-2000-006)
*	Stream Temperature	20°C	(Default for WWF per 391-2000-003)
*	Background NH_3-N	0 mg/L	(Assumed since no nearby upstream WWTPs)

Regarding NH_3-N limits, the attached computer printout of the WQM 7.0 stream model (version 1.1) indicates that a limit of 25.0 mg/L NH_3-N as a monthly average (AML) and 50.0 mg/L NH_3-N instantaneous maximum (IMAX) are necessary to protect the aquatic life from toxicity effects. Recent DMR data show that the plant is discharging NH_3-N well below 25.0 mg/L year-round. The monitoring requirement for ammonia-nitrogen will remain in the proposed permit.

$CBOD_5$:
The attached WQM 7.0 modeling (ver. 1.1) results show that secondary treatment is adequate to protect the water quality of the stream. The WQM 7.0 model suggests a monthly average $CBOD_5$ limit may be 25.0 mg/L for secondary treatment, is adequate to protect the water quality of the stream. However, the existing limits for $CBOD_5$ is monthly average of 10.0 mg/L, weekly average of 15.0 mg/L, & IMAX of 20.0 mg/L are more stringent and will be in the proposed permit. Recent DMRs and inspection reports show that the facility has typically been achieving concentrations below this limit. Mass limits are calculated as follows:

Average monthly mass limit: 10.0 mg/L x 0.0063 MGD x 8.34 = 0.53 (0.5) lbs/day
Average weekly mass limit: 15.0 mg/L x 0.0063 MGD x 8.34 = 0.79 (0.7) lbs/day

The minimum monitoring frequency will remain the same as 2/month.

Dissolved Oxygen (D.O.):
The D.O. goal is 6.0 mg/L. However, a minimum D.O. of 5.0 mg/L is required per 25 Pa. Code § 93.7. It is recommended that this limit be maintained in the proposed permit to ensure the protection of water quality standards. This approach is consistent with DEP's current Standard Operating Procedure (SOP) No. BCW-PMT-033, version 1.9 revised March 22, 2021, and has been applied to other point source dischargers throughout the state.

Fecal Coliform:
The recent coliform guidance in 25 Pa. Code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml and 25 Pa. Code § 92a.47.(a)(5) requires a winter limit of 2,000/100ml as a geometric mean and an instantaneous maximum not greater than 10,000/100ml.

E. Coli:
As recommended by DEP's SOP No. BCW-PMT-033, version 1.9 revised March 22, 2021, a routine monitoring for E. Coli will be included in the permit under 25 Pa. Code §92a.61. This requirement applies to all sewage dischargers greater than 0.002 MGD in their new and reissued permits. A monitoring frequency of 1/year will be included in the permit to be consistent with the recommendation from this SOP.

Toxics:
There is no toxicity concern from this facility. Minor facilities are not required to report toxics if there is no industrial or commercial contribution per DEP's application form 3800-PM-BCW0342b revised 10/2017.

Total Residual Chlorine (TRC):
The attached computer printout utilizes the equation and calculations as presented in the Department's 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID#391-2000-015) for developing chlorine limitations. The attached printout indicates that a water quality limit of 0.5 mg/L would be needed to prevent toxicity concerns at the POFU. The IMAX limit is 1.6 mg/L. These limits are the same as in the existing permit and will be carried over. The minimum monitoring frequency is 1/day.

Total Suspended Solids (TSS):
The existing technology-based limits of 10.0 mg/L average monthly, 15.0 mg/L average weekly, and 20.0 mg/L IMAX will remain in the proposed permit based on the minimum level of effluent quality attainable by secondary treatment based on 25 Pa. Code § 92a.47. Recent DMRs and inspection reports show that the facility has been consistently achieving these limits. Mass limits are calculated as follows:

Average monthly mass limit: 10.0 mg/L x 0.0063 MGD x 8.34 = 0.53 (0.5) lbs/day
Average weekly mass limit: 15.0 mg/L x 0.0063 MGD x 8.34 = 0.79 (0.7) lbs/day

Total Phosphorus:
The existing monthly average of 2.0 mg/L & IMAX of 4.0 mg/L limits will be carried over in the proposed permit. The mass-based limit is 0.11 lbs./day as average monthly which will be carried over as well. Minimum monitoring frequency will remain the same as 2/month.

