REVISED – 03-10-00 CITY & DCSD COMMENTS
REVISED – 04-07-00 CITY COMMENTS
REVISED – 04-25-00 CITY COMMENTS

DETENTION BASIN A
AVONDALE HEIGHTS
Phase Four – Plat Five
January 2000 97-7230M

ACREAGE:
ON–SITE 57.70 ac (see off–site drainage area map for insert)
(area improved in phase four and future phase five tributary to watershed)

INFLOW to BASIN:
- 2yr storm 81.227 ac x 1.61 = 130.77 cfs
- 15yr storm 81.227 ac x 2.64 = 214.44 cfs
- 25yr storm 81.227 ac x 3.23 = 262.36 cfs
- 100yr storm 81.227 ac x 4.17 = 338.72 cfs

RUNOFF from DEVELOPMENT:
- 2 yr storm 57.70 ac x 1.61 = 85.20 cfs
- 15yr storm 57.70 ac x 2.64 = 139.71 cfs
- 25yr storm 57.70 ac x 3.26 = 172.52 cfs
- 100yr storm 57.70 ac x 4.17 = 220.68 cfs

ATTENUATION:
- 2yr storm 57.70 ac x (1.61 – 1.15) = 26.54 cfs
- 15yr storm 57.70 ac x (2.64 – 1.87) = 44.43 cfs
- 25yr storm 57.70 ac x (3.26 – 2.31) = 54.82 cfs
- 100yr storm 57.70 ac x (4.17 – 2.95) = 70.39 cfs

AVONDALE HEIGHTS - PLAT FIVE
DETENTION ANALYSIS
BASIN A

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq. in.)	Area (sq. ft)	A1+A2+sqr(A1*A2) (sq. ft)	* Volume (cubic-ft)	Volume Sum (cubic-ft)
517.06	0.00	0	0	0	0
518.00	18,316.40	18,316	18,316	5,739	5,739
520.00	21,902.85	21,903	60,249	40,166	45,905
522.00	25,681.89	25,682	71,302	47,535	93,440
524.00	29,704.89	29,705	83,007	55,338	148,778
526.00	33,964.58	33,965	95,433	63,622	212,400
527.00	36,182.82	36,183	105,204	35,068	247,467

* Incremental volume computed by the Conic Method for Reservoir Volumes.

AVONDALE HEIGHTS - PLAT FIVE
DETENTION ANALYSIS
BASIN A

***** COMPOSITE OUTFLOW SUMMARY ****

Elevation (ft)	Q (cfs)	Contributing Structures
517.06	0.0	1
517.31	1.5	1
517.56	4.2	1
517.81	7.8	1
518.06	12.0	1
518.31	16.8	1
518.56	22.0	1
518.81	27.8	1
519.06	33.9	1
519.31	40.5	1
519.56	47.4	1
519.81	54.7	1
520.06	62.4	1
520.31	70.3	1
520.56	78.6	1
520.81	87.1	1
521.06	96.0	1
521.31	105.1	1
521.56	114.6	1
521.81	124.2	1
522.06	133.4	2
522.31	138.9	2
522.56	144.1	2
522.81	149.2	2
523.06	154.1	2
523.31	158.8	2
523.56	163.4	2
523.81	167.9	2
524.06	172.3	2
524.31	178.6	2 +3
524.56	193.2	2 +3
524.81	212.4	2 +3
525.06	235.0	2 +3
525.31	260.4	2 +3
525.56	288.4	2 +3
525.81	318.6	2 +3
526.06	350.9	2 +3
526.31	385.2	2 +3
526.56	421.2	2 +3
526.81	459.0	2 +3
527.00	488.8	2 +3

Min. Elev.(ft) = 517.06 Max. Elev.(ft) = 527 Incr.(ft) = .25

SYSTEM CONNECTIVITY

Structure	No.	Q Table	Q Table
WEIR-VR	1		-> 1
ORIFICE	2	? 1	-> A
WEIR-VR	3		-> 3

>>>>>> Structure No. 1 <<<<<<
(Input Data)

