pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0039225**
Facility Type	**Non-Municipal**	APS ID	**1025109**
Major / Minor	**Minor**	Authorization ID	**1330252**

Applicant and Facility Information

Applicant Name	**Blaine E Rhodes**	Facility Name	**Reno Village STP**
	DBA B.E. Rhodes Sewer Company		
Applicant Address	PO Box 397	Facility Address	Rte 8
	Reno, PA 16343-0397		Reno, PA 16343
Applicant Contact	Randall L Rhodes, Secretary/Operator	Facility Contact	
Applicant Phone	(814) 676-2730	Facility Phone	
Applicant Fax	(814)-676-2730	Facility Fax	
Applicant E-Mail	vwc-rlr@pa.rr.com	Facility E-Mail	
Client ID	271968	Site ID	246451
Municipality	Sugarcreek Borough	County	Venango5960.
Ch 94 Load Status	Not Overloaded	Connection Status	No Limitations
SIC Code	**4952**	SIC Description	Private sewage
Application Received	September 29, 2020	EPA Waived?	Yes
Application Accepted	October 21, 2020	If No, Reason	
Purpose of Application	NPDES discharge permit renewal		

Summary of Review

This is a privately owned PUC regulated sewage collection and treatment facility with no listed violations in WMS. Daily DO, pH and TRC monitoring was proposed for the existing permit and was relaxed to 4/week upon issuance for the permit term. Daily monitoring is again proposed.

Randall Rhodes requested continuing the 4/week DO, pH and TRC monitoring and reducing the nutrient monitoring to quarterly. No DO, pH and TRC monitoring changes were made as the monitoring is based on written guidance. The nutrient monitoring was relaxed as nutrients are not limited and the data is being collected to study future nutrient requirements.

Sludge Disposal: Dried sludge is landfilled and liquid sludge sent to the Franklin General Authority.

Public Participation

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

Approve	Deny	Signatures	Date
X		William H. Mentzer William H. Mentzer, P.E. Environmental Engineering Specialist	October 26, 2020
X		Justin C. Dickey Justin C. Dickey, P.E. Environmental Engineer Manager	March 1, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.0465
Latitude NHD	41º 24' 55.05"	Longitude NHD	-79º 46' 37.83"
Latitude DP	41º 24' 59.11"	Longitude DP	-79º 46' 39.20"
Latitude MP	41º 25' 6.37"	Longitude MP	-79º 46' 22.93"
Quad Name	Franklin	Quad Code	0707
Wastewater:	Treated municipal sanitary sewer wastes		

Receiving Waters	Unnamed tributary to the Allegheny River	Stream Code	unknown
NHD Com ID	100476659	RMI	0,31
Drainage Area	0.05	Yield (cfs/mi^2)	0
Q_{7-10} Flow (cfs)	0	Q_{7-10} Basis	Dry swale
Elevation (ft)		Slope (ft/ft)	
Watershed No.	16-E	Chapter 93 Class.	WWF
Existing Use	**statewide**	Existing Use Qualifier	None
Exceptions to Use	none	Exceptions to Criteria	None

Comments: This is a dry drainage swale discharge previously evaluated at Allegheny River RMI 127.59 And 0.65-mile above Seneca Run Drainage 4700 square miles and elevation 956.09 feet; At the downstream at USGS station and RMI 124.30 Drainage 5960.50 square miles and elevation 937.30 feet. The monitoring point is the dry stream discharge

Low Flow Basis	Allegheny River at Franklin	Station	03025500	RMI	124.30		
	Yield (cfs)	0.12	Low Flow (cfs)	683	Drainage (sq-mi)	5690.508	
Comments	The Allegheny River is regulated below the outfall in Franklin at 1250-cfs						

Assessment Status	Impaired
Impairment Cause(s)	mercury
Impairment Source(s)	source unknown
TMDL Status	Name
Comments	

Background/Ambient Data		Data Source
pH (SU)	7.3	WQN 805 at West Hickory
Temperature (°C)	25	WWF
Hardness (mg/L)	57.133	WQN 805 at West Hickory
Alkalinity:	36.445	WQN 805 at West Hickory

