pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0254380**
Facility Type	**Municipal**	APS ID	**913511**
Major / Minor	**Minor**	Authorization ID	**1354025**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Ursina Borough**	Facility Name	**Ursina Borough STP**
Applicant Address	418 Park Street	Facility Address	254 2nd Street
	Confluence, PA 15424-3326		Confluence, PA 15424-2313
Applicant Contact	Janet Nolf	Facility Contact	Same as Applicant
Applicant Phone	(814) 395-3148	Facility Phone	Same as Applicant
Client ID	110918	Site ID	740016
Ch 94 Load Status		Municipality	Ursina Borough
Connection Status		County	Somerset
Date Application Received	April 23, 2021	EPA Waived?	Yes
Date Application Accepted	May 7, 2021	If No, Reason	

Purpose of Application: Application for renewal of an NPDES Permit for treated sewage

Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0254380. NPDES Permit No. PA0254380 was previously issued by the Pennsylvania Department of Environmental Protection (DEP) on September 30, 2016. That permit expired on October 31, 2021 and was granted an administrative extension.

Sewage from the facility is treated with extended aeration, alkaline addition, clarification, and chlorine disinfection before discharging to Laurel Hill Creek (38580), which is classified as a High-Quality Cold Water Fishery (HQ-CWF) per Chapter 93 Designated Use and is located in State Watershed No. 20-B.

The applicant is currently enrolled in and will continue to use eDMR.

Sewage sludge is pumped by Stutzman Vacuum Services and disposed of at Johnstown WWTP.

The applicant's compliance with Act 14 Notifications is documented by letters dated April 12, 2021 and sent to Ursina Borough and Somerset County.

Changes since the last permit renewal include:

- Change in flow monitoring from 2/month to 1/week
- Addition of annual *E. coli* monitoring
- Change in Total Residual Chlorine limit

Anti-Backsliding

Approve	Deny	Signatures	Date
X		Stephanie Conrad / Environmental Engineering Specialist	October 2, 2021
x		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	October 13, 2023

Summary of Review

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 *(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.*

The facility is not seeking to revise the previously permitted effluent limits.

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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.04
Latitude	39º 48' 45.45"	Longitude	-79º 20' 1.10"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Laurel Hill Creek (HQ-CWF)	Stream Code	38580
NHD Com ID	69922135	RMI	2.2
Drainage Area	121	Yield (cfs/mi^2)	0.035
Q_{7-10} Flow (cfs)	4.235	Q_{7-10} Basis	
Elevation (ft)	1350	Slope (ft/ft)	
Watershed No.	19-E	Chapter 93 Class.	HQ-CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	Tentative	Name	Laurel Hill Creek TMDL

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Indian Creek Valley Water Authority		
PWS Waters	Youghiogheny River	Flow at Intake (GPD)	259,200
PWS RMI	62.9	Distance from Outfall (mi)	12.6

Changes Since Last Permit Issuance: None

Treatment Facility Summary

Treatment Facility Name: Ursina Borough STP

WQM Permit No.	Issuance Date	
5612402	4/4/2013	Permit issued by PADEP to Ursina Borough approving construction of a minor sewage treatment plant and sewage conveyance system consisting of: • 20,000 LF 8" PVC sewers • One 0.04 MGD submersible pump station with two pumps rated at 80 gpm at 55' total dynamic head • 1600 LF 4" PVC forcemain • Three E/one extreme DH071grinder pumps • One emergency generator • Two 25 horsepower blowers, one 5hp blower, and one 2 hp blower • One Comminutor • One 1 ½ inch manual bar screen • Two 8998-gallone flow equalization tanks • Two 70 gpm submersible equalization tank pumps • Six 8558-gllon extended aeration tank with PVC course bubble diffusers • Two 6046-gallon settling tanks • One tablet chlorinator • Dechlorination with sodium bisulfite • Sodium bicarbonate alkaline addition • Two 7151-gallon aerobic digestion tanks

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration	Chorine/Dechlor	0.04

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.1	68	Not overloaded	Aerated holding tank	Other STP

Changes Since Last Permit Issuance:

Other Comments:

