pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0252999**
Facility Type	**Municipal**	APS ID	**1052600**
Major / Minor	**Minor**	Authorization ID	**1377857**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Unity Township Municipal Authority**	Facility Name	**14 Mile Run STP**
Applicant Address	PO Box 506	Facility Address	Beatty County Road
	Pleasant Unity, PA 15676-0506		Latrobe, PA 15650
Applicant Contact	Douglas Pike	Facility Contact	Same as Applicant
Applicant Phone	(724) 423-6888	Facility Phone	Same as Applicant
Client ID	62039	Site ID	654515
Ch 94 Load Status	Not Overloaded	Municipality	Unity Township
Connection Status	No Limitations	County	Westmoreland
Date Application Received	December 2, 2021	EPA Waived?	Yes
Date Application Accepted	December 3, 2021	If No, Reason	

Purpose of Application: Application for renewal of a NPDES Permit for an existing discharge of treated sewage.

Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0252999. PA0252999 was previously issued by the PA Department of Environmental Protection (DEP) on May 23, 2017 and expires on May 31, 2022.

Sewage at this facility is treated with grit removal, extended aeration, final clarification, and UV disinfection before discharging to Fourmile Run through Outfall 001 which is classified as a Warm Water Fishery (WWF) per Chapter 93 Designated Use.

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

The applicant complied with Act 14 Notification and no comments were received.

Sludge produced at this facility is treated by aerobic digestion and centrifuge dewatering prior to disposal in a landfill.

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

Approve	Deny	Signatures	Date
X		Stephanie Conrad / Environmental Engineering Specialist	March 15, 2022
x		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	April 19, 2022

Summary of Review
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)	.95
Latitude	40º 17' 54"	Longitude	-79º 24' 39"
Quad Name	Latrobe	Quad Code	1610
Wastewater Description:	Sewage Effluent		

Receiving Waters	Fourmile Run (WWF)	Stream Code	75717
NHD Com ID	125292644	RMI	0.69
Drainage Area	7.84	Yield (cfs/mi^2)	0.031
Q_{7-10} Flow (cfs)	0.243	Q_{7-10} Basis	USGS Stream Stats
Elevation (ft)	1000	Slope (ft/ft)	
Watershed No.	18-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Metals, Total Suspended Solids (TSS)		
Source(s) of Impairment	Acid Mine Drainage		
TMDL Status	Final, Superseded by the Kiski-Conemaugh Watershed.	Name	Kiskiminetas-Conemaugh River Watersheds TMDL, Monastery Run Watershed

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

Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority Freeport		
PWS Waters	Allegheny River	Flow at Intake (MGD)	1.25
PWS RMI	29.2	Distance from Outfall (mi)	53.4

Changes Since Last Permit Issuance:

Other Comments:

Treatment Facility Summary

Treatment Facility Name: 14 Mile Run STP

WQM Permit No.	Issuance Date
6505410	May 30, 2006

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Ultraviolet	0.905

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.905	1,106	Not Overloaded	Dewatering	Landfill

Changes Since Last Permit Issuance: None

Other Comments:

Compliance History

Facility: 14 Mile Run STP

NPDES Permit No.: PA0252999

Compliance Review Period: 2/2017 – 2/2022

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
2991432	11/19/2019	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted
2676310	12/27/2017	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

No Violations

Open Violations by Client ID:

No open violations for client id 62039

Enforcement Summary:

No open enforcements

DMR Violation Summary:

MONITORING END DATE	OUTFALL	PARAMETER	STATISTICAL BASE CODE	PERMIT VALUE	SAMPLE VALUE	UNIT OF MEASURE
9/30/2017	1	Ammonia-Nitrogen	Weekly Average	3.6	12.3	mg/L
9/30/2017	1	Ammonia-Nitrogen	Average Monthly	2.4	3.2	mg/L
10/31/2017	1	Ammonia-Nitrogen	Weekly Average	3.6	4.9	mg/L

Compliance Status:

Permittee in compliance.

