

100 YEAR STORM

Present Conditions		Bypass Flow (AREA 5&8)		New Acreage	
Q = CIA		Q = CIA		Q = CIA	
A =	10.52	A =	3.86	6.66	
C =	0.35	C =	0.50		
Tc =	20	Tc =	10		
I100 =	8.30	I100 =	9.80		
Q100 =	30.56	Q100 =	18.91	cfs	
Q100 =	30.56	Q100 TOTAL =	18.91	cfs	

Q100 Allowable = 15.35 cfs

Future Conditions		Offsite Pass-Through	
Q = CIA		Q = CIA	
A =	6.66	A =	0.42
C =	0.50	C =	0.90
Tc =	10	Tc =	10
I100 =	9.80	I100 =	9.80
Q100 =	32.63	Q100 =	3.70

Flow for Storm Durations			
Time	I	C	Q
10	9.80	0.50	36.34
15	9.00	0.50	33.37
20	8.30	0.50	30.78
30	6.90	0.50	25.59
40	5.80	0.50	21.51
50	5.00	0.50	18.54
60	4.50	0.50	16.69
70	4.00	0.50	14.83
80	3.70	0.50	13.72
90	3.50	0.50	12.98
100	3.40	0.50	12.61
110	3.20	0.50	11.87

Storage Calculations			
10 min			
Inflow	21803	Storage =	12592
Outflow	9211		
15 min			
Inflow	30035	Storage =	18522
Outflow	11513		
20 min			
Inflow	36932	Storage =	23116
Outflow	13816		
30 min			
Inflow	46053	Storage =	27632
Outflow	18421		
40 min			
Inflow	51615	Storage =	28589
Outflow	23027		
50 min			
Inflow	55620	Storage =	27988
Outflow	27632		
60 min			
Inflow	60070	Storage =	27833
Outflow	32237		
70 min			
Inflow	62294	Storage =	25452
Outflow	36842		
80 min			
Inflow	65854	Storage =	24406
Outflow	41448		
90 min			
Inflow	70081	Storage =	24028
Outflow	46053		
100 min			
Inflow	75643	Storage =	24985
Outflow	50658		
110 min			
Inflow	78313	Storage =	23049
Outflow	55264		

Proposed Pond Volume			
Elevation	Area	Volume	Total Volume
489.73	10	0	0
490	1479	201	0
490.6	1971	1035	0
491	2210	836	836
492	6194	4202	5038
493	10196	8195	13233
494	12547	11372	24605
495	15040	13794	38398
496	17646	16343	54741

100 YR WSEL
494.29

QALLOW=	15.35	CFS
Q100 =	15.25	CFS

2-WEIR CALCULATION		FL= 493.93
Equation: Q = Cd*B*H ^{1.5}		
Q =	2.59 ft ³ /sec	
Cd =	3.32	
H =	0.36 ft	
B =	21.50 in	

2-WEIR CALCULATION		FL= 493.62
Equation: Q = Cd*B*H ^{1.5}		
Q =	0.92 ft ³ /sec	
Cd =	3.32	
H =	0.30 ft	
B =	10.00 in	

2-WEIR CALCULATION		FL= 493.37
Equation: Q = Cd*B*H ^{1.5}		
Q =	1.96 ft ³ /sec	
Cd =	3.32	
H =	0.26 ft	
B =	27.00 in	

RECTANGULAR ORIFICE CALCULATION		FL= 490.6
Equation: Q = Cd*A*(2*g*H) ^{0.5}		
Q =	9.77 ft ³ /sec	
Cd =	0.62	
g =	32.20 ft/sec ²	
H =	3.31 ft	
A = BH	1.08 ft ²	
B =	17.00 in	
H =	9.15 in	

25 YEAR STORM

Present Conditions		Bypass Flow (AREA 5&8)		New Acreage	
Q = CIA		Q = CIA		Q = CIA	
A =	10.52	A =	3.86	6.66	
C =	0.35	C =	0.50		
Tc =	20	Tc =	10		
I25 =	6.80	I25 =	8.30		
Q25 =	25.04	Q25 =	16.02	cfs	
Q25 =	25.04	Q25 TOTAL =	16.02	cfs	

Q25 Allowable = 12.16 cfs

Future Conditions		Offsite Pass-Through	
Q = CIA		Q = CIA	
A =	6.66	A =	0.42
C =	0.50	C =	0.90
Tc =	10	Tc =	10
I25 =	8.30	I25 =	8.30
Q25 =	27.64	Q25 =	3.14

Flow for Storm Durations			
Time	I	C	Q
10	8.30	0.50	30.78
15	7.40	0.50	27.44
20	6.80	0.50	25.21
30	5.50	0.50	20.39
40	4.70	0.50	17.43
50	4.00	0.50	14.83
60	3.50	0.50	12.98
70	3.30	0.50	12.24
80	3.10	0.50	11.49
90	2.80	0.50	10.38
100	2.60	0.50	9.64
110	2.40	0.50	8.90

