pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0097012**
Facility Type	**Non-Municipal**	APS ID	**1112788**
Major / Minor	**Minor**	Authorization ID	**1483429**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Stonebridge Gardens Inc.**	Facility Name	**Stonebridge Gardens MHP STP**
Applicant Address	P.O. Box 117	Facility Address	P.O. Box 117
	Friedens, PA 15541-0117		Friedens, PA 15541-0117
Applicant Contact	James Foust	Facility Contact	David Hottle
Applicant Phone	(814) 443-2434	Facility Phone	814-443-2434
Client ID	264013	Site ID	721761
Ch 94 Load Status	Not Overloaded	Municipality	Quemahoning Township
Connection Status		County	Somerset
Date Application Received	April 24, 2024	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: NPDES permit renewal.

Summary of Review

The Pa Department of Environmental Protection (PADEP/Department) received an NPDES permit renewal application from Stonebridge Gardens Inc. (permittee) on April 28, 2024 for permittee's Stonebridge Gardens MHP STP (facility). This is a minor sewage facility with a design flow of 0.008 MGD that discharges into an UNT to Higgins Run (HQ/CWF) in state watershed 18-E. The current permit expired on May 31, 2024. The terms and conditions of the current permit is administratively extended since the renewal application was not received at least 180 days prior to expiration date. Renewal NPDES permit application under Clean Water Program are not covered by PADEP's PDG per 021-2100-001. This fact sheet is developed in accordance with 40 CFR §124.56.

Changes to existing permit: Added: E. Coli, more stringent TRC limits with schedule.

Sludge use and disposal description and location(s): Aerobically digested sludge hauled-off to other WWTP.

Public Participation

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

Approve	Deny	Signatures	Date
√		Reza H. Chowdhury, E.I.T. / Project Manager	May 9, 2024
X		Pravin Patel Pravin C. Patel, P.E. / Environmental Engineer Manager	06/09/2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.008
Latitude	40º 7' 34"	Longitude	-78º 59' 37"
Quad Name	Hooversville	Quad Code	1714
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Higgins Run	Stream Code	45404-u
NHD Com ID	123723802	RMI	0.545 (previous fact sheet)
Drainage Area	0.2 mi^2	Yield (cfs/mi^2)	0.1
Q_{7-10} Flow (cfs)	0.02	Q_{7-10} Basis	Previous fact sheet
Elevation (ft)	1944.34	Slope (ft/ft)	
Watershed No.	18-E	Chapter 93 Class.	HQ/CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	METALS		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°C)	20	Default
Hardness (mg/L)	100	Default
Other:		

Nearest Downstream Public Water Supply Intake		Greater Johnstown WA Riverside	
PWS Waters	Quemahoning Reservoir	Flow at Intake (cfs)	
PWS RMI	1.42	Distance from Outfall (mi)	5.78

Changes Since Last Permit Issuance: None

Other Comments: A visit to the site on May 2008 confirmed the receiving stream to be perennial. The previous permit considered the receiving stream to be CWF. The secondary receiving stream, Higgins Run, has a designated use of High-Quality (HQ) and Cold-Water Fishes (CWF). The discharge existed prior to stream designation; therefore, the anti-degradation analysis may be waived.

Streamflow:
Streamflow values were taken from previous fact sheet.

PWS Intake:
The nearby downstream PWS intake is Greater Johnstown WA Riverside, on Quemahoning Reservoir, at 1.42 RMI which is approximately 5.78 miles downstream of the outfall 001. Due to the larger dilution of the reservoir, the discharge from the facility is expected not to have an adverse effect on the PWS intake.

Background Data:
There's no nearby WQN station to collect background data. In absence of site-specific data, a default pH of 7.0 S.U., temperature of 20°C, and stream hardness of 100 mg/l will be used for modeling, as appropriate.

Wastewater Characteristics:
A default pH of 7.0, discharge temperature of 25°C, and hardness of 100 mg/l will be used in modeling, as appropriate.

Kiskiminetas-Conemaugh Watersheds TMDL:
There's a TMDL for metals in the Kiskiminetas-Conemaugh Watersheds. This TMDL, as any AMD TMDL, identified three primary metals associated with the AMD- Iron, Manganese, and Aluminum. Treated sewage discharge from a minor STP, like this facility, is expected to be less than water quality criteria and not contributing to the stream impairment. Furthermore, an aggregate WLA was included in the TMDL for these types of facilities (plants rated between 0.002 MGD to 0.499 MGD). The current permit has annual monitoring requirements for these three metals which will be reviewed. If a Reasonable Potential isn't demonstrated, existing annual monitoring will be continued.

Antidegradation (Ch. 93.4):
The effluent limits for this discharge have been developed to ensure that existing in-stream uses and the level of water quality necessary to protect the existing uses are maintained and protected.