Completed by: John Murphy

Completed date: 2/10/2022

Compliance History

DMR Data for Outfall 001 (from November 1, 2020 to October 31, 2021)

Parameter	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20
Flow (MGD) Average Monthly	0.277	0.323	0.291	0.258	0.285	0.377	0.301	0.38	0.379	0.339	0.364	0.268
Flow (MGD) Daily Maximum	0.475	1.509	0.859	0.345	0.53	0.887	0.443	0.979	1.13	0.892	0.745	0.493
pH (S.U.) Minimum	7.0	7.0	6.7	6.4	6.4	6.4	6.0	6.4	6.6	6.0	6.8	6.1
pH (S.U.) Maximum	7.4	7.5	7.6	7.0	7.4	7.1	7.0	7.1	7.1	7.2	7.2	7.0
DO (mg/L) Minimum	7.5	7.3	7.4	6.4	6.1	6.8	6.6	7.5	7.4	7.4	8.7	8.0
$CBOD_5$ (lbs/day) Average Monthly	3	4	7	8	6	9	7	8	17	8	8	5
$CBOD_5$ (lbs/day) Weekly Average	4	14	14.3	9	7	15	7.2	17	31	11	14	6
$CBOD_5$ (mg/L) Average Monthly	1	2	2	4	3	3	3	3	5	3	2	2
$CBOD_5$ (mg/L) Weekly Average	2	2	3	4	3	5	3	4	8	4	3	3
BOD_5 (lbs/day) Raw Sewage Influent Average Monthly	293	312	341	393	445	367	452	438	600	439	522	327
BOD_5 (lbs/day) Raw Sewage Influent Daily Maximum	369	363	378	428	692	418	555	488	953	571	652	397
BOD_5 (mg/L) Raw Sewage Influent Average Monthly	142	144	172	194	173	136	201	165	182	164	174	162
TSS (lbs/day) Average Monthly	7	5	7	9	132	10	14	18	47	15	17	13
TSS (lbs/day) Raw Sewage Influent Average Monthly	215	166	258	346	376	318	343	361	503	377	457	306

TSS (lbs/day) Raw Sewage Influent Daily Maximum	316	294	296	422	484	415	453	476	854	462	698	387
TSS (lbs/day) Weekly Average	13	13	15	15	20	14	21.3	42	122	18	32	26
TSS (mg/L) Average Monthly	3	2	3	4	5	4	7	6	13	5	5	7
TSS (mg/L) Raw Sewage Influent Average Monthly	110	76	130	171	157	114	153	130	146	136	146	152
TSS (mg/L) Weekly Average	4	6	7	7	10	4	10	10	31	7	9	13
Fecal Coliform (No./100 ml) Geometric Mean	7	15	27	9	7	3	12	13	106	65	41	36
Fecal Coliform (No./100 ml) Instantaneous Maximum	37						120	128	120	120	158	120
UV Intensity (mW/cm²) Minimum	10.5	10.5	10.5	10.5	4.3	10.5	10.6	4.3	10.6	4.3	4.3	10.6
Total Nitrogen (mg/L) Daily Maximum	GG	GG	43.8	GG	GG	11.3	GG	GG	GG	29.6	GG	38.7
Ammonia (lbs/day) Average Monthly	0.2	0.6	0.6	0.2	0.5	0.3	0.2	0.9	9.9	0.4	0.3	0.2
Ammonia (lbs/day) Weekly Average	1.1	1.0	1.9	0.4	1.4	0.5	0.2	2.5	30.3	0.6	0.5	0.2
Ammonia (mg/L) Average Monthly	0.1	0.3	0.3	0.1	0.2	0.1	0.1	0.3	2.5	0.1	0.1	0.1
Ammonia (mg/L) Weekly Average	0.5	0.5	1.0	0.2	0.4	0.2	0.1	0.6	6.1	0.2	0.1	0.1
Total Phosphorus (mg/L) Daily Maximum	6.2	4.4	5.3	6.1	5.9	7	5.0	5.1	4.6	5.4	4.7	5.6

Summary of Inspections: The facility was last inspected by the Department of Environmental Protection on November 19, 2019 and no violations were noted.

Permit No. PA0252999

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .95
Latitude 40º 17' 54.00" **Longitude** -79º 24' 39.00"
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
$CBOD_5$	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 Limitations (WQBELs)

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

The effluent was modeled using WQM 7.0 to evaluate $CBOD_5$, ammonia-nitrogen, and Dissolved Oxygen (DO) parameters. Modeling confirmed that water-quality based effluent limits are necessary for ammonia-nitrogen, $CBOD_5$, and DO. The modeling also determined that stricter water-quality based effluent limits are necessary to meet instream criteria for ammonia-nitrogen and $CBOD_5$. In accordance with the SOP's. winter ammonia-nitrogen limits are assessed by comparing the winter WQM 7.0 output value with one calculated from the summer limit using a seasonal multiplier of three. The more restrictive of two values is then imposed. For this facility, the winter ammonia-nitrogen limit to be imposed is the WQM 7.0 winter model output value. WQM 7.0 output files are provided in Attachment A.