Storage Calculations			
10 min			
Inflow	18466	Storage =	11172
Outflow	7294		
15 min			
Inflow	24695	Storage =	15578
Outflow	9117		
20 min			
Inflow	30257	Storage =	19317
Outflow	10940		
30 min			
Inflow	36709	Storage =	22122
Outflow	14587		
40 min			
Inflow	41826	Storage =	23592
Outflow	18234		
50 min			
Inflow	44496	Storage =	22615
Outflow	21881		
60 min			
Inflow	46721	Storage =	21193
Outflow	25528		
70 min			
Inflow	51393	Storage =	22218
Outflow	29174		
80 min			
Inflow	55175	Storage =	22354
Outflow	32821		
90 min			
Inflow	56065	Storage =	19597
Outflow	36468		
100 min			
Inflow	57845	Storage =	17730
Outflow	40115		
110 min			
Inflow	58735	Storage =	14973
Outflow	43762		

Proposed Pond Volume			
Elevation	Area	Volume	Total Volume
489.73	10	0	0
490	1479	201	0
490.6	1971	1035	0
491	2210	836	836
492	6194	4202	5038
493	10196	8195	13233
494	12547	11372	24605
495	15040	13794	38398
496	17646	16343	54741

QALLOW=	12.16	CFS
Q25 =	12.10	CFS

2-WEIR CALCULATION		FL= 493.62
Equation: Q = Cd*B*H ^{1.5}		
Q =	0.92 ft ³ /sec	
Cd =	3.32	
H =	0.30 ft	
B =	10.00 in	

2-WEIR CALCULATION		FL= 493.37
Equation: Q = Cd*B*H ^{1.5}		
Q =	1.96 ft ³ /sec	
Cd =	3.32	
H =	0.26 ft	
B =	27.00 in	

RECTANGULAR ORIFICE CALCULATION		FL= 490.6
Equation: Q = Cd*A*(2*g*H) ^{0.5}		
Q =	9.22 ft ³ /sec	
Cd =	0.62	
g =	32.20 ft/sec ²	
H =	2.95 ft	
A = BH	1.08 ft ²	
B =	17.00 in	
H =	9.15 in	

10 YEAR STORM

Present Conditions		Bypass Flow (AREA 5&8)		New Acreage	
Q = CIA		Q = CIA		Q = CIA	
A =	10.52	A =	3.86	6.66	
C =	0.35	C =	0.50		
Tc =	20	Tc =	10		
I10 =	5.90	I10 =	7.10		
Q10 =	21.72	Q10 =	13.70	cfs	
Q10 =	21.72	Q10 TOTAL =	13.70	cfs	

Q10 Allowable = 10.70 cfs

Future Conditions		Offsite Pass-Through	
Q = CIA		Q = CIA	
A =	6.66	A =	0.42
C =	0.50	C =	0.90
Tc =	10	Tc =	10
I10 =	7.10	I10 =	7.10
Q10 =	23.64	Q10 =	2.68

Flow for Storm Durations			
Time	I	C	Q
10	7.10	0.50	26.33
15	6.50	0.50	24.10
20	5.90	0.50	21.88
30	4.90	0.50	18.17
40	4.00	0.50	14.83
50	3.40	0.50	12.61
60	3.00	0.50	11.12
70	2.80	0.50	10.38
80	2.60	0.50	9.64
90	2.40	0.50	8.90
100	2.20	0.50	8.16
110	2.00	0.50	7.42

Storage Calculations			
10 min			
Inflow	15796	Storage =	9373
Outflow	6423		
15 min			
Inflow	21692	Storage =	13663
Outflow	8028		
20 min			
Inflow	26253	Storage =	16619
Outflow	9634		
30 min			
Inflow	32705	Storage =	19859
Outflow	12846		
40 min			
Inflow	35597	Storage =	19540
Outflow	16057		
50 min			
Inflow	37822	Storage =	18553
Outflow	19268		
60 min			
Inflow	40046	Storage =	17567
Outflow	22480		
70 min			
Inflow	43606	Storage =	17915
Outflow	25691		
80 min			
Inflow	46276	Storage =	17373
Outflow	28902		
90 min			
Inflow	48056	Storage =	15942
Outflow	32114		
100 min			
Inflow	48946	Storage =	13620
Outflow	35325		
110 min			
Inflow	48946	Storage =	10409
Outflow	38537		

Storage Required = 19859 CF

QALLOW=	10.70	CFS
Q10 =	10.69	CFS

2-WEIR CALCULATION		FL= 493.37
Equation: Q = Cd*B*H ^{1.5}		
Q =	1.96 ft ³ /sec	
Cd =	3.32	
H =	0.26 ft	
B =	27.00 in	

RECTANGULAR	
ORIFICE CALCULATION	
Equation: $Q = C_d A \sqrt{(2 * g * H)^{0.5}}$	
Q =	8.74 ft³/sec
Cd =	0.62
g =	32.20 ft/sec²
H =	2.64 ft
A = BH	1.08 ft²
B =	17.00 in
H =	9.15 in