Average monthly mass limit: 2.0 mg/L x 0.0063 MGD x 8.34 = 0.105 (0.11) lbs/day

Influent BOD_5 and TSS Monitoring:
The permit will include influent BOD_5 and TSS monitoring at the same frequency as is done for effluent in order to implement 25 Pa. Code § 94.12 and assess percent removal requirements, per DEP policy.

Total Dissolved Solids (TDS):
Facilities with a design flow less than 0.1 MGD are not required to submit effluent result for TDS and associated parameters (Sulfate, Chloride, Bromide.) Therefore, no TDS limits/monitoring requirement will be placed in the permit.

Chesapeake Bay Strategy:
According to DEP's Chesapeake Bay Phase II Watershed Implementation Plan (WIP) Wastewater Supplement, this facility is considered a phase 5 non-significant sewage discharger with design flow less than 0.2 MGD but greater than 0.002 MGD. In general, DEP will issue permits for all phase 5 facilities with monitoring and reporting for Total Nitrogen (TN) and Total Phosphorus (TP) throughout the permit term at a frequency no less than annually. Furthermore, DEP's SOP No. BPNPSM-PMT-033 states that in general, at a minimum, monitoring for TN and TP should be included in new and reissued permits for sewage discharges with design flows > 2,000 gpd. At this time, the Department is not requiring a total maximum annual nitrogen or phosphorus loading cap. Ammonia-Nitrogen, Nitrate-Nitrite as N, Total Kjeldahl Nitrogen, TN, and TP monitoring is already included in the existing permit and will remain in the proposed renewal.

The annual "Monitor & Report" requirements for Ammonia-Nitrogen, Nitrate-Nitrite as N, and Total Kjeldahl Nitrogen; and annual calculation "Monitor & Report" for TN & TP will remain in the proposed permit.

Stormwater:
There is no known stormwater outfall associated with this facility.

WETT:
Minor facilities and facilities without a formal EPA approved pretreatment program are exempted from WETT.

303d Listed Streams:
The discharge from this facility is in UNT to Shy Beaver Creek at 0.18 RMI which is attaining its designated use(s)

Antidegradation (93.4):
The 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. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

Class A Wild Trout Fisheries:
No Class A Wild Trout Fisheries are impacted by this discharge.

WQM 7.0:
The following data were used in the attached computer model (WQM 7.0) of the stream:

• Discharge pH	7.0	(Default)
• Discharge Temperature	25°C	(Default per 391-2000-013)
• Stream pH	7.0	(Default per 391-2000-013)
• Stream Temperature	20°C	(Default per 391-2000-013)