Ammonia-nitrogen and $CBOD_5$ limits are becoming more restrictive. Based on eDMR data, the facility as currently operating should be able to meet the new, more restrictive limits.

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

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	5.0	Instantaneous Minimum	WQM 7.0
Ammonia-Nitrogen (summer)	2.0	Average Monthly	WQM 7.0

Ammonia-Nitrogen (winter)	4.5	Average Monthly	WQM 7.0
$CBOD_5$	15	Average Monthly	WQM7.0

Monastery Run Watershed TMDL

Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's Water Quality Planning and Management Regulations (codified at Title 40 of the Code of Federal Regulations Part 130) require states to develop a TMDL for impaired water bodies. A TMDL establishes the amount of a pollutant that a water body can assimilate without exceeding water quality criteria for the pollutant. TMDLs also provide a scientific basis for states to establish water quality-based controls for reducing pollution from both point and non-point sources in order to restore and maintain the quality of the state's water resources (USEPA 1991a). Stream Reaches within the Monastery Run Watershed were included in the state's 1996 Section 303(d) list because of various impairments including metals, pH, and sulfates.
A Final TMDL for Monastery Run Watershed was complete on March 17, 2005 for the control of acid mine drainage pollutants: aluminum, iron, manganese, pH, and sulfates. In accordance with 40 CFR § 122.44(d)(1)(vii)(B), when developing WQBELs, the permitting authority shall ensure that effluent limits developed to protect a narrative water criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation (WLA) for the discharge.

The facility permit, PA0252999, is not listed in the Monastery Run Watershed TMDL as the facility was built after the TMDL was finalized. This TMDL was superseded by the 2010 Final Kiskiminetas-Conemaugh River Watershed TMDL, so not limits or monitoring requirements will be imposed based on the Monastery Run Watershed TMDL.

Kiskiminetas-Conemaugh River Watershed TMDL

Stream reaches within the Kiskiminetas-Conemaugh River Watershed are included in the state's 2008 Section 303(d) list because of various impairments including metals, pH, and sediment.

14 Mile Run STP (PA0252999) discharges to the Kiskiminetas-Conemaugh River Watershed, for which a TMDL was finalized on January 29, 2010. The TMDL addresses metals, pH, and sediment impairments associated with abandoned mine drainage. This facility is listed as a negligible discharger in Appendix C of the approved TMDL and is covered under the aggregate WLA for negligible dischargers in Appendix G. The WLA for this facility is based on a flow of 0.95 and the in-stream water quality for each pollutant of concern.

In accordance with 25 PA Code §92a.61, a 1/year monitoring requirement for iron, manganese, and aluminum will be imposed to verify that the sewage discharge is not contributing to stream impairment.

Anti-Backsliding

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.

Permit No. PA0252999

Additional Considerations

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, sewage discharges will include monitoring, at a minimum for *E. coli,* in new and reissued permits, with a monitoring frequency of 1/quarter for design flows >=0.05 and < 1MGD.

Ultraviolet (UV) disinfection is used; therefore, Total Residual Chlorine (TRC) limits are not applicable. Routine monitoring of UV Intensity in mW/cm^2 will be required at the same frequency that is used for TRC.

Quarterly Sampling for Total Nitrogen and Total Phosphorus has been imposed per 25 PA Code §92a.61.

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*. Please note that monitoring requirements were changes for DO, pH, and UV from 1/weekday to daily. During the last permit cycle, the authority was informed to anticipate and to begin to budget for this change.

Mass Loading

Mass loading limits are applicable for publicly owned treatment works. Current policy requires average monthly mass loading limits be established for $CBOD_5$, TSS, and ammonia-nitrogen. Average monthly mass loading limits (lbs/day) are based on the formula: design flow (MGD x concentration limit (mg/L) x conversion factor (8.34).

