

Application Type Renewal
Facility Type Municipal
Major / Minor Minor

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application No. PA0097811
APS ID 812799
Authorization ID 1270680

Applicant and Facility Information

Applicant Name <u>Dry Tavern Sewer Authority</u>	Facility Name <u>Dry Tavern Sewer Authority</u>
Applicant Address <u>PO Box 194</u> <u>Rices Landing, PA 15357-0194</u>	Facility Address <u>859 North Eighty Eight Road</u> <u>Rices Landing, PA 15357</u>
Applicant Contact <u>Mr. Mickey Dikun</u>	Facility Contact <u>Mr. Edgar Harris – H&H Water Controls</u>
Applicant Phone <u>724.833.7303</u>	Facility Phone <u>724.966.2278</u>
Client ID <u>74554</u>	Site ID <u>261070</u>
Ch 94 Load Status <u>Not Overloaded</u>	Municipality <u>Jefferson Township</u>
Connection Status <u></u>	County <u>Greene</u>
Date Application Received <u>April 24, 2019</u>	EPA Waived? <u>Yes</u>
Date Application Accepted <u>April 25, 2019</u>	If No, Reason <u></u>

Purpose of Application Application for a renewal of an existing NPDES permit for discharge of treated Sewage.

Summary of Review

The applicant has applied for a renewal of an existing NPDES Permit, Permit No. PA0097811, which was previously issued by the Department on October 21, 2014. That permit expired on October 31, 2019.



WQM Permit No. 3005401, issued on October 12, 2005, approved construction of a STP with a design flow rate of 0.12 MDG. The existing treatment process consists screening, a two-unit SBR, activated sludge process, and chlorination.

The receiving stream, UNT to Pumpkin Run, is classified as a WWF, and is located in State Watershed No. 19-B.

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

Public Participation

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

Approve	Deny	Signatures	Date
X		 William C. Mitchell, E.I.T. / Project Manager	April 2, 2020
X		 Christopher Kriley, P.E. / Environmental Engineer Manager	April 3, 2020

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.12
Latitude	39° 55' 54.00"	Longitude	-80° 00' 38.00"
Quad Name	Matter	Quad Code	1905
Wastewater Description: Sewage Effluent			
Receiving Waters	Unnamed Tributary to Pumpkin Run (WWF)	Stream Code	40986
NHD Com ID	99414548	RMI	0.19
Drainage Area	0.58	Yield (cfs/mi²)	0.0204
Q ₇₋₁₀ Flow (cfs)	0.0118	Q ₇₋₁₀ Basis	
Elevation (ft)		Slope (ft/ft)	0.009
Watershed No.	19-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	Tentative	Name	Pumpkin Run
Background/Ambient Data		Data Source	
pH (SU)			
Temperature (°F)			
Hardness (mg/L)			
Other:			
Nearest Downstream Public Water Supply Intake	Tri-County Joint Municipal Authority		
PWS Waters	Monongahela River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Changes Since Last Permit Issuance: None

Treatment Facility Summary				
Treatment Facility Name: Dry Tavern Sewer Authority STP				
WQM Permit No.	Issuance Date			
3005401	10/12/2005			
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia Reduction	SBRs	Chlorination	0.12
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.051	204.0	Not Overloaded	Aerobic holding tank	Franklin Twp.WWTP or Clarksburg WWTP

Changes Since Last Permit Issuance: None

Compliance History

An Operation Compliance Check Report was requested on March 31, 2020. The Report will be attached to the Fact Sheet Addendum.

Development of Effluent Limitations

Outfall No.	001	Design Flow (MGD)	0.12
Latitude	39° 55' 54.00"	Longitude	-80° 00' 38.00"
Wastewater Description: Sewage Effluent			

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
CBOD ₅	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Water Quality-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Model
Total Residual Chlorine	0.02	Average Monthly	TRC_CALC
Dissolved Oxygen	5.0	Minimum	WQAM63
Ammonia Nov 1 - Apr 30	3.5	Average Monthly	WQAM63
Ammonia-Nitrogen May 1 – Oct 31	2.0	Average Monthly	WQAM63

Best Professional Judgment (BPJ) Limitations

Comments: N/A

Anti-Backsliding

N/A

Additional Considerations:

For pH, Dissolved Oxygen (DO) and Total Residual Chlorine (TRC), a monitoring frequency 1/day has been imposed. In general, less frequent monitoring may be established only when the permittee demonstrates that there will be no discharge on days where monitoring is not required.