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

Treatment Facility Summary

Treatment Facility Name: Stonebridge Gardens MHP STP

WQM Permit No.	Issuance Date
5670413	06/02/1971
5670413	01/07/2010

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage			Chlorine tablet with dechlorination	0.008

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.008		Not Overloaded		

Changes Since Last Permit Issuance: None

Treatment Plant Description

Stonebridge Gardens Inc. (permittee) owns and operates a STP named Stonebridge Gardens MHP STP (facility) located in Quemahoning Township, Somerset County. This is a non-publicly owned minor sewage facility with a design flow of 0.008 MGD. Per the application, the treatment system consists of the following treatment units:

Headworks → EQ tank → Grinder pumps → Aeration Tank → Clarifier with one return and one skimmer return → chlorine tablet contact tank → Dechlorination tank → Flow meter → Discharge.

Digested sludge is hauled off site to Johnstown STP by licensed hauler.

Compliance History

DMR Data for Outfall 001 (from April 1, 2023 to March 31, 2024)

Parameter	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23
Flow (MGD) Average Monthly	0.005	0.005	0.008	0.006	0.003	0.002	0.002	0.002	0.003	0.002	0.003	0.006
pH (S.U.) Instantaneous Minimum	7.1	7.3	7.0	7.2	7.3	7.4	7.6	7.0	6.5	6.1	6.1	6.5
pH (S.U.) IMAX	7.8	8.1	8.0	7.9	7.9	8.4	8.4	7.6	7.7	7.2	7.5	7.5
DO (mg/L) Instantaneous Minimum	6.5	6.6	6.2	4.5	4.1	4.0	4.1	4.1	4.1	4.5	4.1	4.1
TRC (mg/L) Average Monthly	0.017	0.03	0.03	0.006	0.03	0.10	0.13	0.17	0.07	0.01	0.02	0.023
TRC (mg/L) IMAX	0.06	0.11	0.07	0.05	0.24	1.45	1.31	1.69	1.34	0.05	0.22	0.05
CBOD5 (mg/L) Average Monthly	3.5	5.0	5.0	6.0	15.5	17.0	15.0	7.3	11.0	15.0	22.5	6.0
CBOD5 (mg/L) IMAX	4.0	5.0	5.0	8.0	26.0	31.0	25.0	13.0	14.0	15.0	23.0	8.0
TSS (mg/L) Average Monthly	10.0	3.5	12.0	23.0	16.3	17.0	20.0	7.0	10.0	30.0	24.0	17.0
TSS (mg/L) IMAX	13.0	5.0	18.0	27.0	28.0	31.0	26.0	12.0	11.0	46.0	24.0	20.0
Fecal Coliform (No./100 ml) Geometric Mean	20	18	1.0	129	39	28.1	243	1.0	1.7	4.0	19.0	1.7
Fecal Coliform (No./100 ml) IMAX	413	37	13241	5562	282	2481	2420	1.0	3.0	7.0	36.0	3.1
Total Nitrogen (mg/L) Daily Maximum				29.2								
Ammonia (mg/L) Average Monthly	0.39	0.395	0.5	2.07	18.9	16.5	6.55	1.04	0.64	2.73	2.35	0.16
Ammonia (mg/L) IMAX	0.68	0.69	0.55	2.33	30.8	30.3	7.36	1.98	1.06	3.59	3.52	0.16
Total Phosphorus (mg/L) Daily Maximum				0.47								
Total Aluminum (mg/L) Daily Maximum				0.1								
Total Iron (mg/L) Daily Maximum				0.09								
Total Manganese (mg/L) Daily Maximum				0.07								

Compliance History

Effluent Violations for Outfall 001, from: May 1, 2023 To: March 31, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	09/30/23	Geo Mean	243	No./100 ml	200	No./100 ml
Fecal Coliform	09/30/23	Geo Mean	243	No./100 ml	200	No./100 ml
Fecal Coliform	01/31/24	IMAX	13241	No./100 ml	10000	No./100 ml
Fecal Coliform	09/30/23	IMAX	2420	No./100 ml	1000	No./100 ml
Fecal Coliform	09/30/23	IMAX	2420	No./100 ml	1000	No./100 ml
Fecal Coliform	01/31/24	IMAX	13241	No./100 ml	10000	No./100 ml
Ammonia	10/31/23	Avg Mo	16.5	mg/L	7.5	mg/L
Ammonia	10/31/23	IMAX	30.3	mg/L	15.0	mg/L

Summary of Inspections:

January 20, 2022: CEI conducted. DMR violations noted for fecal coliform, TSS, and Ammonia.

December 22, 2020: RTPT conducted. No violation identified during the inspection. It was evident that the chlorine contact tank was pumped and cleaned out as a result of an effluent violation in previous month. The outfall had little flow and the effluent was clear and odorless.

May 14, 2019: CEI conducted. No violation identified during the inspection. DMR violations noted for TSS and TRC.