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
$CBOD_5$	115	175	XXX	15.0	22.5	30	1/week	8-Hr Composite
BOD_5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	235	355	XXX	30.0	45.0	60	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
UV Intensity (mW/cm^2)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	35	70	XXX	4.5	6.5	9.0	1/week	8-Hr Composite

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	Weekly Average	Instantaneous Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia-Nitrogen May 1 - Oct 31	15	30	XXX	2.0	3.0	4.0	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	8-Hr Composite
Total Aluminum	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Total Iron	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Total Manganese	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

ATTACHMENT A

WQM 7.0 Modeling Results

Summer

Permit No. PA0252999

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
18C	43458	FOURMILE RUN	0.690	1000.00	7.84	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	0.031	0.00	0.00	0.000	0.000	10.0	0.00	0.00	25.00	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
14 Mile Run STP	PA0252999	0.0000	0.9500	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	20.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	2.40	0.00	0.00	0.70

Permit No. PA0252999

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
18C	43458	FOURMILE RUN	0.010	980.00	8.29	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	0.031	0.00	0.00	0.000	0.000	10.0	0.00	0.00	25.00	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. PA0252999

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18C	43458	FOURMILE RUN

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												
0.690	0.24	0.00	0.24	1.4697	0.00557	.549	17.12	31.18	0.18	0.228	20.71	7.00
Q1-10 Flow												
0.690	0.16	0.00	0.16	1.4697	0.00557	NA	NA	NA	0.18	0.235	20.48	7.00
Q30-10 Flow												
0.690	0.33	0.00	0.33	1.4697	0.00557	NA	NA	NA	0.19	0.222	20.92	7.00

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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	5		

Permit No. PA0252999

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18C	43458	FOURMILE RUN

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
0.690	14 Mile Run STP	16.11	4.8	16.11	4.8	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
0.690	14 Mile Run STP	1.78	2.18	1.78	2.18	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)		
0.69	14 Mile Run STP	18.67	18.67	2.18	2.18	5	5	0	0

Permit No. PA0252999

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18C	43458	FOURMILE RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.690	0.950	20.710	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WD Ratio**	**Reach Velocity (fps)**
17.124	0.549	31.184	0.182
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
16.30	1.371	1.87	0.739
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.460	9.804	Tsivoglou	5
Reach Travel Time (days)			
0.228			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.023	15.78	1.84	5.35
0.046	15.28	1.81	5.29
0.068	14.80	1.78	5.27
0.091	14.33	1.75	5.27
0.114	13.87	1.72	5.29
0.137	13.43	1.69	5.33
0.160	13.00	1.66	5.39
0.183	12.59	1.63	5.45
0.205	12.19	1.61	5.52
0.228	11.80	1.58	5.59

Permit No. PA0252999

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18C	43458	FOURMILE RUN

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Eff. Limit 30-day Ave. (mg/L)	Eff. Limit Maximum (mg/L)	Eff. Limit Minimum (mg/L)
0.690	14 Mile Run STP	PA0252999	0.000	CBOD5	18.67		
				NH3-N	2.18	4.36	
				Dissolved Oxygen			5

Permit No. PA0252999

Winter

Permit No. PA0252999

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
18C	43458	FOURMILE RUN	0.690	1000.00	7.84	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	0.062	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	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
14 Mile Run STP	PA0252999	0.0000	0.9500	0.0000	0.000	15.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	15.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	7.20	0.00	0.00	0.70

Permit No. PA0252999

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
18C	43458	FOURMILE RUN	0.010	980.00	8.29	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	0.062	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	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. PA0252999

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18C	43458	FOURMILE RUN

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												
0.690	0.49	0.00	0.49	1.4697	0.00557	.559	17.83	31.88	0.20	0.212	12.51	7.00
Q1-10 Flow												
0.690	0.31	0.00	0.31	1.4697	0.00557	NA	NA	NA	0.19	0.223	13.25	7.00
Q30-10 Flow												
0.690	0.66	0.00	0.66	1.4697	0.00557	NA	NA	NA	0.21	0.202	11.90	7.00

Permit No. PA0252999

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	5		

Permit No. PA0252999

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18C	43458	FOURMILE RUN

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
0.690	14 Mile Run STP	24.1	14.4	24.1	14.4	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
0.690	14 Mile Run STP	3.18	4.61	3.18	4.61	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)		
0.69	14 Mile Run STP	15	15	4.61	4.61	5	5	0	0