Compliance History

Operations Compliance Check Summary Report

Facility: Ursina Borough STP

NPDES Permit No.: PA0254380

Compliance Review Period 4/2018 – 4/2023

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
3524488	03/22/2023	Administrative/File Review	PA Dept of Environmental Protection	Violation(s) Noted
3109717	10/28/2020	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted
2869487	03/20/2019	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted

Violation Summary:

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
989127	03/22/2023	92A.44	NPDES - Violation of effluent limits in Part A of permit	03/22/2023
899749	10/28/2020	92A.44	NPDES - Violation of effluent limits in Part A of permit	10/28/2020
899750	10/28/2020	252.4(A)	NPDES - Failure to utilize an accredited environmental laboratory for testing or analysis of environmental samples	10/28/2020
847058	03/20/2019	92A.44	NPDES - Violation of effluent limits in Part A of permit	04/18/2019

Enforcement Summary:

ENF ID	ENF TYPE	EXECUTED DATE	VIOLATIONS	PENALTY AMOUNT	AMOUNT RECEIVED	ENF FINAL STATUS	ENF CLOSED DATE
414199	CACP	02/08/2023	92A.44	$5,000.00	$5,000.00	Comply/Closed	03/22/2023
398406	NOV	10/28/2020	252.4(A); 92A.44			Administrative Close Out	07/06/2022
373913	NOV	04/18/2019	92A.44			Administrative Close Out	04/12/2021

Open Violations by Client ID:

No open violations for Client ID 110918

DMR Violation Summary:

START	END	PARAMETER	SAMPLE	PERMIT	UNITS	STATISTICAL BASE CODE
02/01/2023	02/28/2023	Total Suspended Solids	14.6	10	mg/L	Average Monthly
02/01/2023	02/28/2023	Total Suspended Solids	21.0	20	mg/L	Instantaneous Maximum

Compliance Status:

CACP signed 2/2023.

Completed by: John Murphy

Completed date: 4/4/2023

Compliance History

DMR Data for Outfall 001 (from June 1, 2022 to May 31, 2023)

Parameter	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22
Flow (MGD) Average Monthly	0.0135	0.010	0.019	0.018	0.0275	0.0245	0.018	0.008	0.008	0.008	0.01	0.009
pH (S.U.) Minimum	6.88	6.98	6.85	7.04	7.03	7.01	6.96	6.85	6.96	6.92	6.66	6.92
pH (S.U.) Maximum	7.28	7.24	7.4	7.36	7.43	7.31	7.50	7.38	7.37	7.47	7.36	7.78
DO (mg/L) Minimum	6.5	4.10	6.62	9.17	5.61	9.84	6.64	5.5	6.71	6.64	4.92	4.71
TRC (mg/L) Average Monthly	0.018	0.011	0.008	0.017	0.014	0.024	0.022	0.022	0.022	0.026	0.025	0.027
TRC (mg/L) Instantaneous Maximum	0.05	0.10	0.10	0.07	0.05	0.07	0.04	0.04	0.05	0.08	0.08	0.07
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) (lbs/day) Average Monthly	0.44	0.52	1.39	1.02	1.65	0.62	0.81	0.31	0.31	0.33	0.25	0.23
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) (mg/L) Average Monthly	3.88	6.29	8.78	6.815	7.2	3.0	5.56	4.59	4.67	4.89	3.0	3.0
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)(mg/L) Instantaneous Maximum	4.76	6.36	11.2	8.10	9.12	3.0	8.11	6.18	6.34	6.77	3.0	3.0
Biochemical Oxygen Demand (BOD_5) (mg/L) Influent Average Monthly	100.5	191	154.5	115	96.3	140.35	144.5	112.9	134.7	209	151	225.5
Total Suspended Solids (TSS) (lbs/day) Average Monthly	1.1	0.70	0.98	2.19	3.35	1.8	0.83	0.60	0.55	0.31	0.42	0.27