Nutrient monitoring is required to establish the nutrient load from the waste water treatment facility and the impacts that load may have on the quality of the receiving stream(s). A 1/year monitor and report requirement for Total N & Total P has been added to the permit as per Chapter 92.a.61.

Mass loading limits are applicable for publicly owned treatment works. Current policy requires average monthly mass loading limits be established for CBOD₅, TSS, and NH₃-N and average weekly mass loading limits be established for CBOD₅ and TSS. 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).

For POTWs with design flows greater than 2,000 GPD influent BOD₅ and TSS monitoring must be established in the permit, and the monitoring should be consistent with the same frequency and sample type as is used for other effluent parameters.

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

Total Dissolved Solids (TDS) and its Major Constituents

Monitoring is not required for Bromide, Chloride, Sulfate, and TDS, because the effluent concentration of TDS, as reported in the NPDES Permit application, does not exceed 1,000 mg/l.

Total Dissolved Solids (TDS) and its major constituents including sulfate, chloride, and bromide have emerged as pollutants of concern in several major watersheds in the Commonwealth. The conservative nature of these solids allows them to accumulate in surface waters and they may remain a concern even if the immediate downstream public water supply is not directly impacted. Bromide has been linked to formation of disinfection byproducts at increased levels in public water systems. As a consequence of actions associated with Triennial Review 13, the Environmental Quality Board has directed DEP to collect additional data. Facilities with design flows greater than or equal to 0.1 mgd are required to report at least one sample analyzed for these parameters with the NPDES Permit renewal application.

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	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.02	XXX	0.06	1/day	Grab
CBOD5	25.0	38.0	XXX	25.0	37.5	50	1/week	8-Hr Composite
BOD5 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	30.0	45.0	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
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Ammonia Nov 1 - Apr 30	3.5	XXX	XXX	3.5	XXX	7	1/week	8-Hr Composite
Ammonia May 1 - Oct 31	2.0	XXX	XXX	2.0	XXX	4	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	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall #001

FEB. 2005 Pollution Report

Nomograph Velocity:

$$Q_{7-10} \text{ Flow} = 0.0118 \text{ cfs}$$

$$\begin{aligned} \text{Discharge Flow} &= 0.120 \text{ mgd} \\ &= 0.186 \text{ cfs} \end{aligned}$$

$$\text{Total flow} = 0.1978 \text{ cfs}$$

$$\text{slope} = 0.009 \text{ ft/ft}$$

$$\text{Nom. velocity} = 0.85 \times 0.3 = 0.255 \text{ ft/s}$$

$$V = \frac{\text{distance}}{\text{time}} \quad \therefore \text{time} = \frac{\text{distance}}{\text{velocity}}$$

$$\text{Reach length} = 1000 \text{ ft}$$

$$\text{time} = \frac{1000 \text{ ft}}{0.255 \text{ fps}} = 3921.6 \text{ sec} \times \frac{1 \text{ min}}{60 \text{ sec}} \times \frac{1 \text{ hr}}{60 \text{ min}} \times \frac{1 \text{ day}}{24 \text{ hr}} =$$

$$0.045 \text{ day}$$

FILE: c:\untitled.wqm
Dry Tavern STP Expansion Nomograph Velocity Warm Period

Default Data

a. Stream Values

1 Q1-10/Q7-10 ratio.....: .69
2 Q30-10/Q7-10 ratio.....: 1.805
3 Temperature.....: 25
4 pH.....: 7
5 C-BOD5.....: 2
6 NH3-N.....: .1
7 D.O. Saturation (%).....: .85
8 D.O. Goal.....: 5
9 Width/Depth ratio.....: 10
10 KC...(Headwaters only!).....: 0
11 KN.....: .6

b. Discharge Values (30-day avgs.)

