pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0264784**
Facility Type	**Municipal**	APS ID	**1054864**
Major / Minor	**Minor**	Authorization ID	**1381831**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Mercer Township**	Facility Name	**Mercer Township Forestville STP**
Applicant Address	PO Box 380	Facility Address	202 Boyers Road
	Harrisville, PA 16038-0380		Harrisville, PA 16038
Applicant Contact	Lori Giesler, Township Secretary (mercertownship@zoominternet.net)	Facility Contact	Lori Giesler, Township Secretary (mercertownship@zoominternet.net)
Applicant Phone	(724) 735-2705	Facility Phone	(724) 735-2705
Client ID	143726	Site ID	818384
Ch 94 Load Status	Not Overloaded	Municipality	Mercer Township
Connection Status	No Limitations	County	Butler
Date Application Received	January 18, 2022	EPA Waived?	Yes
Date Application Accepted	January 19, 2022	If No, Reason	-
Purpose of Application	Renewal of an NPDES Permit for an existing discharge of treated sanitary wastewater from a municipal sewer system.		

Summary of Review

Act 14 - Proof of Notification was submitted and received.

A Part II Water Quality Management permit is not required at this time.

The applicant should be able to meet the limits of this permit, which will protect the uses of the receiving stream.

I. OTHER REQUIREMENTS:

A. Stormwater into Sewers
B. Right of Way
C. Solids Handling
D. Effluent Chlorine Optimization and Minimization
E. Little or no assimilative capacity

SPECIAL CONDITIONS:

II. Solids Management

There are no open violations in efacts associated with the subject Client ID (143726) as of 10/20/2023. *10/27/2023 CWY*

Approve	Deny	Signatures	Date
X		Stephen A. McCauley Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	10/20/2023
X		Chad W. Yurisic Chad W. Yurisic, P.E. / Environmental Engineer Manager	10/27/2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.022
Latitude	41º 06' 14.00"	Longitude	-80º 00' 7.00"
Quad Name	-	Quad Code	-
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to the McDonald Run (CWF)	Stream Code	N/A
NHD Com ID	126222168	RMI	N/A
Drainage Area	0.21	Yield (cfs/mi^2)	0.076
Q_{7-10} Flow (cfs)	0.0147	Q_{7-10} Basis	calculated
Elevation (ft)	1314	Slope (ft/ft)	0.0172
Watershed No.	20-C	Chapter 93 Class.	CWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	-		
Source(s) of Impairment	-		
TMDL Status	-	Name	-

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

Nearest Downstream Public Water Supply Intake	Pennsylvania American Water Company - Ellwood City		
PWS Waters	Slippery Rock Creek	Flow at Intake (cfs)	53.1
PWS RMI	0.1	Distance from Outfall (mi)	40.0

Sludge use and disposal description and location(s): All sludge is sent to the Mahoning Township STP where it is disposed of at an approved 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 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.

Narrative: This Fact Sheet details the determination of draft NPDES permit limits for an existing discharge of 0.022 MGD of treated sewage from a municipal STP in Mercer Township, Butler County.

Treatment permitted under WQM Permit 3274405 A-3 consists of the following: Proposed treatment will consist of the following: A septic tank, a dosing tank, a recirculating sand filter, a recirculation tank with pump, tablet chlorine disinfection with a contact tank, and tablet dechlorination with a contact tank.

1. Streamflow:

Slippery Rock Creek at Wurtemburg, PA - USGS gage station 03106500 (1971-2008):

Q_{7-10}:	47.5	cfs	(USGS StreamStats)
Drainage Area:	398	sq. mi.	(USGS StreamStats)
Yieldrate:	0.11	cfsm	(Calculated)

Unnamed Tributary to the McDonald Run at Outfall 001:

Yieldrate:	0.11	cfsm	(Calculated above)
Drainage Area:	0.21	sq. mi.	(USGS StreamStats)
% of stream allocated:	100%	Basis:	No nearby discharges
Q_{7-10}:	0.023	cfs	(Calculated)

2. Wasteflow:

Maximum discharge: 0.022 MGD = 0.034 cfs

Runoff flow period: 24 hours Basis: Runoff flow for municipal STPs

There is less than 3 parts stream flow (Q7-10) to 1 part effluent (design flow). In accordance with the SOP, the treatment requirements in document number 391-2000-014, titled, "Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers", dated April 12, 2008, were evaluated for this facility. Based on eDMR data, the treatment requirements are not attainable with the treatment technology in place so the requirements will not be implemented in this NPDES Permit renewal.