Existing Limits

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)	0.008	XXX	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/weekday	Grab
Dissolved Oxygen	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/weekday	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.8	XXX	2.0	1/weekday	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
Total Suspended Solids	XXX	XXX	XXX	30.0	XXX	60.0	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
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	22.5	XXX	45.0	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	7.5	XXX	15.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Aluminum, Total	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Iron, Total	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Manganese, Total	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .008
Latitude 40º 7' 32.00" **Longitude** -78º 59' 31.00"
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)

Water Quality-Based Effluent Limits:

WQM 7.0
Since there's no change to the discharge or the receiving stream, and the previous modeling effort seemed accurate, the existing CBOD5, NH3-N, and DO limits will be carried over.

TSS:
There is no water quality criterion for TSS. The existing limits of 30 mg/L average monthly and 60 mg/L instantaneous maximum will remain in the permit based on the minimum level of effluent quality attainable by secondary treatment, 25 Pa. Code § 92a.47 and 40CFR 133.102(b).

pH:
The TBEL for pH is above 6.0 and below 9.0 S.U. (40 CFR §133.102(c) and Pa Code 25 §§ 95.2(1), 92a.47) which are existing limits and will be carried over.

Total Nitrogen:
PADEP's SOP BCW-PMT-033 recommends monitoring for Total Nitrogen for facilities with design flow more than 2000-GPD, which is also supported by Pa Code 25 Ch. 92a.61. Current monitoring requirement will be continued.

Total Phosphorus:
PADEP's SOP BCW-PMT-033 recommends monitoring for Total Phosphorus for facilities with design flow more than 2000-GPD, which is also supported by Pa Code 25 Ch. 92a.61. Current monitoring requirement will be continued.

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 § 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. These are existing requirements and will be carried over in this renewal.

E. Coli:
Pa Code 25 § 92a. 61 requires monitoring of E. Coli. DEP's SOP titled "Establishing Effluent Limitations for Individual Sewage Permits (BCW-PMT-033, revised March 24, 2021) recommends annual E. Coli monitoring for sewage dischargers with design flow between 0.002-0.05 MGD. This requirement will be applied from this permit term.

TRC:
The current permit has 0.8 mg/l as Average Monthly limit and 2.0 mg/l as IMAX. These values are higher than BAT/BPJ values, therefore, TRC_Calc modeling spreadsheet is utilized to determine appropriate limits. With the input of discharge (0.008 MGD) and streamflow of 0.02 cfs, the model output shows an appropriate Average Monthly limit of 0.245 mg/l and IMAX of 0.8 mg/l. These are more stringent than current permit limits. Since the facility has a dechlorination system installed in place, the permittee may meet the new limits with proper management of the system without any need for additional units. A compliance schedule of 2 years should be sufficient to meet the new limits.

TMDL Parameters:
As discussed in page 3 of this report, annual monitoring will be continued unless a reasonable potential is demonstrated. The sample results in the application indicated all three AMD parameters are discharging at a concentration lower than the most stringent criteria, therefore existing monitoring requirements will be carried over.

Monitoring Frequency and Sample Types:
Unless otherwise specified above, the monitoring frequency and sample type of compliance monitoring for existing parameters are recommended by DEP's SOP and Permit Writers Manual and/or on a case-by-case basis using best professional judgment (BPJ).

Anti-Backsliding
Anti-backsliding prohibition is justified in sections where an exception is justified for the affected pollutant(s). For remaining pollutants, this prohibition isn't applicable since the proposed limits are at least as stringent as were in current permit.

Special Parameters Monitoring:
PADEP has determined that they have sufficient data over the past 7 years of implementing the special monitoring logic for TDS, Sulfate, Chloride, Bromide, and 1,4-Dioxane, and monitoring is no longer needed. The previous permit didn't have TDS monitoring and it won't be included in this renewal.

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	0.008	XXX	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/weekday	Grab
Dissolved Oxygen	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/weekday	Grab
Total Residual Chlorine (TRC) Interim	XXX	XXX	XXX	0.8	XXX	2.0	1/weekday	Grab
Total Residual Chlorine (TRC) Final	XXX	XXX	XXX	0.245	XXX	0.8	1/weekday	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
Total Suspended Solids	XXX	XXX	XXX	30.0	XXX	60.0	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
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	22.5	XXX	45.0	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	7.5	XXX	15.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Aluminum, Total	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab

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		
Iron, Total	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Manganese, Total	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab

Compliance Sampling Location: At Outfall 001

Other Comments: None

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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.02	= Q stream (cfs)	0.5	= CV Daily
0.008	= 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 =	0.535	1.3.2.iii	WLA cfc =	0.514
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.199	5.1d	LTA_cfc =	0.299

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.245	AFC
		INST MAX LIMIT (mg/l) =	0.802	

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)