WEIR-VR
Weir - Vertical Rectangular

E1 elev.(ft)? 517.06
E2 elev.(ft)? 527.001
Weir coefficient? 3
Weir elev.(ft)? 517.06
Length (ft)? 4
Contracted/Suppressed (C/S)? S

>>>>>> Structure No. 2 <<<<<<
(Input Data)

ORIFICE
Orifice - Based on Area and Datum Elevation

E1 elev.(ft)? 521.06
E2 elev.(ft)? 527.001
Orifice coeff.? .6
Invert elev.(ft)? 517.06
Datum elev.(ft)? 519.06
Orifice area (sq ft)? 16

>>>>>> Structure No. 3 <<<<<<
(Input Data)

WEIR-VR
Weir - Vertical Rectangular

E1 elev.(ft)? 524.2
E2 elev.(ft)? 527.001
Weir coefficient? 3
Weir elev.(ft)? 524.20
Length (ft)? 19.33
Contracted/Suppressed (C/S)? S

AVONDALE HEIGHTS - PLAT FIVE
DETENTION ANALYSIS
BASIN A

2 YEAR STORM

----INITIAL CONDITIONS----
Elevation = 517.06 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA / INTERMEDIATE ROUTING COMPUTATIONS

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
517.06	0.0	0	0.0	0.0
517.31	1.5	108	3.6	5.1
517.56	4.2	864	28.8	33.0
517.81	7.8	2,915	97.2	105.0
518.06	12.0	6,841	228.0	240.0
518.31	16.8	11,500	383.3	400.1
518.56	22.0	16,267	542.2	564.2
518.81	27.8	21,144	704.8	732.6
519.06	33.9	26,133	871.1	905.0
519.31	40.5	31,233	1041.1	1081.6
519.56	47.4	36,448	1214.9	1262.3
519.81	54.7	41,777	1392.6	1447.3
520.06	62.4	47,223	1574.1	1636.5
520.31	70.3	52,783	1759.4	1829.7
520.56	78.6	58,457	1948.6	2027.2
520.81	87.1	64,248	2141.6	2228.7
521.06	96.0	70,156	2338.5	2434.5
521.31	105.1	76,183	2539.4	2644.5
521.56	114.6	82,329	2744.3	2858.9
521.81	124.2	88,595	2953.2	3077.4
522.06	133.4	94,984	3166.1	3299.5
522.31	138.9	101,494	3383.1	3522.0
522.56	144.1	108,128	3604.2	3748.3
522.81	149.2	114,884	3829.5	3978.7
523.06	154.1	121,766	4058.9	4213.0
523.31	158.8	128,773	4292.4	4451.2
523.56	163.4	135,908	4530.3	4693.7
523.81	167.9	143,171	4772.4	4940.3
524.06	172.3	150,563	5018.8	5191.1
524.31	178.6	158,085	5269.5	5448.1
524.56	193.2	165,737	5524.6	5717.8
524.81	212.4	173,520	5784.0	5996.4
525.06	235.0	181,435	6047.8	6282.8
525.31	260.4	189,484	6316.1	6576.5
525.56	288.4	197,667	6588.9	6877.3
525.81	318.6	205,986	6866.2	7184.8
526.06	350.9	214,441	7148.0	7498.9
526.31	385.2	223,034	7434.4	7819.6
526.56	421.2	231,764	7725.5	8146.7
526.81	459.0	240,633	8021.1	8480.1
527.00	488.8	247,467	8248.9	8737.7

Time increment (t) = 1.0 min.

