pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0103292**
Facility Type	**Municipal**	APS ID	**1074844**
Major / Minor	**Minor**	Authorization ID	**1416114**

Applicant and Facility Information

Applicant Name	**Hamilton Township**	Facility Name	**Hamilton Township Ludlow STP**
Applicant Address	2 Curtis Road	Facility Address	275 State Highway 6
	Ludlow, PA 16333		Ludlow, PA 16333
Applicant Contact	Brian Bastow, Chairman hamiltontwp@westpa.net	Facility Contact	Brian Bastow, Chairman hamiltontwp@westpa.net
Applicant Phone	(814) 945-6913	Facility Phone	(814) 945-6913
Client ID	135991	Site ID	457570
Ch 94 Load Status	Not Overloaded	Municipality	Hamilton Township
Connection Status	No Limitations	County	McKean
Date Application Received	October 31, 2022	EPA Waived?	Yes
Date Application Accepted	November 2, 2022	If No, Reason	-
Purpose of Application	Renewal of an NPDES permit for an existing POTW.		

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

SPECIAL CONDITIONS:

II. Solids Management

There are no open violations in efacts associated with the subject Client ID (135991) as of 8/16/2023. *8/31/2023 CWY*

Approve	Deny	Signatures	Date
X		Stephen A. McCauley Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	8/16/2023
X		Chad W. Yurisic Chad W. Yurisic, P.E. / Environmental Engineer Manager	8/31/2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.07
Latitude	41º 44' 0.00"	Longitude	-78º 57' 7.00"
Quad Name	-	Quad Code	-
Wastewater Description:	Sewage Effluent		
Receiving Waters	Twomile Run (HQ-CWF)	Stream Code	55425
NHD Com ID	100467307	RMI	0.38
Drainage Area	16.1	Yield (cfs/mi^2)	0.069
Q_{7-10} Flow (cfs)	0.761	Q_{7-10} Basis	calculated
Elevation (ft)	1511	Slope (ft/ft)	0.0054
Watershed No.	16-F	Chapter 93 Class.	HQ-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	Aqua Pennsylvania, Inc. - Emlenton		
PWS Waters	Allegheny River	Flow at Intake (cfs)	1,376
PWS RMI	90.0	Distance from Outfall (mi)	110

* - This discharge predates the High Quality stream designation and is grandfathered at the permitted flow.

Sludge use and disposal description and location(s): All sludge is hauled off site by J&J Honey Dipping, Inc. and 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 0.07 MGD of treated sewage from a municipal STP in Hamilton Township, McKean County.

Treatment permitted under WQM Permit 4287401 A-1 consists of the following: A comminutor w/ bypass bar screen, soda ash for pH adjustment, three aeration tanks, one clarifying/settling tank, tablet chlorine disinfection, and aerated sludge holding.

1. Streamflow:

Tionesta Creek at Lynch, PA from 1939-1979 (USGS Gage No. 03017500):

Q_{7-10}:	16.3	cfs	(USGS StreamStats)
Drainage Area:	233	sq. mi.	(USGS StreamStats)
Yieldrate:	0.069	cfsm	(Calculated)

Twomile Run at Outfall 001:

Yieldrate:	0.069	cfsm	(Calculated above)
Drainage Area:	16.1	sq. mi.	(USGS StreamStats)
% of stream allocated:	100%	Basis:	No nearby discharges
Q_{7-10}:	1.11	cfs	(Calculated)

2. Wasteflow:

Maximum discharge: 0.07 MGD = 0.10 cfs

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

The calculated stream flow (Q7-10) is greater than 3 times the permitted discharge flow. In accordance with the SOP, since this is an existing discharge, 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 not evaluated for this facility.

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 set as 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.

The previous mass loading limit was rounded to the higher whole number. The mass loading limit was rounded to the nearest tenth with this renewal.

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/quarter.