Total Suspended Solids (TSS) (mg/L) Average Monthly	9.8	8.4	6.2	14.6	14.6	8.80	5.4	9.0	8.2	4.6	5.0	3.6
Total Suspended Solids (TSS) (mg/L) Influent Average Monthly	142	235	157.0	83.0	85	141	105.0	123.5	94.65	258	140.5	279
Total Suspended Solids (TSS) (mg/L) Instantaneous Maximum	14.0	10.0	6.8	21.0	16.4	8.80	6.0	14.0	8.8	7.2	5.6	4.8
Fecal Coliform (CFU/100 ml) Geometric Mean	32.6	332.2	29.3	147.8	14.6	2.02	37.16	143.4	9.5	277.49	129.9	147.5
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	142.1	866.4	42.8	260.3	29.2	4.1	49.5	172.3	90.6	613.1	186	344.8
Total Nitrogen (mg/L) Daily Maximum	GG	GG	GG	GG	GG	GG	< 0.50	GG	GG	GG	GG	GG
Ammonia (lbs/day) Average Monthly	0.011	0.08	0.016	0.015	0.023	0.02	0.015	0.007	0.007	0.007	0.008	0.11
Ammonia (mg/L) Average Monthly	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.1	0.10	0.10	0.10	1.53
Ammonia (mg/L) Instantaneous Maximum	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.1	0.10	0.10	0.10	2.967
Total Phosphorus (mg/L) Daily Maximum	GG	GG	GG	GG	GG	GG	4.28	GG	GG	GG	GG	GG

Compliance History

Effluent Violations for Outfall 001, from: July 1, 2022 To: May 31, 2023

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	01/31/23	Avg Mo	3.35	lbs/day	3.3	lbs/day
TSS	01/31/23	Avg Mo	14.6	mg/L	10	mg/L
TSS	02/28/23	Avg Mo	14.6	mg/L	10	mg/L
TSS	02/28/23	IMAX	21.0	mg/L	20	mg/L
Fecal Coliform	08/31/22	Geo Mean	277.49	CFU/100 ml	200	CFU/100 ml

Summary of Inspections:

Other Comments:

Permit No. PA0254380

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	.04
Latitude	39º 48' 45.45"	**Longitude**	-79º 20' 1.10"

Wastewater Description: Sewage Effluent

Technology-Based Limitations (TBELs)

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
Flow (MGD)	Report	Average Monthly	-	92a.27, 92a.61
$CBOD_5$	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)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
Ammonia-Nitrogen	25	Average Monthly	-	BPJ
Dissolved Oxygen	4.0	Min	-	BPJ
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Total Nitrogen	Report	Average Monthly	-	92a.61
Total Phosphorus	Report	Average Monthly	-	92a.61
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)

Water Quality-Based Limitations (WQBELs)

Pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020, new water quality criteria for ammonia-nitrogen apply to waters of the commonwealth. Therefore, WQBELs for Outfall 001 are being re-evaluated even through there have been no changes to the STP.

WQM 7.0 Water Quality Modeling

DEP's WQM 7.0 version 1.1 model is a Microsoft Access Program used for sewage dischargers to determine whether TBELs are sufficient to meet in-stream water quality criteria for ammonia-nitrogen, carbonaceous biochemical oxygen demand ($CBOD_5$), and dissolved oxygen (DO). To accomplish this, the model simultaneously simulates mixing and degradation of ammonia-nitrogen and mixing and consumption of DO through $CBOD_5$ and ammonia-nitrogen degradation. WQM 7.0 determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

The model is a two-step process. The discharge is first modeled for the summer period (May through October) because warm temperatures are more likely to result in critical loading conditions. Reduced DO levels likely also play a role in ammonia toxicity and solubility of DO decreases at increased water temperature. If summer modeling determines that WQBELs are appropriate for the summer period, then modeling is completed for the winter period (November through April). This is in accordance with DEP's *"Implementation Guidance of Section 93.7 Ammonia Criteria"* [Do. No. 391-2000-013] (Ammonia Guidance).

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River Mile Index (RMI) was measured in eMAP PA as the distance from the facility's outfall to the mouth of Laurel Hill Creek. Elevation was read by applying a topomap in eMAP PA. Discharge point and downstream drainage areas as well as Q_{7-10} flow were generated by USGS Stream Stats. USGS Stream Stats output files are included in Attachment A. In the absence of site-specific data, discharge temperature, stream temperature, and stream pH were assumed to be 20 °C, 25 °C, and 7 S.U. in accordance with the Ammonia Guidance. Stream width to depth was assumed to be 10 in accordance with the Department's *Technical Reference Guide (TRG) WQM 7.0 for Windows Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1.0* [Doc. No. 391-2000-007].