12 C-BOD5.....: 25
13 NH3-N.....: 25
14 Effluent D.O.....: 2
15 Effluent Temp.....: 20
16 KC.....: 1.5
17 Balanced Technology(1=y 0=no).....: 0

FILE: c:\untitled.wqm
Dry Tavern STP Expansion Nomograph Velocity Warm Period

REACH # 1

Headwaters and Tributary data

No. of Reaches : 1

Rh	Q7-10 (cfs)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)
HW	0.0118	25	7	7.12	2	.1
1	0.0000					

FILE: c:\untitled.wqm
Dry Tavern STP Expansion Nomograph Velocity Warm Period

Stream Characteristics

Rh	Q7-10 (cfs)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)
1	.01	25	7	7.12	2	.1

Q 1-10/Q 7-10 = .69
Q 30-10/Q 7-10 = 1.805

FILE: c:\untitled.wqm
Dry Tavern STP Expansion Nomograph Velocity Warm Period

DISCHARGE # 1
Discharger Data
Q7-10 Design Conditions

Rh	FLOW (MGD)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)	KC (1/days)
1	0.1200	20	7	2	25	25	1.5

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Dry Tavern STP Expansion Nomograph Velocity Warm Period

REACH # 1						
Reach Characteristics						
Rh	D.O. GOAL	KN (/D)	RCH. SL. (FT/FT)	RCH. LEN. (FT.)	DRAIN AREA (MI^2)	W/D
1	5	.6	0.00900	1000	.58	10

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Dry Tavern STP Expansion Nomograph Velocity Warm Period

REACH # 1		
Reach Characteristics		
Rh	KR (/D)	TT (Days)
1	0	.045

FILE: c:\untitled.wqm
Dry Tavern STP Expansion Nomograph Velocity Warm Period

NH3-N Discharge Allocations at Q30-10 (Uniform)

DIS	Q	BASE. CONC.	MULT. CONC.	CRIT. RCH.	PCT. RED.	NH3-N CRIT.
	(mgd)	(mg/l)	(mg/l)		(%)	(mg/l)
1	0.1200	25.00	2.05	1	91.8	1.85

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Dry Tavern STP Expansion Nomograph Velocity Warm Period

NH3-N Discharge Allocations at Q1-10 (Uniform)

DIS	Q	BASE. CONC.	MULT. CONC.	CRIT. RCH.	PCT. RED.	NH3-N CRIT.
	(mgd)	(mg/l)	(mg/l)		(%)	(mg/l)
1	0.1200	50.00	9.94	1	80.1	9.53

FILE: c:\untitled.wqm
Dry Tavern STP Expansion Nomograph Velocity Warm Period

D.O. Allocations (Uniform)

DIS #	Q (MGD)	---NH3-N---		---CBOD5---		CRIT. RCH.	PCT. REM. (%)
		IND. Conc. (mg/l)	CUM. Conc. (mg/l)	IND. Conc. (mg/l)	CUM. Conc. (mg/l)		
1	0.1200	2	2	25	25	0	0

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Dry Tavern STP Expansion Nomograph Velocity Warm Period

(Total) Discharge = .12 MGD
 Temp = 20.3 pH = 7 Width = 2.77
 CBOD-5 = 23.63 NH3-N = 1.89 Depth = 0.28
 D.O. = 5.13 D.O. Goal = 5 Velocity = 0.257
 KC' = 1.492 KN = .6 W/D RATIO = 10
 KR = 93.879 (OWENS)
 Dis. 1 Rch. 1 Trvl Time: .045

Tr.Tm. (Days)	CBOD-5 (mg/l)	NH3-N (mg/l)	D.O. (mg/l)
0.005	23.47	1.88	6.28
0.009	23.31	1.88	7.04
0.014	23.15	1.87	7.12
0.018	22.99	1.87	7.12
0.023	22.83	1.86	7.12
0.027	22.68	1.86	7.12
0.032	22.53	1.85	7.12
0.036	22.37	1.85	7.12
0.041	22.22	1.84	7.12
0.045	22.07	1.84	7.12

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Dry Tavern STP Expansion Nomograph Velocity Warm Period

REACH # 1
Reach Characteristics

Rh	KR (/D)	TT (Days)
1	20	.045

FILE: c:\untitled.wqm
Dry Tavern STP Expansion Nomograph Velocity Warm Period

D.O. Allocations (Uniform)

DIS #	Q (MGD)	---NH3-N---		---CBOD5---		CRIT. RCH.	PCT. REM. (%)
		IND. Conc. (mg/l)	CUM. Conc. (mg/l)	IND. Conc. (mg/l)	CUM. Conc. (mg/l)		
1	0.1200	2	2	25	25	0	0

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FILE: c:\untitled.wqm
Dry Tavern STP Expansion Nomograph Velocity Warm Period