Basis: Application of Chapter 92a.61 as recommended by the SOP for flows greater than 0.05 MGD and less than 1.0 MGD.

e. Phosphorus

Chapter 96.5 does not apply. However, the previous monitoring for Total Phosphorus will be retained in accordance with the SOP, based on Chapter 92a.61.

f. Total Nitrogen

The previous monitoring for Total Nitrogen will be retained in accordance with the SOP, based on Chapter 92a.61.

g. Ammonia-Nitrogen (NH_3-N)

Median discharge pH to be used:	6.8	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:	25.0	mg/l (monthly average)
	50.0	mg/l (instantaneous maximum)
Calculated NH_3-N Winter limits:	25.0	mg/l (monthly average)
	50.0	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, but since the technology-based limits are more protective, they will be used. These limits are less restrictive than in the previous permit. Based on the eDMR data, the more restrictive limits are attainable so they will be retained.

The previous mass loading limit was rounded to the higher whole number. The mass loading limit was rounded to the nearest tenth with this renewal.

h. $CBOD_5$

Median discharge pH to be used:	6.8	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 in the previous permit and will be retained.

The previous mass loading limit was rounded to the higher whole number. The mass loading limit was rounded to the nearest tenth with this renewal.

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 4.0 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.

The measurement frequency was set as 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: 0.5 mg/l (monthly average)
1.6 mg/l (instantaneous maximum)

Basis: The TRC limits above were calculated using the Department's TRC Calculation Spreadsheet (see Attachment 2). They are the same as in the previous permit and will be retained.

The measurement frequency was set as 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 using the Department's Toxics Management Spreadsheet since no sampling other than sewage-related parameters was performed for this facility with the renewal application.

Result: N/A

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). However, since no sample data was provided, mass-balance calculations were not performed.

Nearest Downstream potable water supply (PWS): Aqua Pennsylvania, Inc. - Emlenton
Distance downstream from the point of discharge: 110 miles (approximate)

Result: No limits are necessary as significant dilution is available

6. Flow Information:

All flow comes from the Village of Ludlow which consists of all 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 July 1, 2022 to June 30, 2023)

Parameter	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22
Flow (MGD) Average Monthly	22438	0.02935	0.02973	0.04167	0.03544	0.04323	0.04173	0.03361	0.02338	0.02561	0.03273	0.02395
Flow (MGD) Weekly Average	0.04330	0.07218	0.03390	0.04679	0.04171	0.05859	0.05225	0.04543	0.02773	0.03127	0.09089	0.04325
pH (S.U.) Instantaneous Minimum	7.0	7.0	6.8	6.4	6.5	6.7	6.5	6.7	6.6	6.6	6.7	6.6
pH (S.U.) Instantaneous Maximum	7.5	7.2	7.1	6.9	7.0	7.1	7.1	7.2	7.0	7.0	7.0	7.0
DO (mg/L) Instantaneous Minimum	4.05	4.18	4.11	5.09	5.11	4.46	4.1	4.24	4.1	4.09	4.11	4.1
TRC (mg/L) Average Monthly	0.6	0.4	0.3	0.4	0.4	0.4	0.3	0.3	0.4	0.6	0.5	0.3
TRC (mg/L) Instantaneous Maximum	1.0	0.9	0.7	0.9	0.89	0.8	0.9	0.6	0.9	1.2	1.0	0.5
CBOD5 (lbs/day) Average Monthly	0.7	< 0.3	1	1	1	2	2	< 0.7	< 0.5	< 1	< 4	< 0.3
CBOD5 (mg/L) Average Monthly	5.3	< 2.2	4.7	3.8	5.3	4.5	4.8	< 3.0	< 3.0	< 3.8	< 2.6	< 3.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	23	24	49	55	32	55	49	43	31	42	19	26
BOD5 (mg/L) Raw Sewage Influent Average Monthly	183	172	201	175	138	130	142.3	206	179.1	162	137	223
TSS (lbs/day) Average Monthly	3	2	4	5	7	12	6	3	2	8	1	2
TSS (lbs/day) Raw Sewage Influent Average Monthly	11	21	39	30	28	56	48	35	26	29	14	64
TSS (mg/L) Average Monthly	25.3	13.8	4.7	17.0	27.3	26.0	17.5	12.3	12.8	29.5	10.0	15.8
TSS (mg/L) Raw Sewage Influent Average Monthly	86	150	162	100	122	122	144	158	144	110	104	538
Fecal Coliform (No./100 ml) Geometric Mean	29	6	5	< 2	5	> 144	> 1939	37	216	5	6	4
Fecal Coliform (No./100 ml) Instantaneous Maximum	75.4	18.3	23.1	3.1	21.8	> 2419.6	> 2419.6	435.2	261.3	6.3	16.9	6.1

