

RANCH TRAIL
5 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.47	Areas = 11 & 12 Detained
C =	0.35	
Tc =	10	
I5 =	6.1	
Q5 =	1.00345	

Future Conditions (Developed)	Offsite Conditions (Undeveloped)	Bypass
A = 0.47	A = 0.78	A = 0
Aadj = 0.47		
C = 0.9	C = 0.53	C = 0.9
Tc = 10	Tc = 10	Tc = 10
I5 = 6.1	I5 = 6.1	I5 = 6.1
Q5 = 2.5803	Q5 = 2.52174	Q5 = 0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	L	C	Q	Time	L	C	Q
10 min	6.1	0.9	2.5803	10 min	6.1	0.53	2.52174
15 min	5.5	0.9	2.3265	15 min	5.5	0.53	2.2737
20 min	5	0.9	2.115	20 min	5	0.53	2.067
30 min	4	0.9	1.692	30 min	4	0.53	1.6536
40 min	3.4	0.9	1.4382	40 min	3.4	0.53	1.40556
50 min	2.9	0.9	1.2267	50 min	2.9	0.53	1.19886
60 min	2.6	0.9	1.0998	60 min	2.6	0.53	1.07484
70 min	2.4	0.9	1.0152	70 min	2.4	0.53	0.99216
80 min	2.2	0.9	0.9306	80 min	2.2	0.53	0.90948
90 min	2	0.9	0.846	90 min	2	0.53	0.8268
100 min	1.8	0.9	0.7614	100 min	1.8	0.53	0.74412
110 min	1.7	0.9	0.7191	110 min	1.7	0.53	0.70278

Storage Calculations

Time	Inflow	Storage	Outflow
10 min	3061.224	946.11	2115.114
15 min	4140.18	1496.288	2643.893
20 min	5018.4	1845.729	3172.671
30 min	6022.08	1791.852	4230.228
40 min	6825.024	1537.239	5287.785
50 min	7276.68	931.338	6345.342
60 min	7828.704	425.805	7402.899
70 min	8430.912	-29.544	8460.456
80 min	8832.384	-685.629	9518.013
90 min	9033.12	-1542.45	10575.57
100 min	9033.12	-2600.01	11633.13
110 min	8531.28	-4159.4	12690.68

RANCH TRAIL
10 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.47	Areas = 11 & 12 Detained
C =	0.35	
Tc =	10	
I10 =	7.2	
Q10 =	1.1844	

Future Conditions (Developed)	Offsite Conditions (Undeveloped)	Bypass
A = 0.47	A = 0.78	A = 0
Aadj = 0.47		
C = 0.9	C = 0.53	C = 0.9
Tc = 10	Tc = 10	Tc = 10
I10 = 7.2	I10 = 7.2	I10 = 7.2
Q10 = 3.0456	Q10 = 2.97648	Q10 = 0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	L	C	Q	Time	L	C	Q
10 min	7.2	0.9	3.0456	10 min	7.2	0.53	2.97648
15 min	6.5	0.9	2.7495	15 min	6.5	0.53	2.6871
20 min	5.8	0.9	2.4534	20 min	5.8	0.53	2.39772
30 min	4.7	0.9	1.9881	30 min	4.7	0.53	1.94298
40 min	4	0.9	1.692	40 min	4	0.53	1.6536
50 min	3.5	0.9	1.4805	50 min	3.5	0.53	1.4469
60 min	3	0.9	1.269	60 min	3	0.53	1.2402
70 min	2.7	0.9	1.1421	70 min	2.7	0.53	1.11618
80 min	2.5	0.9	1.0575	80 min	2.5	0.53	1.0335
90 min	2.3	0.9	0.9729	90 min	2.3	0.53	0.95082
100 min	2.2	0.9	0.9306	100 min	2.2	0.53	0.90948
110 min	1.9	0.9	0.8037	110 min	1.9	0.53	0.78546

Storage Calculations

Time	Inflow	Storage	Outflow
10 min	3613.248	1116.72	2496.528
15 min	4892.94	1772.28	3120.66
20 min	5821.344	2076.552	3744.792
30 min	7075.944	2082.888	4993.056
40 min	8029.44	1788.12	6241.32
50 min	8782.2	1292.616	7489.584
60 min	9033.12	295.272	8737.848
70 min	9484.776	-501.336	9986.112
80 min	10036.8	-1197.58	11234.38
90 min	10388.09	-2094.55	12482.64
100 min	11040.48	-2690.42	13730.9
110 min	9534.96	-5444.21	14979.17

RANCH TRAIL
25 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.47	Areas = 11 & 12
C =	0.35	
Tc =	10	
I25 =	8.2	
Q25 =	1.3489	