Nearest Downstream Public Water Supply Intake	Emlenton Water Company/Aqua Pa		
PWS Waters	Allegheny River	Flow at Intake (cfs)	In Franklin 1250
PWS RMI	90.57	Distance from Outfall (mi)	37.1

Changes Since Last Permit Issuance: none

Other Comments: none

Treatment Facility Summary				
Treatment Facility Name: Reno Village STP				
WQM Permit No.	**Issuance Date**			
6188402	26 October 1988			
6188402 T1	November 18, 1984			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.0465
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.0465	85	Not Overloaded	Drying	landfill

Commercial and Industrial waste sources: Non-significant Categorical industrial users
Joy Mfg Chain Plant
Wegel Machine, inc
Webco Industries, Inc.

No hauled in wastes reported.

Changes Since Last Permit Issuance: none

Other Comments: WQM permits 362-S-33, 362-S-33 T-1, 6171401, and 6172408 are cancelled permits with parts retained by WQM permit 6188402.

	Month	Year	Mean MGD	Max MGD	Mean PPD	Max PPD	Min mg/L	Mean mg/L	Max mg/L	#	Min mg/L	Mean mg/L	Max mg/L	#
Annual Average Flow														
Hydraulic Design Flow														
Organic Design														
Annual Average Flow														
		2017	**0.031**											
		2018	**0.037**											
		2019	**0.037**											
Highest Monthly Ave	**June**	**2019**	**0.045**											
Dissolved Oxygen														
pH											**6.7**		**7.7**	**834**
BOD5								**240.63**	**380**	**8**				
CBOD5												**7.75**	**22.0**	**48**
TSS								**299.25**	**552**	**8**		**6.35**	**18.0**	**48**
Nitrogen												**37.1**	**5`.6**	**48**
Ammonia												**0.74**	**17.0**	**48**
Phosphorus												**5.6**	**7.7**	**48**
Nitrite-Nitrate Nitrogen														
Total Dissolved Solids														
Chloride														
Sulfate														

Soda ash is used for pH adjustment
Sodium hypochlorite is used for disinfection
5.047-dry tons sludge removed in the previous year. 42.8-dry tons sent to the Northwest Sanitary Landfill and 5.047-dry tons sent to the Franklin City General Authority
Heffren Septic Tank Service hauls the liquid sludge and Waste Management hauls the dry sludge.

Compliance History

DMR Data for Outfall 001 (from September 1, 2019 to August 31, 2020)

Parameter	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19
Flow (MGD) Average Monthly	0.034	0.033	0.030	0.030	0.033	0.036	0.035	0.035	0.033	0.033	0.035	0.036
Flow (MGD) Daily Maximum	0.041	0.038	0.032	0.034	0.054	0.053	0.047	0.056	0.036	0.037	0.043	0.050
pH (S.U.) Minimum	6.94	6.92	6.88	6.83	6.79	6.87	6.85	6.88	6.88	7.02	6.72	6.99
pH (S.U.) Instant Maximum	7.47	7.4	7.41	7.26	7.33	7.25	7.26	7.28	7.36	7.39	7.35	7.38
DO (mg/L) Instant Minimum	4.85	4.42	4.72	4.57	5.12	4.74	5.14	6.27	5.63	5.71	5.43	4.58
TRC (mg/L) Average Monthly	0.39	0.34	0.36	0.41	0.29	0.36	0.35	0.42	0.5	< 0.40	0.37	0.38
TRC (mg/L) Instant Maximum	0.59	0.42	0.47	0.53	0.53	0.55	0.56	0.62	0.84	0.47	0.48	0.5
CBOD5 (mg/L) Average Monthly	3.75	2.5	2.75	4.15	3.5	5.0	4.85	2.35	< 2.05	3.85	< 2.05	3.75
BOD5 (lbs/day) Influent Ave Monthly			200			320			220			213
BOD5 (lbs/day) Influent Daily Max			200			320			220			213
BOD5 (mg/L) Influent Ave Monthly			200			320			220			213
TSS (lbs/day) Influent Ave Monthly			240			310			330			290
TSS (lbs/day) Influent Daily Max			240			310			330			290
TSS (mg/L) Average Monthly	< 5.0	5.0	5.5	9.5	< 5.0	5.0	< 5.0	< 5.0	< 5.5	< 5	5.0	< 5.0
TSS (mg/L) Influent Ave Monthly			240			310			330			290
Fecal Coliform (#/100 ml) Geometric Mean	< 10.0	< 10.0	31.15	29.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10	< 10.0	< 15.49
Total Nitrogen (mg/L) Average Monthly	51.6	48.6	50.9	45.55	34.35	48.05	38.55	40.0	37.74	40.77	38.1	33.4
Ammonia (mg/L) Average Monthly	< 0.21	0.14	< 0.1	0.11	0.34	0.53	1.70	< 0.11	< 0.1	< 0.1	< 0.10	0.16
Total Phosphorus (mg/L) Ave Monthly	7.85	8.34	8.35	6.52	6.40	6.70	5.83	6.18	4.67	5.52	5.85	5.61