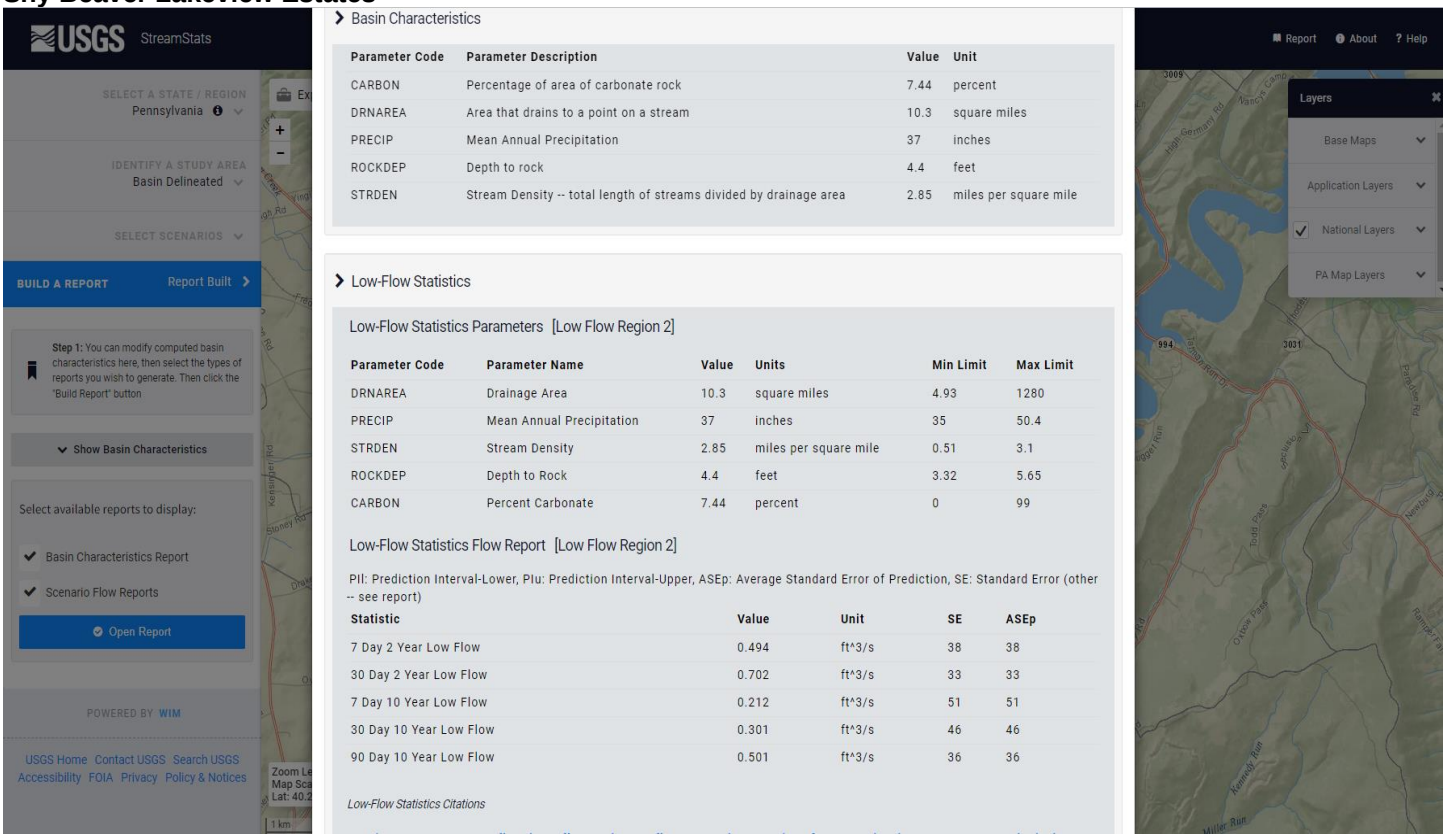
The following two nodes were used in modeling:

Node 1: Discharge at Shy Beaver Creek (13673)

Elevation:	786.5 ft (USGS National Map)
Drainage Area:	10.3 $mi.^2$ (USGS StreamStats)
River Mile Index:	1.4 (PA DEP eMapPA)
Low Flow Yield:	0.02 $cfs/mi.^2$ (calculated)
Discharge Flow:	0.0063 MGD

Node 2: At the confluence with Raystown Branch Juniata River (13349)

Elevation:	786 ft (USGS National Map)
Drainage Area:	803 $mi.^2$ (StreamStats)
River Mile Index:	0.001 (PA DEP eMapPA)
Low Flow Yield:	0.02 $cfs/mi.^2$
Discharge Flow:	0.00 MGD



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	7.44	percent
DRNAREA	Area that drains to a point on a stream	10.3	square miles
PRECIP	Mean Annual Precipitation	37	inches
ROCKDEP	Depth to rock	4.4	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	2.85	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 2]

