pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0255319**
Facility Type	**Municipal**	APS ID	**1081258**
Major / Minor	**Minor**	Authorization ID	**1427516**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**South Franklin Township**	Facility Name	**South Franklin WWTP**
Applicant Address	100 Municipal Road	Facility Address	Treehaven Avenue
	Washington, PA 15301		Washington, PA 15301
Applicant Contact	Tyler Linck	Facility Contact	Same as applicant
Applicant Phone	(724) 225-4828	Facility Phone	Same as applicant
Client ID	92076	Site ID	827363
Ch 94 Load Status	Not Overloaded	Municipality	South Franklin Township
Connection Status	No Limitations	County	Washington
Date Application Received	February 16, 2023	EPA Waived?	Yes
Date Application Accepted	February 22, 2023	If No, Reason	

Purpose of Application: Application for a renewal of an NPDES permit for the discharge of treated sewage.

Summary of Review

The applicant has applied for the renewal of NPDES Permit No. PA0255319. The previous permit was issued on August 3, 2018 and will expire on August 31, 2023. WQM Permit No. 6319410 was issued for this facility on August 27, 2021. The WWTP has not yet been constructed.

Sewage from this facility will be treated with sequencing batch reactors, aerobic sludge digestion, and UV disinfection.

The applicant is not yet enrolled in eDMR because the facility is not constructed and therefore not discharging.

The Act 14-PL 834 Municipal Notification was provided by the February 10, 2023 letters and no comments were received.

Below is a summary of changes made to this permit:

- All instances of 8-hr composite sampling have been changed to 24-hr composite sampling
- The DO and Ammonia-Nitrogen effluent limitations have become more stringent
- The mass loading limitations for $CBOD_5$ and TSS have become slightly more stringent
- *E. Coli* monitoring has been imposed
- Flow monitoring has been updated from 1/week to Continuous
- Annual monitoring for Total Iron, Total Aluminum, and Total Manganese has been imposed
- Weekly monitoring for Total Nitrogen and Total Phosphorus has been imposed

Sludge use and disposal description and location(s): N/A

Approve	Deny	Signatures	Date
X		Grace Polakoski Grace Polakoski, E.I.T. / Environmental Engineering Specialist	March 17, 2023
X		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	April 4, 2023

Summary of Review

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.

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)	0.15
Latitude	40º 7' 52.83"	Longitude	-80º 16' 59.03"
Quad Name	Washington West	Quad Code	1703
Wastewater Description:	Sewage Effluent		
Receiving Waters	Chartiers Creek (WWF)	Stream Code	36777
NHD Com ID	99694812	RMI	46.94
Drainage Area	5.75 mi^2	Yield (cfs/mi^2)	0.0124
Q_{7-10} Flow (cfs)	0.0713	Q_{7-10} Basis	USGS StreamStats (Attachment A)
Elevation (ft)	1050	Slope (ft/ft)	
Watershed No.	20-F	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	NUTRIENTS, NUTRIENTS, PATHOGENS, SILTATION, SILTATION		
Source(s) of Impairment	AGRICULTURE, AGRICULTURE, SOURCE UNKNOWN, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS		
TMDL Status	Final, Final	Name	Chartiers Creek, Chartiers Creek Watershed

Background/Ambient Data		Data Source
pH (SU)	N/A	Facility not yet constructed
Temperature (°F)	N/A	Facility not yet constructed
Hardness (mg/L)	N/A	Facility not yet constructed
Other:		

Nearest Downstream Public Water Supply Intake		Western PA W CO-Washington Dis	
PWS Waters	Chartiers Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	2.94

Changes Since Last Permit Issuance: N/A

Treatment Facility Summary

Treatment Facility Name: South Franklin WWTP

WQM Permit No.	Issuance Date	Purpose
6319410	8/27/2021	Construction of the WWTP, pump station, sanitary sewers, and single-residence grinder pumps.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia Reduction	Sequencing Batch Reactor	Ultraviolet	0.15

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.15	275	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: N/A

Other Comments: N/A

Compliance History

Other Comments: **No compliance history available since the WWTP is not yet constructed.**

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .15
Latitude 40º 7' 52.83" **Longitude** -80º 16' 59.03"
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
Flow (MGD)	Report	Average Monthly	-	92a.27, 92a.61
	Report Max Daily	Average Weekly	-	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 (TSS)	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 (TRC)	0.5	Average Monthly	-	92a.48(b)(2)
Ammonia-Nitrogen (NH_3-N)	25	Average Monthly	-	92a.61
	50	IMAX	-	92a.61
Dissolved Oxygen (DO)	4.0	Instantaneous Minimum	-	93.6, 92a.61
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Total N	Report	Average Monthly	-	92a.61
Total P	Report	Average Monthly	-	92a.61
Fecal Coliform (No./100mL) (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (No./100mL) (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (No./100mL) (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (No./100mL) (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
E. Coli (No./100mL)	Report	IMAX	-	92a.61

Water Quality-Based Limitations

WQM7.0
WQM7.0 is a water quality modeling program for Windows that determines Waste Load Allocations ("WLAs") and effluent limitations for carbonaceous biochemical oxygen demand ("CBOD5"), ammonia-nitrogen, and dissolved oxygen for single and multiple point-source discharge scenarios. To accomplish this, the model simulates two basic processes. In the ammonia-nitrogen module, the model simulates the mixing and degradation of ammonia-nitrogen in the stream and compares calculated instream ammonia-nitrogen concentrations to ammonia-nitrogen water quality criteria. In the dissolved oxygen module, the model simulates the mixing and consumption of dissolved oxygen in the stream due to the degradation of CBOD5 and ammonia-nitrogen and compares calculated instream dissolved oxygen concentrations to dissolved oxygen water quality criteria. WQM 7.0 then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

DEP's modeling for sewage discharges is a two-step process. First, a discharge is modeled for the summer period (May through October) using warm temperatures for the discharge and the receiving stream. Modeling for the summer period is done first because allowable ammonia-nitrogen concentrations in a discharge are lower at higher temperatures (i.e., warm temperatures are more likely to result in critical loading conditions). Reduced dissolved oxygen levels also appear to increase ammonia toxicity and the maximum concentration of dissolved oxygen in water is lower at higher temperatures. The second step is to evaluate WQBELs for the winter period, but only if modeling shows that WQBELs are needed for the summer period.

The model inputs used to model the discharge from South Franklin WWTP are shown below:

Stream Parameters			
Reach 1		**Reach 2**	
Stream Code	36777	Stream Code	36777
RMI	46.94	RMI	46.84
Elevation (ft)	1050	Elevation (ft)	1049
Drainage Area (mi^2)	5.75	Drainage Area (mi^2)	5.78
Q_{7-10} Flow (cfs)	0.0713	Q_{7-10} Flow (cfs)	0.0718

Facility/Design Parameters	
Discharge Flow (MGD)	0.15
LFY (cfs/mi^2) [for use in summer modeling]	0.0124
2*LFY (cfs/mi^2) [for use in winter modeling]	0.0248

Summer Modeling Inputs			
Tributary		**Discharge**	
Temperature (°C)	25	Temperature (°C)	20
pH (S.U.)	7	pH (S.U.)	7
DO (mg/L)	8.24	DO (mg/L)	4
$CBOD_5$ (mg/L)	2	$CBOD_5$ (mg/L)	25
NH_3-N (mg/L)	0	NH_3-N (mg/L)	25
DO Goal (mg/L)	5	DO Goal (mg/L)	5
Winter Modeling Inputs			
Tributary		**Discharge**	
Temperature (°C)	5	Temperature (°C)	15
pH (S.U.)	7	pH (S.U.)	7
DO (mg/L)	12.51	DO (mg/L)	4
$CBOD_5$ (mg/L)	2	$CBOD_5$ (mg/L)	25
NH_3-N (mg/L)	0	NH_3-N (mg/L)	25
DO Goal (mg/L)	5	DO Goal (mg/L)	5

The modeling results (output files can be found in Attachments B and C) show that water-quality based effluent limitations for these parameters are appropriate.

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	5.0	Minimum	WQM7.0
$CBOD_5$	25	Average Monthly	WQM7.0
Ammonia Nitrogen (Nov 1 – Apr 30)	4.47	Average Monthly	WQM7.0
Ammonia Nitrogen (May 1 – Oct 31)	2.43	Average Monthly	WQM7.0

Best Professional Judgment (BPJ) Limitations

Based on best professional judgment and the standard in 25 PA Code Chapter 93, a dissolved oxygen minimum limitation of 4.0 mg/L would normally be implemented. However, WQM7.0 modeling results indicate that a dissolved oxygen minimum limitation of 5.0 mg/L is appropriate for the summer period and 4.0 mg/L is appropriate for the winter period. The more stringent of the values will be imposed during this permit cycle.

Mass Loading Limitations

Per Department SOP “Establishing Effluent Limitations for Individual Sewage Permits” (BCW-PMT-033), mass loading limits will be established for POTWs for $CBOD_5$, TSS, ammonia nitrogen. Average monthly mass loading limits will be established

for $CBOD_5$, TSS, and ammonia nitrogen. Average weekly mass loading limits will be established for $CBOD_5$ and TSS. Mass loading limits will be calculated according to the formula below:

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

The following mass loading limitations were calculated and rounded according to DEP rounding guidance:

Parameter	Average Monthly (lbs/day)	Average Weekly (lbs/day)
$CBOD_5$	31.0	46.0
TSS	37.0	56.0
Ammonia Nitrogen (Nov 1 – Apr 30)	5.50	—
Ammonia Nitrogen (May 1 – Oct 31)	3.00	—

Average monthly and average weekly mass loading limits for $CBOD_5$ have become more stringent. Due to DEP rounding guidance, the average monthly mass loading limits for $CBOD_5$ and TSS have become slightly more stringent.

Total Maximum Daily Load (TMDL) Considerations

Chartiers Creek TMDL

A TMDL for Chartiers Creek was approved on April 9, 2001 for the control of organics, polychlorinated biphenyls (PCBs), chlordane, and pesticides. 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 quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation (WLA) for the discharge prepared by the State and approved by the EPA pursuant to 40 CFR § 130.7. The TMDL document states that the production and use of PCBs and chlordane are now both banned in the US. Therefore, there are no new point sources for either of these pollutants. Known, existing point sources of PCBs and/or chlordane have obtained NPDES permits with WQBELs for those pollutants. PCBs and chlordane in Chartiers Creek are expected to be present primarily in the sediment due to historic use and improper disposal practices. Natural attenuation is expected to reduce PCB and chlordane contamination in Chartiers Creek over time. The TMDL is monitoring the concentrations of PCBs and chlordane in fish therefore South Franklin WWTP will not be assigned wasteload allocations or monitoring for PCBs and chlordane.

Chartiers Creek Watershed TMDL

A TMDL for the Chartiers Creek Watershed was approved on April 9, 2003 for the control of iron, manganese, and aluminum, pollutants that are attributed to acid mine drainage and resource extraction. 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 quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation (WLA) for the discharge prepared by the State and approved by the EPA pursuant to 40 CFR § 130.7. South Franklin WWTP was not assigned wasteload allocations for iron, aluminum, and manganese by the Chartiers Creek Watershed TMDL, therefore the Department will impose annual monitoring for iron, aluminum, and manganese for the first time for this facility.

Influent Monitoring

Per Department SOP “New and Reissuance Sewage Individual NPDES Permit Applications” (BCW-PMT-002), POTWs with design flows greater than 2,000 GPD, influent BOD_5 and TSS monitoring will be established in the permit. The influent monitoring will be established with the same frequency and sample type as the effluent sampling. The “Daily Maximum” basis for the weekly average mass loading has been removed and updated to “Weekly Average” to more closely match the effluent sampling type and frequency.

Additional Considerations

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 greater than 0.05 MGD and less than 1 MGD.

The receiving stream is impaired for nutrients therefore, weekly sampling for nitrogen and phosphorus will be reimposed per 25 PA Code §92.61b.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3 “Self-Monitoring Requirements for Sewage Dischargers” and Table 6-4 “Self-Monitoring Requirements for Industrial Dischargers”, from the Departments Technical Guidance for the Development and Specification of Effluent Limitations.

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)	Required
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Daily Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	31.0	46.0	XXX	25.0	37.5	50	1/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Weekly Avg	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	37.0	56.0	XXX	30.0	45.0	60	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Weekly Avg	XXX	Report	XXX	XXX	1/week	24-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
Ultraviolet light transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Total Nitrogen	XXX	XXX	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	5.5	XXX	XXX	4.47	XXX	8.94	1/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	3.0	XXX	XXX	2.43	XXX	4.86	1/week	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite
Aluminum, Total	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite
Iron, Total	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite
Manganese, Total	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite

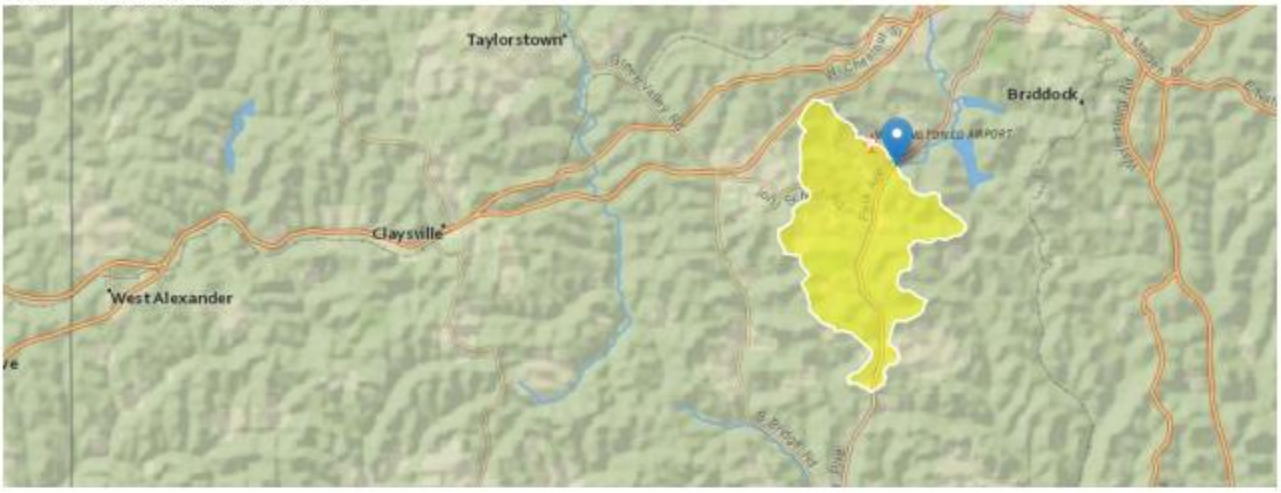
Compliance Sampling Location: Outfall 001

Other Comments: N/A

ATTACHMENT A:
USGS StreamStats Report

StreamStats Report

Region ID: PA
Workspace ID: PA20230310154811048000
Clicked Point (Latitude, Longitude): 40.13144, -80.28311
Time: 2023-03-10 10:48:34 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5.75	square miles
ELEV	Mean Basin Elevation	1209	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.75	square miles	2.26	1400
ELEV	Mean Basin Elevation	1209	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

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	0.207	ft^3/s	43	43
30 Day 2 Year Low Flow	0.369	ft^3/s	38	38
7 Day 10 Year Low Flow	0.0713	ft^3/s	66	66
30 Day 10 Year Low Flow	0.134	ft^3/s	54	54
90 Day 10 Year Low Flow	0.252	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/)

Application Version: 4.13.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

ATTACHMENT B:
WQM7.0 MODELING RESULTS (SUMMER)

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
20F	36777	CHARTIERS CREEK	**46.940**	1050.00	5.75	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	0.012	0.07	0.00	0.000	0.000	0.0	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
South Franklin	PA0255319	0.0000	0.0000	0.1500	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	8.24	0.00	0.00
NH3-N	25.00	0.00	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
20F	36777	CHARTIERS CREEK	**46.840**	1049.00	5.78	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	0.012	0.07	0.00	0.000	0.000	0.0	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

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		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS 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												
46.940	0.07	0.00	0.07	.2321	0.00189	.438	10.23	23.34	0.07	0.090	21.18	7.00
Q1-10 Flow												
46.940	0.05	0.00	0.05	.2321	0.00189	NA	NA	NA	0.06	0.095	20.82	7.00
Q30-10 Flow												
46.940	0.10	0.00	0.10	.2321	0.00189	NA	NA	NA	0.07	0.086	21.47	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
46.940	0.150	21.175	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
10.232	0.438	23.343	0.068
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
19.59	1.461	1.86	0.766
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.762	16.883	Owens	5
Reach Travel Time (days)			
0.090			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.009	19.32	1.85	5.78
0.018	19.06	1.84	5.81
0.027	18.79	1.82	5.83
0.036	18.53	1.81	5.86
0.045	18.28	1.80	5.89
0.054	18.02	1.79	5.92
0.063	17.77	1.77	5.95
0.072	17.53	1.76	5.98
0.081	17.28	1.75	6.02
0.090	17.05	1.74	6.05

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS 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
46.940	South Franklin	15.66	18.74	15.66	18.74	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
46.940	South Franklin	1.72	2.43	1.72	2.43	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)		
46.94	South Franklin	25	25	2.43	2.43	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS 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)
46.940	South Franklin	PA0255319	0.000	CBOD5	25		
				NH3-N	2.43	4.86	
				Dissolved Oxygen			5

ATTACHMENT C:
WQM7.0 MODELING RESULTS (WINTER)

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
20F	36777	CHARTIERS CREEK	**46.940**	1050.00	5.75	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	0.025	0.07	0.00	0.000	0.000	0.0	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
South Franklin	PA0255319	0.0000	0.0000	0.1500	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	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	12.51	0.00	0.00
NH3-N	25.00	0.00	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
20F	36777	CHARTIERS CREEK	**46.840**	1049.00	5.78	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	0.025	0.07	0.00	0.000	0.000	0.0	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

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		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS 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												
46.940	0.07	0.00	0.07	.2321	0.00189	.438	10.23	23.34	0.07	0.090	12.65	7.00
Q1-10 Flow												
46.940	0.05	0.00	0.05	.2321	0.00189	NA	NA	NA	0.06	0.095	13.36	7.00
Q30-10 Flow												
46.940	0.10	0.00	0.10	.2321	0.00189	NA	NA	NA	0.07	0.086	12.05	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
46.940	0.150	12.650	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
10.232	0.438	23.343	0.068
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
19.59	1.462	3.42	0.398
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.000	13.792	Owens	5
Reach Travel Time (days)			
0.090			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.009	19.41	3.40	6.23
0.018	19.23	3.39	6.43
0.027	19.05	3.38	6.62
0.036	18.87	3.37	6.78
0.045	18.69	3.36	6.93
0.054	18.52	3.34	7.06
0.063	18.34	3.33	7.18
0.072	18.17	3.32	7.29
0.081	18.00	3.31	7.39
0.090	17.83	3.30	7.48

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS 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
46.940	South Franklin	24.1	28.84	24.1	28.84	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
46.940	South Franklin	3.15	4.47	3.15	4.47	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)		
46.94	South Franklin	25	25	4.47	4.47	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20F	36777	CHARTIERS 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)
46.940	South Franklin	PA0255319	0.000	CBOD5	25		
				NH3-N	4.47	8.94	
				Dissolved Oxygen			4