(Total) Discharge = .12 MGD
 Temp = 20.3 pH = 7 Width = 2.77
 CBOD-5 = 23.63 NH3-N = 1.89 Depth = 0.28
 D.O. = 5.13 D.O. Goal = 5 Velocity = 0.257
 KC' = 1.492 KN = .6 W/D RATIO = 10
 KR = 20 (USR DEF.)
 Dis. 1 Rch. 1 Trvl Time: .045

Tr.Tm. (Days)	CBOD-5 (mg/l)	NH3-N (mg/l)	D.O. (mg/l)
0.005	23.47	1.88	5.22
0.009	23.31	1.88	5.30
0.014	23.15	1.87	5.38
0.018	22.99	1.87	5.45
0.023	22.83	1.86	5.52
0.027	22.68	1.86	5.58
0.032	22.53	1.85	5.64
0.036	22.37	1.85	5.70
0.041	22.22	1.84	5.75
0.045	22.07	1.84	5.80

FILE: c:\untitled.wqm
Dry Tavern STP Expansion Nomograph Velocity Warm Period

Effluent Limitations Display

DIS #	Q MGD	NH3-N 1 DAY	TOX. 30 DAY	DISS. OXYGEN C-BOD5 30-DAY	NH3-N 30-DAY	EFF. D.O.
1	.12	4.1	2	25	2	5

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Warm Period

Default Data

- a. Stream Values
- | | | |
|----|-------------------------------|-------|
| 1 | Q1-10/Q7-10 ratio..... | .69 |
| 2 | Q30-10/Q7-10 ratio..... | 1.805 |
| 3 | Temperature..... | 25 |
| 4 | pH..... | 7 |
| 5 | C-BOD5..... | 2 |
| 6 | NH3-N..... | .1 |
| 7 | D.O. Saturation (%)..... | .85 |
| 8 | D.O. Goal..... | 5 |
| 9 | Width/Depth ratio..... | 10 |
| 10 | KC... (Headwaters only!)..... | 0 |
| 11 | KN..... | .6 |
- b. Discharge Values (30-day avgs.)
- | | | |
|----|------------------------------------|-----|
| 12 | C-BOD5..... | 25 |
| 13 | NH3-N..... | 25 |
| 14 | Effluent D.O..... | 2 |
| 15 | Effluent Temp..... | 20 |
| 16 | KC..... | 1.5 |
| 17 | Balanced Technology(1=y 0=no)..... | 0 |

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Warm Period

REACH # 1

Headwaters and Tributary data

No. of Reaches : 1

Rh	Q7-10 (cfs)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)
HW	0.0118	25	7	7.12	2	.1
1	0.0000					

FILE: c:\untitled.wqm
 Dry Tavern STP Expansion EPA Velocity Warm Period

Stream Characteristics

Rh	Q7-10 (cfs)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)
1	.01	25	7	7.12	2	.1

Q 1-10/Q 7-10 = .69
 Q 30-10/Q 7-10 = 1.805

FILE: c:\untitled.wqm
 Dry Tavern STP Expansion EPA Velocity Warm Period

DISCHARGE # 1
 Discharger Data
 Q7-10 Design Conditions

Rh	FLOW (MGD)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)	KC (1/days)
1	0.1200	20	7	2	25	25	1.5

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FILE: c:\untitled.wqm
 Dry Tavern STP Expansion EPA Velocity Warm Period

REACH # 1						
Reach Characteristics						
Rh	D.O.	KN	RCH. SL.	RCH. LEN.	DRAIN AREA	W/D
	GOAL	(/D)	(FT/FT)	(FT.)	(MI^2)	
1	5	.6	0.00900	1000	.58	10

FILE: c:\untitled.wqm
 Dry Tavern STP Expansion EPA Velocity Warm Period

REACH # 1		
Reach Characteristics		
Rh	KR	TT
	(/D)	(Days)
1	0	0

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FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Warm Period

NH3-N Discharge Allocations at Q30-10 (Uniform)

DIS	Q	BASE. CONC.	MULT. CONC.	CRIT. RCH.	PCT. RED.	NH3-N CRIT.
	(mgd)	(mg/l)	(mg/l)		(%)	(mg/l)
1	0.1200	25.00	2.05	1	91.8	1.85

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Warm Period

NH3-N Discharge Allocations at Q1-10 (Uniform)