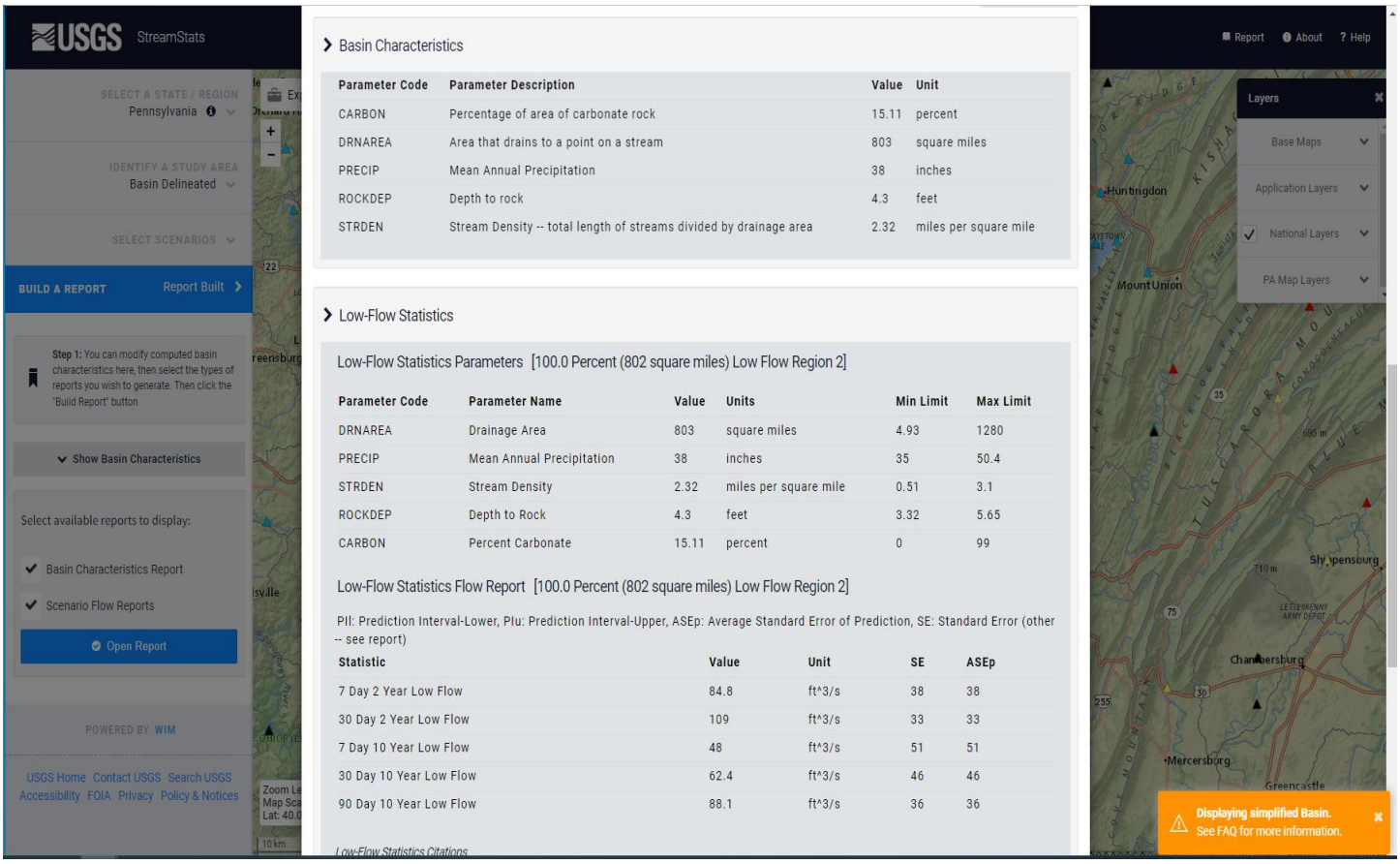
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	10.3	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	37	inches	35	50.4
STRDEN	Stream Density	2.85	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.4	feet	3.32	5.65
CARBON	Percent Carbonate	7.44	percent	0	99

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

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.494	ft^3/s	38	38
30 Day 2 Year Low Flow	0.702	ft^3/s	33	33
7 Day 10 Year Low Flow	0.212	ft^3/s	51	51
30 Day 10 Year Low Flow	0.301	ft^3/s	46	46
90 Day 10 Year Low Flow	0.501	ft^3/s	36	36