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0465
Latitude 41º 24' 59.11" **Longitude** -79º 46' 39.20"
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)
DO	4.0			BPJ

Comments: none

Water Quality-Based Limitations

A Sewerage program based “Reasonable Potential Analysis” determined the following parameters were candidates for limitations: CBOD5, TSS, nitrogen, ammonia, phosphorus, dissolved oxygen and pH

The following limitations were determined through water quality modeling (output files attached):

Parameter		Limit (mg/L)			SBC	Model		
Name	Period	Min	Mean	Max		Min	Mean	Max
CBOD5			25.0	50.0			25,0	50.0
TSS			30.0	60.0			30.0	60.0
Ammonia							25.0	
pH		6.0		9.0		6.0		9.0
DO		4.0			4.0			

Comments: No nutrient requirements have been established for the receiving waters and ammonia requirements are not necessary in the dry stream reach or Allegheny River. The discharge is to low laying area with several drains to the Allegheny River.

Best Professional Judgment (BPJ) Limitations

Comments: For effluent DO.

Anti-Backsliding

Not considered as the existing requirements are being achieved.

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	Report Daily Max	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
TRC	XXX	XXX	XXX	0.5	XXX	1.2	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50.0	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	6-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60.0	2/month	8-Hr Composite
TSS Raw Sewage Influent	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	8-Hr Composite
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/quarter	8-Hr Composite

Compliance Sampling Location: Outfall 001 after disinfection

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
18A	42122	ALLEGHENY RIVER	**127.580**	956.09	4700.00	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	0.120	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.30	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
Reno Village	PA0039225	0.0465	0.0465	0.0465	0.000	25.00	7.20

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	7.54	0.00	0.00
NH3-N	25.00	0.10	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
18A	42122	ALLEGHENY RIVER	**124.300**	937.30	5960.50	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	0.120	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.30	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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18A	42122	ALLEGHENY RIVER

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												
127.580	564.00	0.00	564.00	.0719	0.00108	1.171	446.75	381.4	1.08	0.186	25.00	7.30
Q1-10 Flow												
127.580	360.96	0.00	360.96	.0719	0.00108	NA	NA	NA	0.84	0.239	25.00	7.30
Q30-10 Flow												
127.580	767.04	0.00	767.04	.0719	0.00108	NA	NA	NA	1.28	0.157	25.00	7.30

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	Uniform Treatme	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	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18A	42122	ALLEGHENY RIVER

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
127.580	Reno Village	NA	50	5.22	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
127.580	Reno Village	NA	25	1.13	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)		
127.58	Reno Village	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18A	42122	ALLEGHENY RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
127.580	0.047	25.000	7.300
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
446.749	1.171	381.402	1.078
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.00	0.002	0.10	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.540	5.455	Tsivoglou	5
Reach Travel Time (days)			
0.186			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.019	2.00	0.10	7.54
0.037	2.00	0.10	7.54
0.056	2.00	0.10	7.54
0.074	2.00	0.10	7.54
0.093	2.00	0.10	7.54
0.112	2.00	0.10	7.54
0.130	2.00	0.10	7.54
0.149	2.00	0.10	7.54
0.167	2.00	0.10	7.54
0.186	2.00	0.10	7.54