Total Nitrogen (mg/L) Average Quarterly	2.97			5.79			1.53			4.79		
Ammonia (lbs/day) Average Monthly	4	2	0.2	0.07	0.05	0.1	0.3	0.3	0.09	< 0.2	0.1	0.1
Ammonia (mg/L) Average Monthly	33	15	1	1	1	0.5	1	1	1	< 1	1	1
Total Phosphorus (mg/L) Average Quarterly	0.75			1.0			1.70			3.90		

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 Wkly Avg	XXX	XXX	XXX	XXX	Continuous	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	1.6	1/day	Grab
CBOD5	14.5	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	17.5	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/quarter	Grab
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	2/quarter	24-Hr Composite
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Ammonia May 1 - Oct 31	11.6	XXX	XXX	20.0	XXX	40	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		
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	2/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 limits for CBOD5, Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for influent BOD5 and influent TSS is based on Chapter 92a.61. The limits for Ammonia-Nitrogen are water quality-based on Chapter 93.7. Monitoring for Total Nitrogen and Total Phosphorus is based on Chapter 92a.61.

Attachment 1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16F	55425	TWOMILE 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)
6.200	Ludlow STP	PA0103292a	0.070	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16F	55425	TWOMILE RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.200	0.070	20.444	6.978
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
17.548	0.538	32.607	0.129
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.04	0.689	2.22	0.724
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.866	7.278	Tsivoglou	6
Reach Travel Time (days)			
0.473			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.047	3.91	2.15	7.76
0.095	3.78	2.07	7.71
0.142	3.66	2.00	7.68
0.189	3.54	1.94	7.68
0.237	3.42	1.87	7.69
0.284	3.31	1.81	7.71
0.331	3.20	1.75	7.74
0.379	3.10	1.69	7.77
0.426	3.00	1.63	7.80
0.473	2.90	1.58	7.84

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
16F	55425	TWOMILE RUN	**6.200**	1509.00	16.10	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	0.069	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
Ludlow STP	PA0103292a	0.0700	0.0000	0.0000	0.000	25.00	6.80

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
16F	55425	TWOMILE RUN	**5.200**	1478.00	19.30	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	0.069	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 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
16F	55425	TWOMILE 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												
6.200	1.11	0.00	1.11	.1083	0.00587	.538	17.55	32.61	0.13	0.473	20.44	6.98
Q1-10 Flow												
6.200	0.71	0.00	0.71	.1083	0.00587	NA	NA	NA	0.10	0.591	20.66	6.97
Q30-10 Flow												
6.200	1.51	0.00	1.51	.1083	0.00587	NA	NA	NA	0.15	0.404	20.33	6.98

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16F	55425	TWOMILE 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
6.200	Ludlow STP	16.31	50	16.31	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
6.200	Ludlow STP	1.86	25	1.86	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)		
6.20	Ludlow STP	25	25	25	25	4	4	0	0

Attachment 2

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

1.11	= Q stream (cfs)	0.5	= CV Daily
0.07	= 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 = 3.289	1.3.2.iii	WLA cfc = 3.199
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 1.225	5.1d	LTA_cfc = 1.860

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		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)**