INFLOW HYDROGRAPH / ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	------	0.0	0.0	0.00	517.06
1.0	26.15	26.2	19.1	26.2	3.54	517.50
2.0	39.23	65.4	70.9	84.5	6.77	517.74
3.0	65.39	104.6	155.5	175.5	9.99	517.94
4.0	91.54	156.9	284.1	312.5	14.17	518.17
5.0	104.62	196.2	441.6	480.3	19.34	518.43
6.0	130.77	235.4	625.2	677.0	25.88	518.73
7.0	130.77	261.5	820.3	886.8	33.25	519.03
8.0	130.77	261.5	1000.8	1081.8	40.51	519.31
9.0	130.77	261.5	1167.5	1262.3	47.40	519.56
10.0	130.77	261.5	1321.1	1429.1	53.98	519.79
11.0	130.77	261.5	1462.2	1582.6	60.21	519.99
12.0	130.77	261.5	1591.8	1723.8	65.97	520.17
13.0	130.77	261.5	1710.8	1853.4	71.29	520.34
14.0	130.77	261.5	1819.7	1972.3	76.29	520.49
15.0	130.77	261.5	1919.5	2081.3	80.88	520.63
16.0	130.77	261.5	2010.9	2181.0	85.09	520.75
17.0	130.77	261.5	2094.4	2272.4	88.99	520.86
18.0	130.77	261.5	2170.8	2356.0	92.60	520.96
19.0	130.77	261.5	2240.5	2432.3	95.90	521.06
20.0	130.77	261.5	2304.2	2502.0	98.93	521.14
21.0	104.62	235.4	2338.5	2539.6	100.55	521.19
22.0	91.54	196.2	2334.0	2534.6	100.34	521.18
23.0	65.39	156.9	2294.0	2490.9	98.44	521.13
24.0	39.23	104.6	2209.7	2398.6	94.45	521.02
25.0	26.15	65.4	2096.9	2275.1	89.11	520.87
26.0	0.00	26.2	1957.8	2123.0	82.64	520.68
27.0	0.00	0.0	1806.4	1957.8	75.68	520.47
28.0	0.00	0.0	1667.7	1806.4	69.35	520.28
29.0	0.00	0.0	1540.3	1667.7	63.68	520.10
30.0	0.00	0.0	1423.4	1540.3	58.49	519.93
31.0	0.00	0.0	1315.9	1423.4	53.76	519.78
32.0	0.00	0.0	1216.8	1315.9	49.51	519.63
33.0	0.00	0.0	1125.5	1216.8	45.66	519.50
34.0	0.00	0.0	1041.2	1125.5	42.18	519.37
35.0	0.00	0.0	963.2	1041.2	38.99	519.25
36.0	0.00	0.0	891.0	963.2	36.07	519.14
37.0	0.00	0.0	824.2	891.0	33.41	519.04
38.0	0.00	0.0	762.1	824.2	31.04	518.94
39.0	0.00	0.0	704.4	762.1	28.84	518.85
40.0	0.00	0.0	650.8	704.4	26.83	518.77
41.0	0.00	0.0	600.8	650.8	24.98	518.69
42.0	0.00	0.0	554.3	600.8	23.26	518.61
43.0	0.00	0.0	510.9	554.3	21.69	518.54
44.0	0.00	0.0	470.3	510.9	20.31	518.48
45.0	0.00	0.0	432.3	470.3	19.02	518.42
46.0	0.00	0.0	396.6	432.3	17.82	518.36
47.0	0.00	0.0	363.2	396.6	16.69	518.30
48.0	0.00	0.0	331.8	363.2	15.69	518.25
49.0	0.00	0.0	302.3	331.8	14.75	518.20
50.0	0.00	0.0	274.6	302.3	13.87	518.16
51.0	0.00	0.0	248.5	274.6	13.04	518.11
52.0	0.00	0.0	224.0	248.5	12.25	518.07
53.0	0.00	0.0	201.0	224.0	11.50	518.03
54.0	0.00	0.0	179.4	201.0	10.79	517.99
55.0	0.00	0.0	159.2	179.4	10.12	517.95
56.0	0.00	0.0	140.2	159.2	9.49	517.91
57.0	0.00	0.0	122.4	140.2	8.90	517.88
58.0	0.00	0.0	105.8	122.4	8.34	517.84
59.0	0.00	0.0	90.1	105.8	7.82	517.81
60.0	0.00	0.0	76.0	90.1	7.06	517.76