WQM 7.0 modeling inputs are documented in the table below:

Discharge Characteristics		Basin/Stream Characteristics	
Parameter	**Value**	**Parameter**	**Value**
River Mile Index (RMI)	2.2	Drainage Area	121.0
Discharge Flow (MGD)	0.04	Q_{7-10} (cfs)	4.235
Discharge Temp (°C)	20.0	Low-flow yield (cfs/mi^2)	0.035
Ammonia-Nitrogen (mg/L)	25.00	Elevation (ft)	1350
$CBOD_5$ (mg/L)	25.00	Stream Width/Depth	10
		Stream Temp (°C)	20.0
		Stream pH (s.u.)	7.0

The discharge was modeled using WQM 7.0 to evaluate the $CBOD_5$, ammonia-nitrogen, and DO parameters. The modeling confirmed that technology based effluent limits are appropriate for $CBOD_5$ and ammonia-nitrogen. WQM 7.0 output files are included in Attachment B.

Total Residual Chlorine Modeling

The Department's Total Residual Chlorine (TRC) Spreadsheet is a Microsoft Excel® Program used to evaluate WQBELs for TRC using a mass balance. In accordance with the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], default values of 0.3 mg/L and 0 mg/L for in-stream and discharge chlorine demand were used. Additionally, a discharge flow of 0.04 MGDD and a Q_{7-10} flow of 4.235 were used.

TRC was modeled with the TRC Spreadsheet and the model recommendations are the same as technology based effluent limits. However, since the facility discharges to HQ-CWF, antidegradation requirements apply as discussed later in this Fact Sheet. A 0.02 mg/L of both average monthly and instantaneous maximum limits would be applied at Outfall 001.

Best Professional Judgment (BPJ) Limitations

A Dissolved Oxygen minimum limitation of 4.0 mg/L will be implemented based on the standard in 25 PA Code Chapter 93 and best professional judgment.

Antidegradation Considerations

Ursina Borough STP discharges to Laurel Hill Creek, which is classified as a HQ-CWF.

The following Antidegradation Best Available Combination of Technologies (ABACT) effluent limits, at a minimum, will be established based on the requirements of the Department's *Water Quality Antidegradation Implementation Guidance* [Doc. No. 391-0300-002].

Parameter	Treatment Process Performance Expectations (mg/L)		
	<2,000 gpd	2,000-50,000 gpd	>50,000 gpd
$CBOD_5$ (May 1 – Oct. 31)	10	10	10
$CBOD_5$ (Nov. 1 – Apr. 30)	20	20	10
Suspended Solids	20	10	10

NH_3-N (May 1 – Oct. 31)	5.0	3.0	1.5
NH_3-N (Nov. 1 – Apr. 30)	15.0	9.0	4.5
Effective disinfection	Disinfection should be accomplished using a method that leaves no detectable residual. Disinfection using ultra-violet light or other non-chlorine based systems is encouraged and must be considered.		
Other parameters, as needed	*Determined by the size and characteristics of the proposed discharge, may include – NO_2/NO_3-N, Total Phosphorus, Copper, Lead, Zinc*		

Please note that the TRC average monthly and instantaneous maximum limits are changing to equal the method detection limit of 0.02, which is the detection limit for EPA methods 330.5 and 330.4. This is in accordance with the ABACT for TRC to have "no detectable residual."

Based on eDMR data, the facility as currently operating is not able to meet the new, more restrictive TRC limit. A compliance schedule of six months following the final permit effective date will be established for TRC.

Permit Limits

The limits to be imposed, which are provided below, represent the most stringent limitations between the TBELs, WQBELs, and ABACT limits.

Parameter	Limit (mg/l)	SBC	Model	Basis
Dissolved Oxygen	4.0	Instantaneous Minimum	N/A	BPJ
$CBOD_5$ (summer)	10	Average Monthly	N/A	Antidegradation ABACT
$CBOD_5$ (winter)	20	Average Monthly	N/A	Antidegradation ABACT
Ammonia-Nitrogen (summer)	3.0	Average Monthly	N/A	Antidegradation ABACT
Ammonia-Nitrogen (winter)	9.0	Average Monthly	N/A	Antidegradation ABACT
Total Residual Chlorine	0.02	Average Monthly	N/A	Antidegradation ABACT

Additional Considerations

In accordance with Section 1.A. of the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020 and under the authority of 25 Pa. Code § 93.7(a) and § 92.a.61, sewage dischargers will include monitoring for *E. coli.* For new and reissued permits, a monitoring frequency of 1/year will be imposed for facilities with a design flow between 0.002 and 0.05 MGD.