Low-Flow Statistics Citations



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	15.11	percent
DRNAREA	Area that drains to a point on a stream	803	square miles
PRECIP	Mean Annual Precipitation	38	inches
ROCKDEP	Depth to rock	4.3	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	2.32	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (802 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	803	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	38	inches	35	50.4
STRDEN	Stream Density	2.32	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.3	feet	3.32	5.65
CARBON	Percent Carbonate	15.11	percent	0	99

Low-Flow Statistics Flow Report [100.0 Percent (802 square miles) Low Flow Region 2]

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	84.8	ft^3/s	38	38
30 Day 2 Year Low Flow	109	ft^3/s	33	33
7 Day 10 Year Low Flow	48	ft^3/s	51	51
30 Day 10 Year Low Flow	62.4	ft^3/s	46	46
90 Day 10 Year Low Flow	88.1	ft^3/s	36	36

Low-Flow Statistics Citations

Analysis Results WQM 7.0

Hydrodynamics | NH3-N Allocations | D.O. Allocations | D.O. Simulation | Effluent Limitations

RMI	Discharge Name	Permit Number	Disc Flow (mgd)
1.40	Hopewell Twp	PA0082759	0.0063

Parameter	Effluent Limit 30 Day Average (mg/L)	Effluent Limit Maximum (mg/L)	Effluent Limit Minimum (mg/L)
CBOD5	25		
NH3-N	25	50	
Dissolved Oxygen			5

Record: 1 of 1 | No Filter | Search

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rptEffLimits

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
11D	13673	SHY BEAVER CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Eff. Limit 30-day Avg. (mg/L)	Eff. Limit Maximum (mg/L)	Eff. Limit Minimum (mg/L)
1.400	Hopewell Twp	PA0082759	0.006	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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rpt_WLA

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
11D	13673	SHY BEAVER CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
1.400	Hopewell Twp	16.29	50	16.29	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
1.400	Hopewell Twp	1.87	25	1.87	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5 Baseline (mg/L)	CBOD5 Multiple (mg/L)	NH3-N Baseline (mg/L)	NH3-N Multiple (mg/L)	Dissolved Oxygen Baseline (mg/L)	Dissolved Oxygen Multiple (mg/L)	Critical Reach	Percent Reduction
1.400	Hopewell Twp	25	25	25	25	5	5	0	0

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rptDOSim

WQM 7.0 D.O. Simulation

SWP Basin	Stream Code	Stream Name
11D	13873	SHY BEAVER CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.400	0.006	20.226	7.000

Reach Width (ft)	Reach Depth (ft)	Reach WD Ratio	Reach Velocity (fps)
11.880	0.487	24.391	0.037

Reach CBOD5 (mg/L)	Reach Kc (1/days)	Reach NH3-N (mg/L)	Reach Kn (1/days)
3.04	0.181	1.13	0.712

Reach DO (mg/L)	Reach Kr (1/days)	Kr Equation	Reach DO Goal (mg/L)
8.094	9.113	Owens	6

Reach Travel Time (days)
2.293

Subreach Results

Trav Time (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.229	2.91	0.96	8.21
0.459	2.80	0.81	8.21
0.688	2.68	0.69	8.21
0.917	2.57	0.59	8.21
1.147	2.47	0.50	8.21
1.376	2.36	0.42	8.21
1.605	2.27	0.36	8.21
1.834	2.17	0.31	8.21
2.064	2.09	0.26	8.21
2.293	2.00	0.22	8.21

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rptModelSpecs

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

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rptHydro

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
11D	13873	SHY BEAVER CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
1.400	0.21	0.00	0.21	.0097	0.00007	.487	11.88	24.39	0.04	2.293	20.23	7.00
Q1-10 Flow												
1.400	0.13	0.00	0.13	.0097	0.00007	NA	NA	NA	0.03	2.903	20.34	7.00
Q30-10 Flow												
1.400	0.28	0.00	0.28	.0097	0.00007	NA	NA	NA	0.04	1.943	20.17	7.00