Permit No. PA0252999

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18C	43458	FOURMILE RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.690	0.950	12.515	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
17.826	0.559	31.877	0.196
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
11.77	1.429	3.47	0.393
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.806	8.695	Tsivoglou	5
Reach Travel Time (days)			
0.212			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.021	11.52	3.44	6.16
0.042	11.27	3.41	6.46
0.064	11.03	3.38	6.72
0.085	10.80	3.35	6.94
0.106	10.57	3.32	7.13
0.127	10.35	3.30	7.30
0.148	10.13	3.27	7.45
0.169	9.91	3.24	7.58
0.191	9.70	3.22	7.70
0.212	9.50	3.19	7.80

Permit No. PA0252999

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18C	43458	FOURMILE RUN

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Eff. Limit 30-day Ave. (mg/L)	Eff. Limit Maximum (mg/L)	Eff. Limit Minimum (mg/L)
0.690	14 Mile Run STP	PA0252999	0.000	CBOD5	15		
				NH3-N	4.61	9.22	
				Dissolved Oxygen			5

ATTACHMENT B

USGS Stream Stats Output

Permit No. PA0252999

Discharge Point

StreamStats Report

Region ID: PA
Workspace ID: PA20211220134604170000
Clicked Point (Latitude, Longitude): 40.29816, -79.41073
Time: 2021-12-20 08:46:23 -0500

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	7.84	square miles	2.33	1720
ELEV	Mean Basin Elevation	1210	feet	898	2700
PRECIP	Mean Annual Precipitation	41	inches	38.7	47.9

Low-Flow Statistics Flow Report [99.9 Percent (7.83 square miles) Low Flow Region 3]

PII: Prediction Interval-Lower, PIu: 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	0.607	ft^3/s	43	43
30 Day 2 Year Low Flow	0.876	ft^3/s	38	38
7 Day 10 Year Low Flow	0.243	ft^3/s	54	54
30 Day 10 Year Low Flow	0.36	ft^3/s	49	49
90 Day 10 Year Low Flow	0.54	ft^3/s	41	41

Low-Flow Statistics Citations

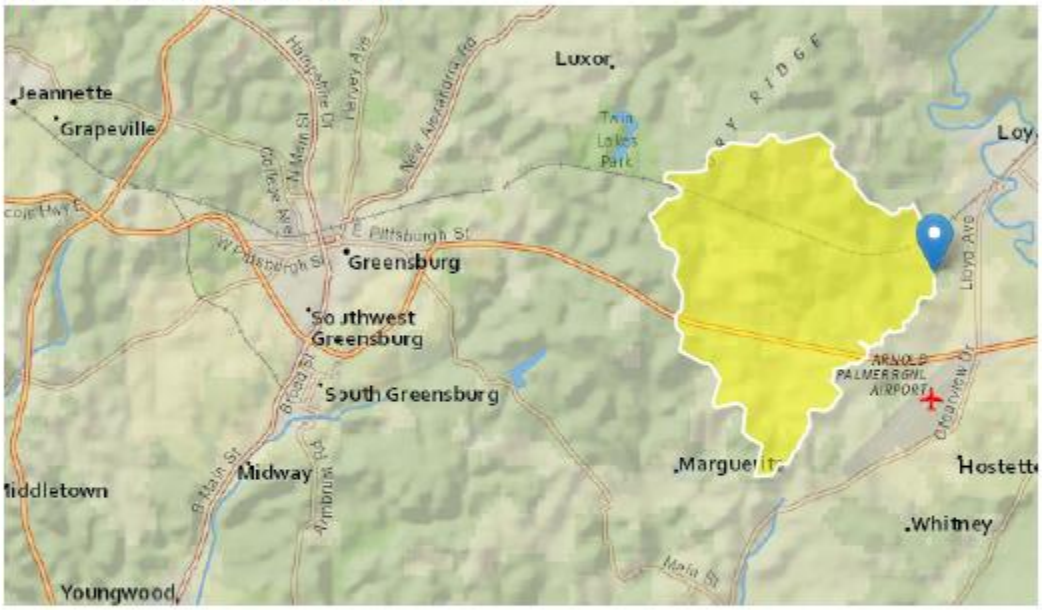
Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Permit No. PA0252999

Downstream of Discharge Point

StreamStats Report

Region ID: PA
Workspace ID: PA20211220135917537000
Clicked Point (Latitude, Longitude): 40.29771, -79.40437
Time: 2021-12-20 08:59:37 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	8.29	square miles
ELEV	Mean Basin Elevation	1203	feet
PRECIP	Mean Annual Precipitation	41	inches