In accordance with Section 1.A. of the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], and under the authority of 25 Pa. Code § 92a.61(b), nutrient monitoring for total nitrogen and total phosphorus will be imposed for sewage facilities with a design flow greater than 2,000 GPD. The intent of this monitoring is to establish the nutrient load of the wastewater and evaluate the impact that load may have on the quality of the receiving stream. During the last permit cycle, total nitrogen monitoring resulted in six samples with results ranging from non-detect to 41.4 mg/L. Total phosphorus sampling resulted in six samples ranging from 3.4 to 5.47. The SOP states that if the receiving stream is not impaired for nutrients, then discretion may be used in setting the monitoring frequency. Laurel Hill Creek is not impaired for nutrients; therefore, a monitoring frequency of 1/year will again be imposed.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Department's *Technical Guidance for the Development and Specification of Effluent Limitations* [Doc

No. 362-0400-001]. Please note that monitoring frequency for flow has been changed from 2/month to 1/week to be consistent with this guidance.

Mass Loading

Section 1.A of the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9] Table 5.3 of the Department's *Technical Guidance for the Development and Specification of Effluent Limitations* [DOC. No. 362-0400-001] establish mass loading limits for Publicly Owned Treatment Works (POTWs) for ammonia-nitrogen, $CBOD_5$, and TSS. Average monthly limits will be imposed for ammonia-nitrogen, $CBOD_5$, and TSS based on the following equation:

$$mass\ loading\ limit\ \left(\frac{lbs}{day}\right) = average\ annual\ flow\ (MGD) * concentration\ limit\ \left(\frac{mg}{L}\right) * 8.34\ (conversion\ factor)$$

The following mass loading limits are being imposed:

Parameter	Average Monthly (lbs/day)
Ammonia-Nitrogen Summer (mg/L)	1.0
Ammonia-Nitrogen Winter (mg/L)	3.0
$CBOD_5$ Summer (mg/L)	6.5
$CBOD_5$ Winter (mg/L)	3.0
TSS (mg/L)	3.0

Please note that the average monthly load limit for $CBOD_5$ summer and winter and TSS have changed to be consistent with the rounding guidance in the Department's *Technical Guidance for the Development and Specification of Effluent Limitations* [Doc. No. 362-0400-001].

Influent Monitoring

In accordance with Section IV.F.2 of DEP's SOP for *New and Reissuance Sewage Individual NPDES Permit Applications* [SOP No. BCW-PMT-002 Version 2.0]. For POTWs with design flows greater than 2,000 GPD, influent BOD5 and TSS monitoring must be established in the permit at a frequency and sample type equivalent to that imposed for the effluent parameters.

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: Six Months Following 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		
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.02	XXX	0.02	1/day	Grab

Compliance Sampling Location: Outfall #001

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" (386-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Six Months Following Permit Effective 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		
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.03	XXX	0.1	1/day	Grab

Compliance Sampling Location: Outfall #001

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
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) Nov 1 - Apr 30	6.5	XXX	XXX	20	XXX	40	2/month	Grab
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) May 1 - Oct 31	3.0	XXX	XXX	10	XXX	20	2/month	Grab
Biochemical Oxygen Demand (BOD_5) Influent	Report	XXX	XXX	Report	XXX	Report	2/month	Grab
Total Suspended Solids (TSS) Influent	Report	XXX	XXX	Report	XXX	Report	2/month	Grab
Total Suspended Solids (TSS)	3.0	XXX	XXX	10	XXX	20	2/month	Grab
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
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	3.0	XXX	XXX	9.0	XXX	18.0	2/month	Grab

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Ammonia-Nitrogen May 1 - Oct 31	1.0	XXX	XXX	3.0	XXX	6.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: Outfall #001

Other Comments:

ATTACHMENT A

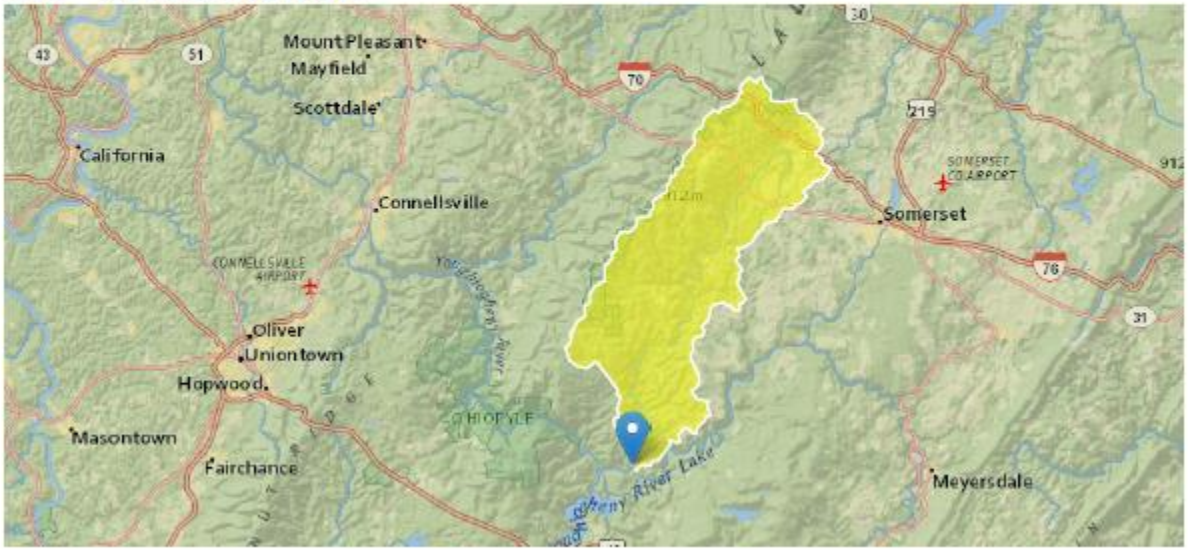
USGS Stream Stats Output

Discharge Point

Permit No. PA0254380

StreamStats Report

Region ID: PA
Workspace ID: PA20230405122141437000
Clicked Point (Latitude, Longitude): 39.81559, -79.32955
Time: 2023-04-05 08:22:03 -0400



Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (121 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	121	square miles	2.26	1400
ELEV	Mean Basin Elevation	2209	feet	1050	2580

Low-Flow Statistics Flow Report [100.0 Percent (121 square miles) Low Flow Region 4]

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	11	ft^3/s	43	43
30 Day 2 Year Low Flow	17.6	ft^3/s	38	38
7 Day 10 Year Low Flow	4.29	ft^3/s	66	66
30 Day 10 Year Low Flow	6.78	ft^3/s	54	54
90 Day 10 Year Low Flow	12.6	ft^3/s	41	41

Low-Flow Statistics Citations

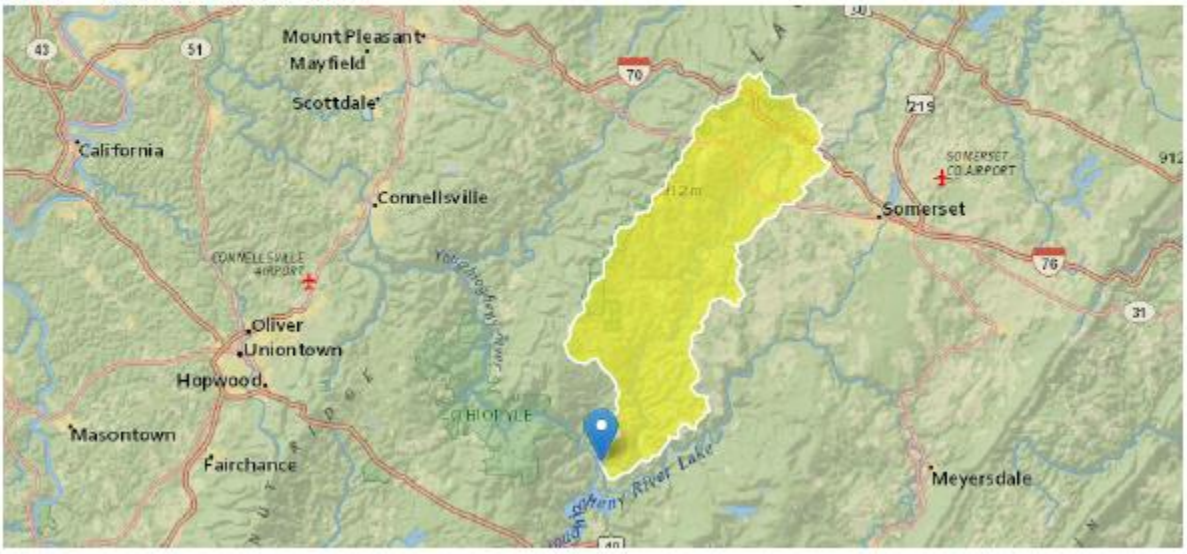
Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Downstream of Discharge Point