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rptGeneral

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
11D	13873	SHY BEAVER CREEK	1.400	786.50	10.30	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Trib Temp (°C)	Trib pH	Stream Temp (°C)	Stream pH
Q7-10	0.020	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Hopewell Twp	PA0082759	0.0063	0.0063	0.0063	0.00	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

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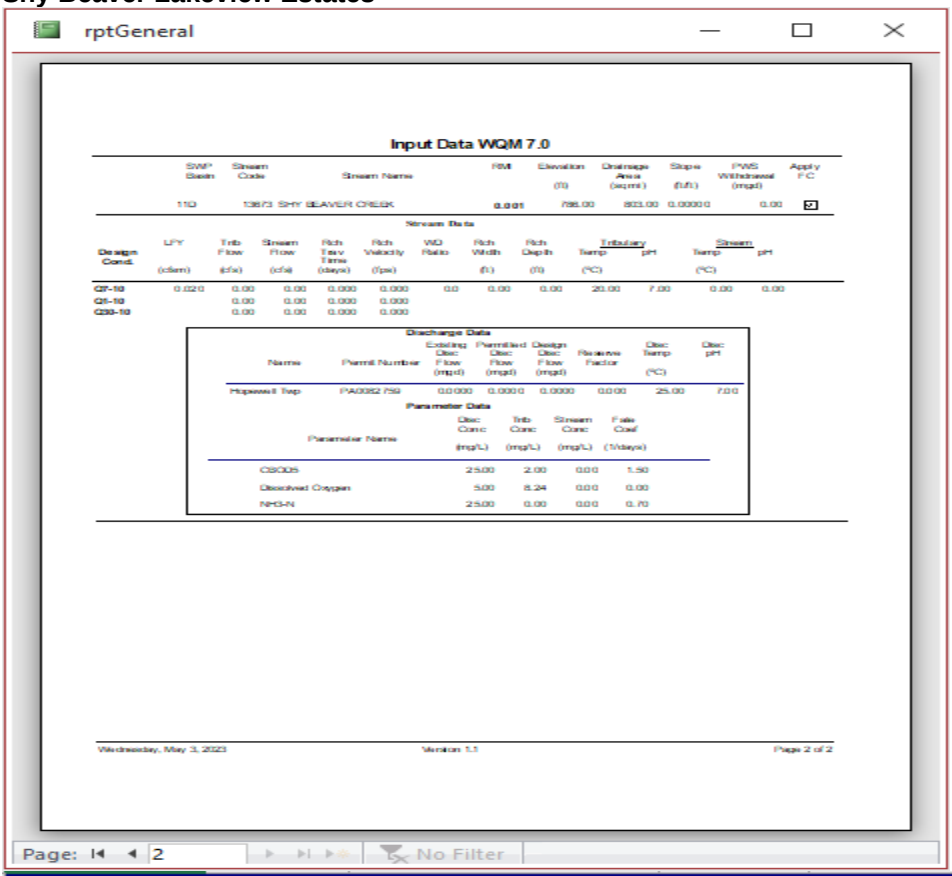