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18A	42122	ALLEGHENY RIVER

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)
127.580	Reno Village	PA0039225	0.047	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

1A	B	C	D	E	F	G	H	I	J	K	L	M
	Discharger		Reno Village						Wednesday, October 21, 2020			
	Site		Reno Village STP					Revised	Monday, March 1, 2021			
	Municipality		Sugar Creek Borough									
	County		Venango									
	NPDES Permit		PA0039225									
2	**TRC EVALUATION**											
3	Input appropriate values in B4:B8 and E4:E7											
4	564.1156	**= Q stream (cfs)**				**0.5**	**= CV Daily**					
5	0.0465	**= Q discharge (MGD)**				**0.5**	**= CV Hourly**					
6	30	**= no. samples**				**1**	**= AFC_Partial Mix Factor**					
7	0.4	**= Chlorine Demand of Stream**				**1**	**= CFC_Partial Mix Factor**					
8	0	**= Chlorine Demand of Discharge**				**15**	**= AFC_Criteria Compliance Time (min)**					
9	**0.5**	**= BAT/BPJ Value**				**720**	**= CFC_Criteria Compliance Time (min)**					
	0	**= % Factor of Safety (FOS)**					**=Decay Coefficient (K)**					
10	Source	Reference	AFC Calculations				Reference		CFC Calculations			
11	TRC	**1.3.2.iii**		WLA afc =	3285.802		**1.3.2.iii**		WLA cfc =	3223.058		
12	PENTOXSD TRG	**5.1a**		LTAMULT afc =	0.373		**5.1c**		LTAMULT cfc =	0.581		
13	PENTOXSD TRG	**5.1b**		LTA_afc=	1224.368		**5.1d**		LTA_cfc =	1873.735		
14												
15	Source					Effluent Limit Calculations						
16	PENTOXSD TRG	5.1f				AML MULT =	1.231					
17	PENTOXSD TRG	5.1g				AVG MON LIMIT (mg/l) =	0.500		BAT/BPJ			
18						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)**

(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....
....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)

Chlorine Required			=	perennial	Chlorine Demand	+ Chlorine Residual
Stream	Reach/Node		2	1	2	
Stream	Flow	Conditions		dry	perennial	
Stream	Code			49939	42122	
	Function				secondary	
Samples				30	30	
reach	outfall		RMI	0.32	127.58	
	Reach End		RMI	0	124.3	
reach			feet	1689.6	17318.4	
drainage			sq miles	0.23	4700	
TRC	limitation	average	mg/L	0.082	0.500	
		maximum	mg/L	0.270	1.635	
elevation		modelled	feet	1628.95	956.9	
elevation		modelled	feet	1238.19	937.3	
slope		modelled	foot/foot	0.231	0.001	
low flow			cfs/sq mi	0.120	0.120	
discharge			mgd	0.0465	0.0465	
Runoff	Period		hours	24.000	24.000	

Dry stream discharge with no known need to protect aquatic life therefore no requirements are proposed.

stream	flow		cfs	0.02761	564.11563
stream	flow		MGD	0.017842	364.597522
stream	flow	total	MGD	0.064342	364.644022
stream	chlorine	demand	mg/L	0.4	0.4
discharge	discharge	demand	mg/L		
stream	Total Stream/Waste		ratio	1.4	7841.8

The first point of use is the Allegheny River where water-quality based limits are not necessary. Mussel habitat was not evaluated but with the overland flow providing a rapid chlorine disapation and Allegheny River dilution no critical habitat impairmmt is expected.

permitted	TRC	mean	BAT	0.5	0.5						
permitted	TRC	maximum	WQ	1.2	1.2						
Total Stream:	Waste ratio:	14351	low flow	1250.0	cfs	drainage	5690.5	sq mil	yield	0.220	cfs/sq-mi
		7842	low flow	683	cfs	drainage	5690.5	sq mil	yield	0.120	cfs/sq-mi

B	C	D	E	F	G	H	I	J	K	L	M	