Permit No. PA0254380

StreamStats Report

Region ID: PA
Workspace ID: PA20230405122840255000
Clicked Point (Latitude, Longitude): 39.81463, -79.36141
Time: 2023-04-05 08:29:01 -0400



Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (125 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	125	square miles	2.26	1400
ELEV	Mean Basin Elevation	2191	feet	1050	2580

Low-Flow Statistics Flow Report [100.0 Percent (125 square miles) Low Flow Region 4]

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	11.4	ft^3/s	43	43
30 Day 2 Year Low Flow	18.1	ft^3/s	38	38
7 Day 10 Year Low Flow	4.44	ft^3/s	66	66
30 Day 10 Year Low Flow	7	ft^3/s	54	54
90 Day 10 Year Low Flow	13	ft^3/s	41	41

Low-Flow Statistics Citations

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

ATTACHMENT B

WQM 7.0 Modeling Results

Permit No. PA0254380

Summer

Permit No. PA0254380

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
19E	38580	LAUREL HILL CREEK	2.200	1350.00	121.00	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 (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.035	0.00	0.00	0.000	0.000	10.0	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
Ursina Borough	PA0254380	0.0000	0.0400	0.0000	0.000	20.00	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	4.00	9.01	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0254380

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
19E	38580	LAUREL HILL CREEK	0.010	1340.00	125.00	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 (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.035	0.00	0.00	0.000	0.000	10.0	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

Permit No. PA0254380

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19E	38580	LAUREL HILL CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
2.200	4.28	0.00	4.28	.0619	0.00086	.741	40.75	55.02	0.14	0.930	20.00	7.00
Q1-10 Flow												
2.200	2.74	0.00	2.74	.0619	0.00086	NA	NA	NA	0.11	1.188	20.00	7.00
Q30-10 Flow												
2.200	5.83	0.00	5.83	.0619	0.00086	NA	NA	NA	0.17	0.784	20.00	7.00

Permit No. PA0254380

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		

Permit No. PA0254380

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19E	38580	LAUREL HILL 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
2.200	Ursina Borough	16.76	50	16.76	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
2.200	Ursina Borough	1.89	25	1.89	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
2.20	Ursina Borough	25	25	25	25	4	4	0	0

Permit No. PA0254380

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19E	38580	LAUREL HILL CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.200	0.040	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
40.753	0.741	55.023	0.144
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.33	0.131	0.36	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.939	1.183	Tsivoglou	6
Reach Travel Time (days)			
0.930			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.093	2.30	0.33	8.24
0.186	2.27	0.31	8.24
0.279	2.24	0.29	8.24
0.372	2.22	0.27	8.24
0.465	2.19	0.26	8.24
0.558	2.16	0.24	8.24
0.651	2.14	0.23	8.24
0.744	2.11	0.21	8.24
0.837	2.09	0.20	8.24
0.930	2.06	0.19	8.24

Permit No. PA0254380

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19E	38580	LAUREL HILL CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
2.200	Ursina Borough	PA0254380	0.000	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

ATTACHMENT C

TRC Modeling Results

Permit No. PA0254380

TRC_CALC_Ursina Borough

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

4.29	= Q stream (cfs)	0.5	= CV Daily
0.04	= 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 = 22.135	1.3.2.iii	WLA cfc = 21.572
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 8.248	5.1d	LTA_cfc = 12.541

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)