TRC EVALUATION

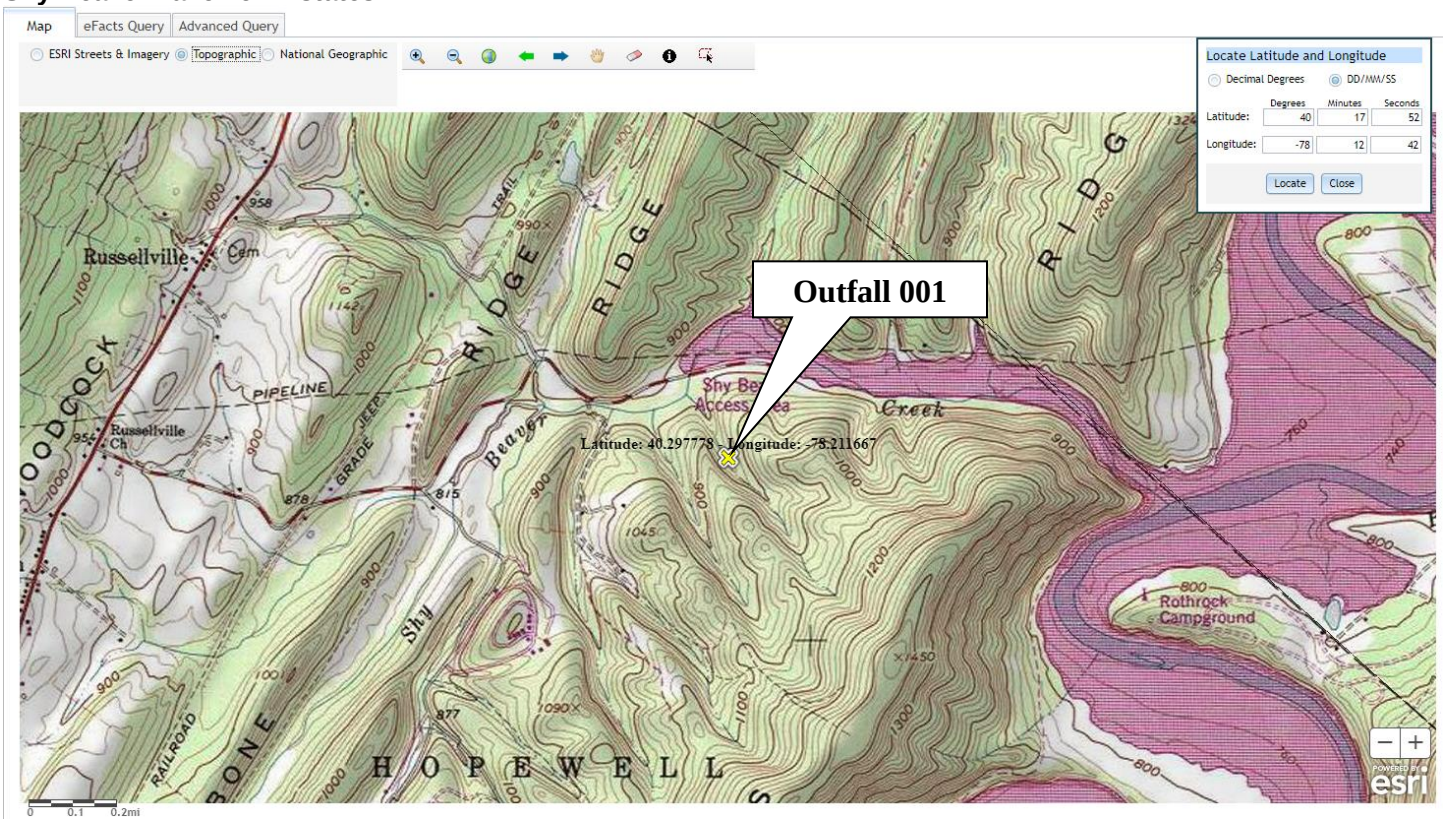
Input appropriate values in A3:A9 and D3:D9

0.212	= Q stream (cfs)	0.5	= CV Daily
0.0063	= 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 = 6.958	1.3.2.iii	WLA cfc = 6.776
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 2.593	5.1d	LTA_cfc = 3.939

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)**


Map
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Longitude: -78 12 42
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JEEP GRADE
TRAIL
RIDGE
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Our ref: 8616375

February 15, 2023

Mr. Fred Clark
DEP Southcentral Regional Office
909 Elmerton Avenue
Harrisburg, PA 17110

Hopewell Township Shy Beaver WWTF January 31, 2023 NOV Response

Dear Fred:

Hopewell Township is in receipt of the Department's January 31, 2023, Notice of Violation (NOV) for the Shy Beaver Wastewater Treatment Facility (WWTF) (PA0082759). This letter documents that Township's actions in addressing the Notice of Violation. 28 of the 34 listed permit exceedances are related to Total Suspended Solids effluent concentrations (TSS), 4 are related to CBOD, 1 is related to Fecal Coliform, and 1 is related to Phosphorus. The Township has taken the following actions to improve permit compliance at the facility.