****************** SUMMARY OF ROUTING COMPUTATIONS ******************

Starting Pond W.S. Elevation = 517.06 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 130.77 cfs
Peak Outflow = 100.55 cfs
Peak Elevation = 521.19 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
Peak Storage From Storm = 73,171 cu-ft

Total Storage in Pond = 73,171 cu-ft

130.77 – 100.55 = 30.22 cfs
Required Attenuation: 26.54 cfs

AVONDALE HEIGHTS - PLAT FIVE
DETENTION ANALYSIS
BASIN A

15 YEAR STORM

----INITIAL CONDITIONS----
Elevation = 517.06 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA / INTERMEDIATE ROUTING COMPUTATIONS

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
517.06	0.0	0	0.0	0.0
517.31	1.5	108	3.6	5.1
517.56	4.2	864	28.8	33.0
517.81	7.8	2,915	97.2	105.0
518.06	12.0	6,841	228.0	240.0
518.31	16.8	11,500	383.3	400.1
518.56	22.0	16,267	542.2	564.2
518.81	27.8	21,144	704.8	732.6
519.06	33.9	26,133	871.1	905.0
519.31	40.5	31,233	1041.1	1081.6
519.56	47.4	36,448	1214.9	1262.3
519.81	54.7	41,777	1392.6	1447.3
520.06	62.4	47,223	1574.1	1636.5
520.31	70.3	52,783	1759.4	1829.7
520.56	78.6	58,457	1948.6	2027.2
520.81	87.1	64,248	2141.6	2228.7
521.06	96.0	70,156	2338.5	2434.5
521.31	105.1	76,183	2539.4	2644.5
521.56	114.6	82,329	2744.3	2858.9
521.81	124.2	88,595	2953.2	3077.4
522.06	133.4	94,984	3166.1	3299.5
522.31	138.9	101,494	3383.1	3522.0
522.56	144.1	108,128	3604.2	3748.3
522.81	149.2	114,884	3829.5	3978.7
523.06	154.1	121,766	4058.9	4213.0
523.31	158.8	128,773	4292.4	4451.2
523.56	163.4	135,908	4530.3	4693.7
523.81	167.9	143,171	4772.4	4940.3
524.06	172.3	150,563	5018.8	5191.1
524.31	178.6	158,085	5269.5	5448.1
524.56	193.2	165,737	5524.6	5717.8
524.81	212.4	173,520	5784.0	5996.4
525.06	235.0	181,435	6047.8	6282.8
525.31	260.4	189,484	6316.1	6576.5
525.56	288.4	197,667	6588.9	6877.3
525.81	318.6	205,986	6866.2	7184.8
526.06	350.9	214,441	7148.0	7498.9
526.31	385.2	223,034	7434.4	7819.6
526.56	421.2	231,764	7725.5	8146.7
526.81	459.0	240,633	8021.1	8480.1
527.00	488.8	247,467	8248.9	8737.7

Time increment (t) = 1.0 min.