Flow will be required to be monitored as authorized under Chapter 92a.61, and as recommended in the SOP.

3. Parameters:

The following parameters were evaluated: pH, Total Suspended Solids, Fecal Coliform, E. Coli, Total Phosphorus, Total Nitrogen, NH_3-N, $CBOD_5$, Dissolved Oxygen, and Disinfection.

a. pH

Between 6.0 and 9.0 at all times

Basis: Application of Chapter 93.7 technology-based limits.

The measurement frequency was previously set to 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001), and will be retained.

b. Total Suspended Solids

Limits are 30.0 mg/l as a monthly average and 60.0 as an instantaneous maximum.

Basis: Application of Chapter 92a47 technology-based limits.

c. Fecal Coliform

05/01 - 09/30:	200/100ml	(monthly average geometric mean)
	1,000/100ml	(instantaneous maximum)
10/01 - 04/30:	2,000/100ml	(monthly average geometric mean)
	10,000/100ml	(instantaneous maximum)

Basis: Application of Chapter 92a47 technology-based limits

d. E. Coli

Monitoring was added for E. Coli at a frequency of 1/year.

Basis: Application of Chapter 92a.61 as recommended by the SOP for flows greater than 0.002 MGD and less than 0.05 MGD.

e. Phosphorus

Chapter 96.5 does not apply. Therefore, the previous monitoring for Total Phosphorus will be retained in accordance with the SOP, based on Chapter 92a.61. The monitoring frequency will be reduced from 2/month to 1/quarter since the receiving stream is not impaired for nutrients, per the SOP.

f. Total Nitrogen

The previous monitoring for Total Nitrogen will be retained in accordance with the SOP, based on Chapter 92a.61. The monitoring frequency will be reduced from 2/month to 1/quarter since the receiving stream is not impaired for nutrients, per the SOP.

g. Ammonia-Nitrogen (NH_3-N)

Median discharge pH to be used:	7.2	Standard Units (S.U.)
	Basis:	eDMR data from previous 12 months
Discharge temperature:	25°C	(default value used in the absence of data)
Median stream pH to be used:	7.0	Standard Units (S.U.)
	Basis:	default value used in the absence of data
Stream Temperature:	20˚C	(default value used for CWF modeling)
Background NH_3-N concentration:	0.0	mg/l
	Basis:	Default value
Calculated NH_3-N Summer limits:	2.9	mg/l (monthly average)
	5.8	mg/l (instantaneous maximum)
Calculated NH_3-N Winter limits:	8.7	mg/l (monthly average)
	17.4	mg/l (instantaneous maximum)

Result: WQ modeling resulted in the summer NH3-N limits above (see Attachment 1). The winter limits are calculated as three times the summer limits. The calculated limits are more restrictive than the previous permit. Per eDMR data, the more restrictive limits are attainable so they will be added to this renewal without a compliance schedule.

h. $CBOD_5$

Median discharge pH to be used: 7.2 Standard Units (S.U.)

Basis: eDMR data from previous 12 months

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: default value used in the absence of data

Stream Temperature: 20˚C (default value used for CWF modeling)

Background $CBOD_5$ concentration: 2.0 mg/l

Basis: Default value

Calculated $CBOD_5$ limits: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the calculated CBOD5 limits above (see Attachment 1). These limits are the same as the previous permit and will be retained.

i. Influent Total Suspended Solids and BOD_5

Monitoring for these two parameters will be retained as recommended in the SOP for POTWs, as authorized under Chapter 92a.61.

j. Dissolved Oxygen (DO)

The technology-based minimum of 5.0 mg/l is recommended by the WQ Model (see Attachment 1) and the SOP based on Chapter 93.7, under the authority of Chapter 92a.61. This limit is the same as the previous permit and will be retained.

The measurement frequency was previously set to 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001), and will be retained.

k. Disinfection

☐ Ultraviolet (UV) light monitoring

☒ Total Residual Chlorine (TRC) limits: 0.10 mg/l (monthly average)
0.35 mg/l (instantaneous maximum)

Basis: The TRC limits above were calculated using the Department's TRC Calculation Spreadsheet (see Attachment 2). The limits are less restrictive than the previous permit. Based on eDMR data, the previous, more restrictive limits are attainable, so they will be retained.

The measurement frequency was previously set to 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001), and will be retained.

4. Reasonable Potential Analysis for Receiving Stream:

A Reasonable Potential Analysis was not performed in accordance with State practices for Outfall 001 using the Department's Toxics Management Spreadsheet since no sampling other than sewage-related parameters was performed for this facility with the renewal application.

5. Reasonable Potential for Downstream Public Water Supply (PWS):

The Department's Toxics Management Spreadsheet does not calculate limits for parameters that are based on PWS criteria (TDS, Chloride, Bromide, and Sulfate). Since no relevant sampling was provided, mass-balance calculations were not performed.

Nearest Downstream potable water supply (PWS): Pennsylvania American Water Company - Ellwood City
Distance downstream from the point of discharge: 40.0 miles (approximate)

Result: No limits or monitoring are necessary as significant dilution is available.

6. Flow Information:

The Mercer Township Forestville STP receives 100% of its flow from the Forestville area of Mercer Township.

All the sewers are separate sewers.

7. Anti-Backsliding:

Since all the permit limits in this renewal are the same or more restrictive than the previous NPDES Permit, anti-backsliding is not applicable.

8. Attachment List:

Attachment 1 - WQ Modeling Printouts
Attachment 2 - TRC_Calc Spreadsheet

(The Attachments above can be found at the end of this document)

Compliance History

DMR Data for Outfall 001 (from September 1, 2022 to August 31, 2023)

Parameter	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22
Flow (MGD) Average Monthly	0.0011	0.00126	0.0016	0.01126	0.01126	0.0099	0.0037	0.0037	0.0038	0.0034	0.0024	0.0024
Flow (MGD) Daily Maximum	0.0019	0.00243	0.0052	0.01815	0.01815	0.072	0.0065	0.0132	0.0128	0.0167	0.0056	0.0056
pH (S.U.) Minimum	6.43	7.1	6.8	7.1	7.1	7.0	6.8	7.1	6.8	7.0	7.1	6.9
pH (S.U.) Maximum	7.77	7.64	7.6	7.9	7.9	8.1	7.3	7.5	7.5	7.6	7.8	7.6
DO (mg/L) Minimum	6.02	6.01	5.07	6.58	6.58	6.12	6.02	5.87	6.6	6.59	7.26	6.95
TRC (mg/L) Average Monthly	0.06	0.07	0.04	0.06	0.06	0.06	0.04	0.04	0.06	0.06	0.07	0.07
CBOD5 (lbs/day) Average Monthly	< 0.01	< 0.02	< 0.03	0.4	0.4	< 0.4	< 0.1	< 0.2	< 0.1	0.05	0.083	0.055
CBOD5 (mg/L) Average Monthly	< 2.0	< 2.0	< 2.0	3.5	3.5	< 2.3	< 3.2	< 5.9	< 3.5	2.4	5.24	5.88
BOD5 (lbs/day) Influent Average Monthly	2	3	3	57	57	34	4	7	20	4.37	3.83	1.16
BOD5 (mg/L) Influent Average Monthly	285	367	240	464	464	214	102.5	187	589	218.5	218.5	120
TSS (lbs/day) Average Monthly	< 0.03	< 0.05	< 0.06	< 0.8	< 0.6	< 0.9	< 0.9	< 0.3	< 0.2	0.052	0.05	0.027
TSS (lbs/day) Influent Average Monthly	5	3	3	72	72	25	6	8	18	6.57	5.80	2.69
TSS (mg/L) Average Monthly	< 5.0	< 5.0	5.0	< 5.0	< 5.0	< 5.0	< 29.5	< 7.5	< 5.3	2.5	2.5	2.5
TSS (mg/L) Influent Average Monthly	512	352	241	529	549	178	166	227	595	308	308	292
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 110	< 3	> 1035	> 1035	< 2	< 1	> 8875	< 1	4.1	1	49
Total Nitrogen (lbs/day) Average Monthly	0.2	0.3	0.7	7	7	8	1	2	< 0.4	0.95	0.84	1.76
Total Nitrogen (mg/L) Average Monthly	38.8	35	51.5	62.1	62.1	54.9	39.3	53.3	< 10.95	45.98	45.56	43.58
Ammonia (lbs/day) Average Monthly	< 0.003	0.004	< 0.01	< 0.05	< 0.05	< 0.1	< 0.03	< 0.06	0.5	0.003	0.001	0.001

Ammonia (mg/L) Average Monthly	< 0.4	< 0.4	< 0.8	< 0.4	< 0.4	< 0.8	< 0.8	< 1.7	12.709	0.15	0.1	0.1
Total Phosphorus (lbs/day) Average Monthly	0.03	0.04	0.05	0.5	0.5	0.9	0.2	0.1	0.1	0.083	0.067	0.067
Total Phosphorus (mg/L) Average Monthly	4.8	4.1	3.7	4.6	4.6	4.7	4.4	3.5	4.29	4.18	5.24	5.28

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)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.07	XXX	0.23	1/day	Grab
CBOD5	4.5	XXX	XXX	25.0	XXX	50	2/month	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS	5.5	XXX	XXX	30.0	XXX	60	2/month	24-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
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	Report Avg Qrtly	Report Daily Max	XXX	Report Avg Qrtly	Report Daily Max	XXX	1/quarter	24-Hr Composite
Ammonia Nov 1 - Apr 30	1.5	XXX	XXX	8.7	XXX	17.4	2/month	24-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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Ammonia May 1 - Oct 31	0.5	XXX	XXX	2.9	XXX	5.8	2/month	24-Hr Composite
Total Phosphorus	Report Avg Qrtly	Report Daily Max	XXX	Report Avg Qrtly	Report Daily Max	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: at Outfall 001, after disinfection.

Flow is monitor only based on Chapter 92a.61. The limits for pH and Dissolved Oxygen are technology-based on Chapter 93.7. The Total Residual Chlorine (TRC) limits are water quality-based on Chapter 93.7. The limits for $CBOD_5$, Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for influent BOD_5 and influent TSS is based on Chapter 92a.61. Monitoring for E. Coli, Total Nitrogen, and Total Phosphorus is based on Chapter 92a.61. The limits for Ammonia-Nitrogen are water quality-based on Chapter 93.7.

Attachment 1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34574	McDONALD RUN

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)
3.500	Forestville STP	PA0264784	0.022	CBOD5	25		
				NH3-N	2.95	5.9	
				Dissolved Oxygen			5

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34574	McDONALD RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.500	0.022	22.978	7.108
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.612	0.331	7.888	0.066
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
15.70	1.343	1.76	0.880
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.311	29.143	Owens	6
Reach Travel Time (days)			
0.814			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.081	13.85	1.64	7.21
0.163	12.22	1.52	7.43
0.244	10.78	1.42	7.57
0.326	9.51	1.32	7.69
0.407	8.39	1.23	7.80
0.488	7.40	1.14	7.81
0.570	6.53	1.07	7.81
0.651	5.76	0.99	7.81
0.733	5.08	0.92	7.81
0.814	4.48	0.86	7.81

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	6		

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
20C	34574	McDONALD RUN	**3.500**	1314.00	0.21	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	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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
Forestville STP	PA0264784	0.0220	0.0000	0.0000	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	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
20C	34574	McDONALD RUN	**2.620**	1234.00	1.45	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	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34574	McDONALD 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
3.500	Forestville STP	11.09	15.91	11.09	15.91	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
3.500	Forestville STP	1.54	2.95	1.54	2.95	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)		
3.50	Forestville STP	25	25	2.95	2.95	5	5	0	0

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20C	34574	McDONALD 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												
3.500	0.02	0.00	0.02	.034	0.01722	.331	2.61	7.89	0.07	0.814	22.98	7.11
Q1-10 Flow												
3.500	0.01	0.00	0.01	.034	0.01722	NA	NA	NA	0.06	0.889	23.49	7.13
Q30-10 Flow												
3.500	0.03	0.00	0.03	.034	0.01722	NA	NA	NA	0.07	0.754	22.60	7.09

Attachment 2

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.023	= Q stream (cfs)	0.5	= CV Daily
0.022	= 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)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.235	1.3.2.iii	WLA cfc =	0.221
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.087	5.1d	LTA_cfc =	0.129

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.108	AFC
		INST MAX LIMIT (mg/l) =	0.352	

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)**