1. Aeration tank cleanout – In June 2022, Hopewell Township contracted with Lake Septic to clean out the aeration tank in service at the WWTF. A significant amount of deposited material was removed. This effort was done to improve mixing and aeration and remove material that could be impacting water quality chemistry in the tank.
2. WWTF Equipment Replacement – The Township entered into a COSTARS contract with Dutchland, Inc., who provided the original treatment facility and equipment. The key part of the contract is to renew the existing tertiary filter system. The controls, solenoids, valves, underdrains, and related equipment prevent effective operation of the tertiary filter. Once the tertiary filter system is back operating as originally designed, the facility will be better able to consistently meet the stringent TSS concentrations in the permit. The latest update we've received from Dutchland is they plan to be able to complete this work in mid-March 2023. Dutchland anticipates needing about three days to complete the installation. Dutchland has been delayed in their start time based on some electronics lead time issues.

   In addition to the tertiary filter, Dutchland will be replacing the air drops and diffusers and related valves for the aeration tanks and renewing the air lift pump piping and valves. Attached is a copy of the executed contact.
3. WWTF Outfall Relocation – The WWTF has stringent effluent discharge permit limitations based on the receiving stream. As another strategy for improving permit compliance, the Township has coordinated with DEP and the Army Corps of Engineers (ACOE) on the feasibility of moving the facility outfall to Shy Beaver Creek. DEP confirmed less stringent effluent limitations are possible with this option and the ACOE does not see an issue that would prevent granting an easement for a new outfall. Attached are DEP's and ACOE's documentation. The adjusted outfall location and less stringent effluent limitations would eliminate the majority of the TSS and CBOD effluent exceedances noted in the NOV.

This option does carry an estimated cost of around $300,000 with a significant amount of permitting required, including an NPDES Part I permit modification, a Water Quality Management Part II permit amendment, a Chapter 105 General Permit for a new outfall, and E&S approval. With the required lead times to prepare and receive approval of those permits, this option is more of a longer-term approach. The Township has scheduled a PENNVEST Planning Consultation for February 22, 2023, to review possible funding for this project and a larger, more regional approach to wastewater management in this portion of the Township.

In summary, the Township believes once the Dutchland improvements are completed and the facility is able to be operated as originally designed and intended, they will be able to prevent a reoccurrence of these instances of noncompliance.

Regards

Andrew Glitzer, PE
Project Director
+1 814 251-9734
andrew.glitzer@ghd.com

Copy to: Chris Cooper, Susan Shontz

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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	0.5	0.7	XXX	10.0	15.0	20	2/month	Grab
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
TSS	0.5	0.7	XXX	10.0	15.0	20	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab
Total Phosphorus	0.11	XXX	XXX	2.0	XXX	4	2/month	Grab

Existing Effluent Limitations and Monitoring Requirements

Chesapeake Bay Requirements

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	XXX	Report	XXX	Report Annual Avg	XXX	XXX	1/year	Grab
Kjeldahl--N	XXX	XXX	XXX	Report Annual Avg	XXX	XXX	1/year	Grab
Nitrate-Nitrite as N	XXX	XXX	XXX	Report Annual Avg	XXX	XXX	1/year	Grab
Total Nitrogen	XXX	Report	XXX	Report Annual Avg	XXX	XXX	1/year	Calculation
Total Phosphorus	XXX	Report	XXX	Report Annual Avg	XXX	XXX	1/year	Grab

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	0.5	0.7	XXX	10.0	15.0	20.0	2/month	Grab
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
TSS	0.5	0.7	XXX	10.0	15.0	20.0	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab
Total Phosphorus	0.11	XXX	XXX	2.0	XXX	4.0	2/month	Grab

Compliance Sampling Location:

Other Comments:

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

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

Compliance Sampling Location:

Other Comments:

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☒	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☒	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☒	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: BCW-PMT-033
☐	Other: