pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Amendment, Major**
Wastewater Type	**Sewage**
Facility Type	**SFTF**

NPDES PERMIT FACT SHEET
INDIVIDUAL SFTF/SRSTP

Application No.	**PA0205729 A-1**
APS ID	**1048046**
Authorization ID	**1370020**

Applicant, Facility and Project Information

Applicant Name	**Jayme S & Shawn H Cunningham**	Facility Name	**Cunningham SFTF**
Applicant Address	208 Rural Valley Road	Facility Address	208 Rural Valley Road
	Claysville, PA 15323-1338		Claysville, PA 15323-1338
Applicant Contact	Shawn Cunningham	Facility Contact	Same as Applicant
Applicant Phone	(724) 263-9299	Facility Phone	Same as Applicant
Client ID	351359	Site ID	262268
SIC Code	8811	Municipality	Blaine Township
SIC Description	Services - Private Households	County	Washington
Date Application Received	September 8, 2021	WQM Required	
Date Application Accepted	September 21, 2021	WQM App. No.	

Project Description: Application for a NPDES Permit Major Amendment for the discharge of a treated Sewage.

Summary of Review

The applicant has applied for a Major Amendment of their NPDES Permit. NPDES Permit PA0205729 was previously issued by the Department on March 30, 2020 and will expire on June 30, 2025.

The applicant requested within the last NPDES Renewal Application, that the permitted design flow of the existing Small Flow Treatment Facility (SFTF) be reduced from 0.0008 MGD to 0.0004 MGD, as only 1 of the 2 homes was occupied and would be in use. Due to the change in the design flow, sampling frequencies were reduced from 1/month to 1/6 months for all parameters except TRC, which remained at 1/month.

WQM Permit No. 6391404 issued on March 13, 1994 authorized the Cunningham SFTF to treat an average design flow of 800 GPD (House Number 206 & 208). Both homes are owned by Mr. & Mrs. Cunningham. The existing treatment process consists of 2 septic tanks (one at each house), sand filtration, and chlorine disinfection.

An Act 537 Planning was approved for this SFTF on March 13, 1994.

The receiving body is Wolf Run, which is classified as a HQ-WWF located in State Watershed 20-E.

For this Major Amendment NPDES Permit application, the applicant has requested that the design flow of the SFTF be increased back to 0.0008 MGD as they now wish to occupy both homes (House Numbers 206 & 208).

Approve	Deny	Signatures	Date
X			December 1, 2021
		Hazim Aldalli / Environmental Engineering Specialist	
x			
		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	December 9, 2021

Summary of Review

Checking on the effluent monitoring data (table attached to this fact sheet on page 8) that been sampled for the facility since the last permit issuance, results show limits exceedance for TRC and Fecal Coliform on individual incidences.

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)	0.0008
Latitude	40º 10' 5.00"	Longitude	-80º 22' 6.00"
Quad Name	Washington West	Quad Code	1703
Wastewater Description:	Sewage Effluent		
Receiving Waters	Wolf Run (HQ-WWF)	Stream Code	32943
NHD Com ID	73865468	RMI	0.758
Drainage Area	2.64	Yield (cfs/mi^2)	0.01038
Q_{7-10} Flow (cfs)	0.0274	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1006.41	Slope (ft/ft)	0.0067
Watershed No.	20E	Chapter 93 Class.	High Quality Waters - Warm Water Fishes
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	

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

Nearest Downstream Public Water Supply Intake	INDEPENDENCE TWP MUNI AUTH		
PWS Waters	Cross Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	14.8

Changes Since Last Permit Issuance: The average monthly flow rate has changed from 0.0004 MGD to 0.0008 MGD and the Sampling Frequency for all Parameters has changed from 1/6 month to 1/month.

Other Comments: See attached StreamStats Report on page 10.

Treatment Facility Summary

Treatment Facility Name: Cunningham SFTF

WQM Permit No.	Issuance Date
6391404	March 13, 1994

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Septic Tank, Sand Filter	Chlorination	0.0008

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0008		Not Overloaded	Septic Tank	-----

Changes Since Last Permit Issuance: None.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0008
Latitude 40º 10' 5.00" **Longitude** -80º 22' 6.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations (TBELs)

The following effluent limitations and monitoring requirements, at a minimum, will be established in all new and renewed SFTF permits based on the requirements of DEP's "Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance Small Flow Treatment Facility Individual NPDES Permit Application" (SOP No. BCW-PMT-003, Version 1.8, Final, November 9, 2012, Revised May 17, 2019).

Parameter	Avg	IMAX	Sample Type	Frequency: SFTFs	Frequency: SRSTPs
Flow (GPD)	Report	XXX	Estimate (SRSTPs) Measured (SFTFs)	1/month	1/year
BOD5 (mg/L)	10	20	Grab	1/month	1/year
TSS (mg/L)	10	20	Grab	1/month	1/year
pH*	6.0 S.U. Inst. Min.	9.0 S.U.	Grab	1/month	1/year
TRC (mg/L)	Report for SRSTPs; Use TRC Spreadsheet to determine WQBELs or 0.02 mg/L for SFTFs		Grab	1/month	1/year
Fecal Coliform (No./100 ml)	200 Geometric Mean (SFTFs) / Average (SRSTPs)		Grab	1/month	1/year

***** Technology-Based effluent limits for pH will be imposed based upon Federal Regulation 133.102(c) and State Regulation 95.2(1).

Additional TBELs:

Outfall 001 discharges to Wolf Run, which is classified as a HQ-WWF. The proposed Major Amendment for this SFTF is an increase of flow (400 GPD to 800 GPD) to an existing on-lot system.

The following Antidegradation Best Available Combination of Technologies (ABACT) effluent limits, at a minimum, will be established based on the requirements of DEP's "Water Quality Antidegradation Implementation Guidance" (Doc. No. 391-0300-002; November 29, 2003).

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*		

The limitations and monitoring requirements, specified on page 7 of this Fact Sheet, reflect the most stringent limitation amongst the above Technology-Based Effluent Limitations.

Anti-Backsliding:

The previously imposed seasonal limits for Ammonia-Nitrogen (AML 3.0 & 9.0 mg/l) will be unchanged due to Anti-Backsliding as stated in 40 CFR Section 122.44(l).

Additional Considerations:

The existing facility was originally permitted prior to the development of the "Water Quality Antidegradation Implementation Guidance" document (Doc. No. 391-0300-002; November 29, 2003). Therefore, per Pa. Code 25 § 92a.48(b)(2), a technology-based effluent limit of 0.5 mg/L for TRC will be imposed. In general, an IMAX limit of 1.6 mg/L is established where the 0.5 mg/L average monthly limit is used per *Standard Operating Procedure (SOP) for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits (SOP No. BCW-PMT-033)*. The Department's TRC_CALC Spreadsheet was used to verify the applicability of the limit. Output files are attached on page 9. The recommended water quality-based effluent limitations (WQBELs) are: 0.5 mg/L average monthly (AML) and 1.17 mg/L instantaneous maximum (IMAX). The IMAX for WQBEL from TRC_CALC Spreadsheet is more stringent than IMAX for TBEL recommended in abovementioned SOP. Therefore, upon applying the Department's round-off guidance, an IMAX of 1.1 mg/L will be imposed at Outfall 001.

Additionally, Pa. Code 25 § 92a.48(b)(3) states:

"Facilities using chlorination that discharge to an Exceptional Value Water, or to a High Quality Water where economic or social justification under § 93.4c(b) (1)(iii) (relating to implementation of antidegradation requirements) has not been demonstrated under applicable State or Federal law or regulations, shall discontinue chlorination or dechlorinate their effluents prior to discharge into the waters."

Therefore, the Department recommends that the facility should dechlorinate the water prior to discharge and consider replacing the chlorination system with UV disinfection or other non-chlorine-based systems before or during the renewal of the next NPDES permitting cycle. A recommendation has been added to the cover letter which states:

Pursuant to Pa. Code 25 § 92a.48(b)(3) that regulate the facilities that discharge to Exceptional Value Water or to a High Quality Water, which is the case with Wolf Run (HQ-WWF) as the receiving water body, the facilities are required to dechlorinate the treated water prior to discharge. Please consider replacing the chlorination system with UV disinfection or other non-chlorine-based systems before or during the next renewal cycle.

BOD_5 limitations were imposed instead of $CBOD_5$ which reflect the most stringent limitation amongst the Technology-Based Effluent Limitations, and based upon the Department's SOP – New and Reissuance Individual SFTF NPDES Permits, and per DEP Small Flow Treatment Facilities Manual (Nov. 2003).

Sampling frequencies have been increased from 1/6 month to 1/month due to the increased effluent rate generated from this facility.