DIS	Q	BASE. CONC.	MULT. CONC.	CRIT. RCH.	PCT. RED.	NH3-N CRIT.
	(mgd)	(mg/l)	(mg/l)		(%)	(mg/l)
1	0.1200	50.00	9.94	1	80.1	9.53

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Warm Period

D.O. Allocations (Uniform)

DIS #	Q (MGD)	---NH3-N---		---CBOD5---		CRIT. RCH.	PCT. REM. (%)
		IND. Conc. (mg/l)	CUM. Conc. (mg/l)	IND. Conc. (mg/l)	CUM. Conc. (mg/l)		
1	0.1200	2	2	25	25	0	0

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Warm Period

(Total) Discharge = .12 MGD
 Temp = 20.3 pH = 7 Width = 4.44
 CBOD-5 = 23.63 NH3-N = 1.89 Depth = 0.44
 D.O. = 5.13 D.O. Goal = 5 Velocity = 0.100
 KC' = 1.492 KN = .6 W/D RATIO = 10
 KR = 20.889 (OWENS)
 Dis. 1 Rch. 1 Trvl Time: .115

Tr.Tm. (Days)	CBOD-5 (mg/l)	NH3-N (mg/l)	D.O. (mg/l)
0.012	23.22	1.87	5.38
0.023	22.81	1.86	5.59
0.035	22.42	1.85	5.76
0.046	22.03	1.83	5.91
0.058	21.65	1.82	6.04
0.069	21.28	1.81	6.14
0.081	20.91	1.80	6.24
0.092	20.55	1.78	6.32
0.104	20.19	1.77	6.39
0.115	19.84	1.76	6.46

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FILE: c:\untitled.wqm
 Dry Tavern STP Expansion EPA Velocity Warm Period

Effluent Limitations Display

DIS #	Q MGD	NH3-N 1 DAY	TOX. 30 DAY	DISS. OXYGEN C-BOD5 30-DAY	NH3-N 30-DAY	EFF. D.O.
1	.12	4.1	2	25	2	5

(WQAM63.EXE) Release 1.2 02-15-2005 09:19:01

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Cold Period

Default Data

- a. Stream Values
- 1 Q1-10/Q7-10 ratio.....: .69
 - 2 Q30-10/Q7-10 ratio.....: 1.805
 - 3 Temperature.....: 5
 - 4 pH.....: 7
 - 5 C-BOD5.....: 2
 - 6 NH3-N.....: .1
 - 7 D.O. Saturation (%).....: .85
 - 8 D.O. Goal.....: 5
 - 9 Width/Depth ratio.....: 10
 - 10 KC... (Headwaters only!).....: 0
 - 11 KN.....: .6
- b. Discharge Values (30-day avgs.)
- 12 C-BOD5.....: 25
 - 13 NH3-N.....: 6
 - 14 Effluent D.O.....: 5
 - 15 Effluent Temp.....: 15
 - 16 KC.....: 1.5
 - 17 Balanced Technology(1=y 0=no).....: 0

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Cold Period

REACH # 1

Headwaters and Tributary data

No. of Reaches : 1

Rh	Q7-10 (cfs)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)
HW	0.0236	5	7	10.82	2	.1
1	0.0000					

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Cold Period

Stream Characteristics

Rh	Q7-10 (cfs)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)
1	.02	5	7	10.82	2	.1

Q 1-10/Q 7-10 = .69
Q 30-10/Q 7-10 = 1.805

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Cold Period

DISCHARGE # 1
Discharger Data
Q7-10 Design Conditions

Rh	FLOW (MGD)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)	KC (1/days)
1	0.1200	15	7	5	25	6	1.5

(WQAM63.EXE) Release 1.2 02-15-2005 09:29:24

FILE: c:\untitled.wqm
 Dry Tavern STP Expansion EPA Velocity Cold Period

REACH # 1						
Reach Characteristics						
Rh	D.O. GOAL	KN (/D)	RCH. SL. (FT/FT)	RCH. LEN. (FT.)	DRAIN AREA (MI^2)	W/D
1	5	.6	0.00900	1000	.58	10

FILE: c:\untitled.wqm
 Dry Tavern STP Expansion EPA Velocity Cold Period

REACH # 1		
Reach Characteristics		
Rh	KR (/D)	TT (Days)
1	0	0

(WQAM63.EXE) Release 1.2 02-15-2005 09:30:16

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Cold Period

NH3-N Discharge Allocations at Q30-10 (Uniform)