Future Conditions (Developed)	Offsite Conditions (Undeveloped)	Bypass
A = 0.47	A = 0.78	A = 0
Aadj = 0.47		
C = 0.9	C = 0.53	C = 0.9
Tc = 10	Tc = 10	Tc = 10
I25 = 8.2	I25 = 8.2	I25 = 8.2
Q25 = 3.4686	Q25 = 3.38988	Q25 = 0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	L	C	Q	Time	L	C	Q
10 min	8.2	0.9	3.4686	10 min	8.2	0.53	3.38988
15 min	7.5	0.9	3.1725	15 min	7.5	0.53	3.1005
20 min	6.7	0.9	2.8341	20 min	6.7	0.53	2.76978
30 min	5.5	0.9	2.3265	30 min	5.5	0.53	2.2737
40 min	4.7	0.9	1.9881	40 min	4.7	0.53	1.94298
50 min	4	0.9	1.692	50 min	4	0.53	1.6536
60 min	3.5	0.9	1.4805	60 min	3.5	0.53	1.4469
70 min	3.2	0.9	1.3536	70 min	3.2	0.53	1.32288
80 min	2.7	0.9	1.1421	80 min	2.7	0.53	1.11618
90 min	2.5	0.9	1.0575	90 min	2.5	0.53	1.0335
100 min	2.4	0.9	1.0152	100 min	2.4	0.53	0.99216
110 min	2.3	0.9	0.9729	110 min	2.3	0.53	0.95082

Storage Calculations

Time	Inflow	Storage	Outflow
10 min	4115.088	1271.82	2843.268
15 min	5645.7	2091.615	3554.085
20 min	6724.656	2459.754	4264.902
30 min	8280.36	2593.824	5686.536
40 min	9434.592	2326.422	7108.17
50 min	10036.8	1506.996	8529.804
60 min	10538.64	587.202	9951.438
70 min	11241.22	-131.856	11373.07
80 min	10839.74	-1954.96	12794.71
90 min	11291.4	-2924.94	14216.34
100 min	12044.16	-3593.81	15637.97
110 min	11542.32	-5517.29	17059.61

RANCH TRAIL
100 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.47	Areas = 11 & 12 Detained
C =	0.35	
Tc =	10	
I100 =	9.8	
Q100 =	1.6121	

Future Conditions (Developed)	Offsite Conditions (Undeveloped)	Bypass
A = 0.47	A = 0.78	A = 0
Aadj = 0.47		
C = 0.9	C = 0.53	C = 0.9
Tc = 10	Tc = 10	Tc = 10
I100 = 9.8	I100 = 9.8	I100 = 9.8
Q100 = 4.1454	Q100 = 4.05132	Q100 = 0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	L	C	Q	Time	L	C	Q
10 min	9.8	0.9	4.1454	10 min	9.8	0.53	4.05132
15 min	9	0.9	3.807	15 min	9	0.53	3.7206
20 min	8.3	0.9	3.5109	20 min	8.3	0.53	3.43122
30 min	6.9	0.9	2.9187	30 min	6.9	0.53	2.85246
40 min	5.8	0.9	2.4534	40 min	5.8	0.53	2.39772
50 min	5	0.9	2.115	50 min	5	0.53	2.067
60 min	4.5	0.9	1.9035	60 min	4.5	0.53	1.8603
70 min	4	0.9	1.692	70 min	4	0.53	1.6536
80 min	3.7	0.9	1.5851	80 min	3.7	0.53	1.52958
90 min	3.5	0.9	1.4805	90 min	3.5	0.53	1.4469
100 min	3.4	0.9	1.4382	100 min	3.3	0.53	1.36422
110 min	3.2	0.9	1.3536	110 min	2.9	0.53	1.19886

Storage Calculations

Time	Inflow	Storage	Outflow
10 min	4918.032	1519.98	3398.052
15 min	6774.84	2527.275	4247.565
20 min	8330.544	3233.466	5097.078
30 min	10388.09	3591.984	6796.104
40 min	11642.69	3147.558	8495.13
50 min	12546	2351.844	10194.16
60 min	13549.68	1656.498	11893.18
70 min	14051.52	459.312	13592.21
80 min	14854.46	-436.77	15291.23
90 min	15807.96	-1182.3	16990.26
100 min	16814.52	-1874.77	18689.29
110 min	15314.76	-5073.55	20388.31

REVISED TO CONFORM TO CONSTRUCTION RECORDS.
 DATE: 2-17-26



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY W.L. DOUPHRATE II, TEXAS P.E. NO. 60102, F-986, ON DATE: MAY 3, 2024

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DRAINAGE DETENTION CALCULATIONS WEIR NO 3
 RANCH TRAIL OFFICES
 CITY OF ROCKWALL
 ROCKWALL COUNTY, TEXAS

REVISION
W.L.D.
 CHECKED
GC.W.
 DRAWN
 SCALE
 1" = 20' H
 1" = 10' V
 DATE
MAY, 2024
 PROJECT
23028
 53