SFTFs/SRSTPs are not required to monitor for Total Nitrogen and Total Phosphorus in new and reissued permits. The receiving stream is not impaired for nutrients.

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/month	Measured
pH (S.U.)	XXX	XXX	6.0 Inst. Min.	XXX	XXX	9.0	1/month	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.1	1/month	Grab
BOD5	XXX	XXX	XXX	10	XXX	20	1/month	Grab
TSS	XXX	XXX	XXX	10	XXX	20	1/month	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/month	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18.0	1/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6.0	1/month	Grab

Compliance Sampling Location: Outfall 001

DMR & AMR Effluent Monitoring Data for Cunningham SRSTP 2020-2021													
Parameter	**Permit Limit**	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Flow (GPD)								288					
pH (S.U.)	6.0-9.0			6.77	6.82	6.81/6.5	6.55	6.95					
TRC	0.5	0.8	0.5	0.8/0.3	1.57/0.4	<0.2/0.3	0.5/0.5	0.4/0.4	0.3/<0.2	0.4/<0.2	0.3/0.26	0.3/0.4	0.5
CBOD5	25-50			<3.0	<3.0	<4.0/<2.0	<3.0	5.51					
TSS	30-60			5	<5.0	<5.0/<5.0	<5.0	<5.0					
Fecal Coliform (No./100 ml)	200-1000			<1	<1	1120/102	1	6498					
Ammonia Nov 1 - Apr 30	9-18			<0.80	<0.80								
Ammonia May 1 - Oct 31	3-6			<0.80				<0.80					

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0274	= Q stream (cfs)	0.5	= CV Daily
0.0008	= Q discharge (MGD)	0.5	= CV Hourly
4	= 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)

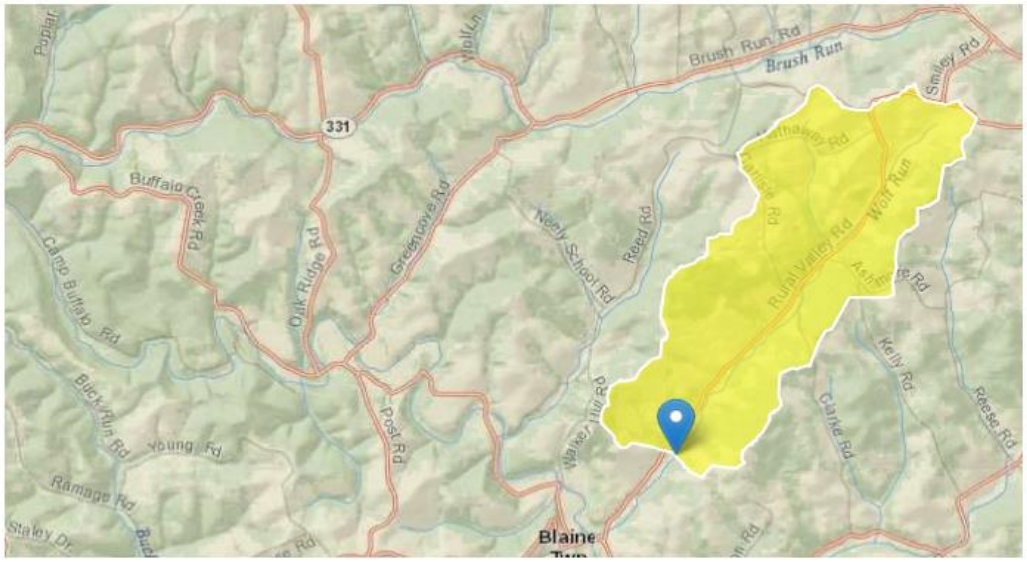
Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 7.082	1.3.2.iii	WLA cfc = 6.896
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 2.639	5.1d	LTA_cfc = 4.009

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.170	

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: PA20211014145728150000
Clicked Point (Latitude, Longitude): 40.16840, -80.36630
Time: 2021-10-14 10:57:50 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.61	square miles
ELEV	Mean Basin Elevation	1218	feet

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.61	square miles	2.26	1400

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
ELEV	Mean Basin Elevation	1218	feet	1050	2580

Low-Flow Statistics Flow Report [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	0.0848	ft^3/s	43	43
30 Day 2 Year Low Flow	0.157	ft^3/s	38	38
7 Day 10 Year Low Flow	0.027	ft^3/s	66	66
30 Day 10 Year Low Flow	0.054	ft^3/s	54	54
90 Day 10 Year Low Flow	0.106	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/)