DIS	Q	BASE. CONC.	MULT. CONC.	CRIT. RCH.	PCT. RED.	NH3-N CRIT.
	(mgd)	(mg/l)	(mg/l)		(%)	(mg/l)
1	0.1200	6.00	3.91	1	34.8	3.20

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Cold Period

NH3-N Discharge Allocations at Q1-10 (Uniform)

DIS	Q	BASE. CONC.	MULT. CONC.	CRIT. RCH.	PCT. RED.	NH3-N CRIT.
	(mgd)	(mg/l)	(mg/l)		(%)	(mg/l)
1	0.1200	12.00	12.00	0	0	14.90

(WQAM63.EXE) Release 1.2 02-15-2005 09:30:45

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Cold Period

D.O. Allocations (Uniform)

DIS #	Q (MGD)	---NH3-N---		---CBOD5---		CRIT. RCH.	PCT. REM. (%)
		IND. Conc. (mg/l)	CUM. Conc. (mg/l)	IND. Conc. (mg/l)	CUM. Conc. (mg/l)		
1	0.1200	3.9	3.9	25	25	0	0

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Cold Period

(Total) Discharge = .12 MGD
 Temp = 13.9 pH = 7 Width = 4.49
 CBOD-5 = 22.41 NH3-N = 3.47 Depth = 0.45
 D.O. = 5.66 D.O. Goal = 5 Velocity = 0.104
 KC' = 1.484 KN = .6 W/D RATIO = 10
 KR = 20.851 (OWENS)
 Dis. 1 Rch. 1 Trvl Time: .112

Tr.Tm. (Days)	CBOD-5 (mg/l)	NH3-N (mg/l)	D.O. (mg/l)
0.011	22.13	3.46	6.20
0.022	21.85	3.44	6.63
0.034	21.58	3.43	6.98
0.045	21.31	3.41	7.26
0.056	21.05	3.40	7.49
0.067	20.78	3.39	7.68
0.078	20.53	3.37	7.83
0.089	20.27	3.36	7.95
0.101	20.02	3.34	8.05
0.112	19.77	3.33	8.14

(WQAM63.EXE) Release 1.2 02-15-2005 09:30:59

FILE: c:\untitled.wqm
Dry Tavern STP Expansion EPA Velocity Cold Period

Effluent Limitations Display

DIS	Q	NH3-N TOX.		DISS. OXYGEN		
#		1	30	C-BOD5	NH3-N	EFF.
	MGD	DAY	DAY	30-DAY	30-DAY	D.O.
1	.12	7.8	3.9	25	3.9	5

(WQAM63.EXE) Release 1.2 02-15-2005 09:31:29

Nomograph Velocity Cold Period

Q7-10 flow : 0.0236 cfs

Discharge flow : 0.186 cfs

Total flow : 0.2096

Nomograph velocity = $0.86 \times 0.3 = 0.258$ Fps

travel time = $\frac{1000 \text{ ft}}{0.258 \text{ Fps}} = 3876 \text{ sec} = 0.044 \text{ day}$

FILE: c:\untitled.wqm
Dry Tavern STP Expansio Nomograph Velocity Cold Period

Default Data

a. Stream Values

1 Q1-10/Q7-10 ratio.....: .69
2 Q30-10/Q7-10 ratio.....: 1.805
3 Temperature.....: 5
4 pH.....: 7
5 C-BOD5.....: 2
6 NH3-N.....: .1
7 D.O. Saturation (%).....: .85
8 D.O. Goal.....: 5
9 Width/Depth ratio.....: 10
10 KC... (Headwaters only!).....: 0
11 KN.....: .6

b. Discharge Values (30-day avgs.)

12 C-BOD5.....: 25
13 NH3-N.....: 6
14 Effluent D.O.....: 5
15 Effluent Temp.....: 15
16 KC.....: 1.5
17 Balanced Technology(1=y 0=no).....: 0

FILE: c:\untitled.wqm
Dry Tavern STP Expansio Nomograph Velocity Cold Period

REACH # 1

Headwaters and Tributary data

No. of Reaches : 1

Rh	Q7-10 (cfs)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)
HW	0.0236	5	7	10.82	2	.1
1	0.0000					

FILE: c:\untitled.wqm
Dry Tavern STP Expansio Nomograph Velocity Cold Period

Stream Characteristics

Rh	Q7-10 (cfs)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)
1	.02	5	7	10.82	2	.1

Q 1-10/Q 7-10 = .69
Q 30-10/Q 7-10 = 1.805

FILE: c:\untitled.wqm
Dry Tavern STP Expansio Nomograph Velocity Cold Period

DISCHARGE # 1
Discharger Data
Q7-10 Design Conditions

Rh	FLOW (MGD)	T (c)	pH (su)	DO (mg/l)	CBOD5 (mg/l)	NH3-N (mg/l)	KC (1/days)
1	0.1200	15	7	5	25	6	1.5

FILE: c:\untitled.wqm
 Dry Tavern STP Expansio Nomograph Velocity Cold Period

REACH # 1						
Reach Characteristics						
Rh	D.O. GOAL	KN (/D)	RCH. SL. (FT/FT)	RCH. LEN. (FT.)	DRAIN AREA (MI^2)	W/D
1	5	.6	0.00900	1000	.58	10

FILE: c:\untitled.wqm
 Dry Tavern STP Expansio Nomograph Velocity Cold Period

REACH # 1		
Reach Characteristics		
Rh	KR (/D)	TT (Days)
1	20	.044

(WQAM63.EXE) Release 1.2 02-15-2005 09:53:51

FILE: c:\untitled.wqm
 Dry Tavern STP Expansio Nomograph Velocity Cold Period

NH3-N Discharge Allocations at Q30-10 (Uniform)

DIS	Q	BASE. CONC.	MULT. CONC.	CRIT. RCH.	PCT. RED.	NH3-N CRIT.
	(mgd)	(mg/l)	(mg/l)		(%)	(mg/l)
1	0.1200	6.00	3.91	1	34.8	3.20

FILE: c:\untitled.wqm
 Dry Tavern STP Expansio Nomograph Velocity Cold Period

NH3-N Discharge Allocations at Q1-10 (Uniform)

DIS	Q	BASE. CONC.	MULT. CONC.	CRIT. RCH.	PCT. RED.	NH3-N CRIT.
	(mgd)	(mg/l)	(mg/l)		(%)	(mg/l)
1	0.1200	12.00	12.00	0	0	14.90

FILE: c:\untitled.wqm
Dry Tavern STP Expansio Nomograph Velocity Cold Period

D.O. Allocations (Uniform)

DIS #	Q (MGD)	---NH3-N---		---CBOD5---		CRIT.	PCT.
		IND. Conc. (mg/l)	CUM. Conc. (mg/l)	IND. Conc. (mg/l)	CUM. Conc. (mg/l)	RCH.	REM. (%)
1	0.1200	3.9	3.9	25	25	0	0

FILE: c:\untitled.wqm
Dry Tavern STP Expansio Nomograph Velocity Cold Period

(Total) Discharge = .12 MGD
 Temp = 13.9 pH = 7 Width = 2.82
 CBOD-5 = 22.41 NH3-N = 3.47 Depth = 0.28
 D.O. = 5.66 D.O. Goal = 5 Velocity = 0.263
 KC' = 1.485 KN = .6 W/D RATIO = 10
 KR = 20 (USR DEF.)
 Dis. 1 Rch. 1 Trvl Time: .044

Tr.Tm. (Days)	CBOD-5 (mg/l)	NH3-N (mg/l)	D.O. (mg/l)
0.004	22.30	3.47	5.87
0.009	22.19	3.46	6.06
0.013	22.08	3.45	6.24
0.018	21.97	3.45	6.41
0.022	21.86	3.44	6.56
0.026	21.75	3.44	6.70
0.031	21.65	3.43	6.83
0.035	21.54	3.43	6.95
0.040	21.43	3.42	7.06
0.044	21.33	3.41	7.16

Copy of TRC_CALC

TRC EVALUATION

0.0118	= Q stream (cfs)	0.5	= CV Daily	
0.12	= Q discharge (MGD)	0.5	= CV Hourly	
4	= no. samples	0.995	= 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)	
	= % Factor of Safety (FOS)		=Decay Coefficient (K)	
Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.039	1.3.2.iii	WLA cfc = 0.031
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.015	5.1d	LTA_cfc = 0.018
Source	Effluent Limit Calculations			
PENTOXSD TRG	5.1f	AML MULT = 1.720		
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.025	AFC	
		INST MAX LIMIT (mg/l) = 0.059		
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)			