INFLOW HYDROGRAPH / ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	------	0.0	0.0	0.00	517.06
1.0	42.89	42.9	33.5	42.9	4.70	517.59
2.0	64.33	107.2	122.9	140.7	8.91	517.88
3.0	107.22	171.6	267.2	294.4	13.63	518.14
4.0	150.11	257.3	483.0	524.5	20.74	518.50
5.0	171.55	321.7	744.0	804.7	30.35	518.91
6.0	214.44	386.0	1045.3	1130.0	42.35	519.38
7.0	214.44	428.9	1362.6	1474.2	55.79	519.85
8.0	214.44	428.9	1654.0	1791.5	68.74	520.26
9.0	214.44	428.9	1921.0	2082.9	80.95	520.63
10.0	214.44	428.9	2165.2	2349.8	92.34	520.96
11.0	214.44	428.9	2388.2	2594.0	102.91	521.25
12.0	214.44	428.9	2591.6	2817.1	112.75	521.51
13.0	214.44	428.9	2777.1	3020.5	121.70	521.74
14.0	214.44	428.9	2946.9	3206.0	129.53	521.95
15.0	214.44	428.9	3105.2	3375.8	135.29	522.15
16.0	214.44	428.9	3255.8	3534.1	139.18	522.32
17.0	214.44	428.9	3399.4	3684.6	142.64	522.49
18.0	214.44	428.9	3536.5	3828.2	145.87	522.65
19.0	214.44	428.9	3667.6	3965.4	148.91	522.80
20.0	214.44	428.9	3793.1	4096.4	151.66	522.94
21.0	171.55	386.0	3872.3	4179.1	153.39	523.02
22.0	150.11	321.7	3886.6	4194.0	153.70	523.04
23.0	107.22	257.3	3838.6	4143.9	152.66	522.99
24.0	64.33	171.6	3710.4	4010.1	149.86	522.84
25.0	42.89	107.2	3526.4	3817.7	145.63	522.64
26.0	0.00	42.9	3289.3	3569.3	139.99	522.36
27.0	0.00	0.0	3023.3	3289.3	132.98	522.05
28.0	0.00	0.0	2779.7	3023.3	121.83	521.75
29.0	0.00	0.0	2557.5	2779.7	111.09	521.47
30.0	0.00	0.0	2354.9	2557.5	101.33	521.21
31.0	0.00	0.0	2169.7	2354.9	92.56	520.96
32.0	0.00	0.0	2000.5	2169.7	84.61	520.74
33.0	0.00	0.0	1845.6	2000.5	77.48	520.53
34.0	0.00	0.0	1703.6	1845.6	70.97	520.33
35.0	0.00	0.0	1573.3	1703.6	65.15	520.15
36.0	0.00	0.0	1453.7	1573.3	59.83	519.98
37.0	0.00	0.0	1343.8	1453.7	54.96	519.82
38.0	0.00	0.0	1242.5	1343.8	50.61	519.67
39.0	0.00	0.0	1149.2	1242.5	46.64	519.53
40.0	0.00	0.0	1063.1	1149.2	43.08	519.40
41.0	0.00	0.0	983.5	1063.1	39.81	519.28
42.0	0.00	0.0	909.8	983.5	36.83	519.17
43.0	0.00	0.0	841.6	909.8	34.08	519.07
44.0	0.00	0.0	778.3	841.6	31.66	518.97
45.0	0.00	0.0	719.5	778.3	29.42	518.88
46.0	0.00	0.0	664.8	719.5	27.35	518.79
47.0	0.00	0.0	613.9	664.8	25.46	518.71
48.0	0.00	0.0	566.4	613.9	23.71	518.63
49.0	0.00	0.0	522.3	566.4	22.08	518.56
50.0	0.00	0.0	480.9	522.3	20.67	518.50
51.0	0.00	0.0	442.2	480.9	19.36	518.43
52.0	0.00	0.0	406.0	442.2	18.13	518.37
53.0	0.00	0.0	372.0	406.0	16.98	518.32
54.0	0.00	0.0	340.1	372.0	15.96	518.27
55.0	0.00	0.0	310.1	340.1	15.00	518.22
56.0	0.00	0.0	281.9	310.1	14.10	518.17
57.0	0.00	0.0	255.4	281.9	13.25	518.13
58.0	0.00	0.0	230.4	255.4	12.46	518.08
59.0	0.00	0.0	207.0	230.4	11.70	518.04
60.0	0.00	0.0	185.1	207.0	10.97	518.00

****************** SUMMARY OF ROUTING COMPUTATIONS ******************

Starting Pond W.S. Elevation = 517.06 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 214.44 cfs
Peak Outflow = 153.70 cfs
Peak Elevation = 523.04 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
Peak Storage From Storm = 121,208 cu-ft

Total Storage in Pond = 121,208 cu-ft

214.44 – 153.70 = 60.74 cfs
Required Attenuation: 44.43 cfs

AVONDALE HEIGHTS - PLAT FIVE
DETENTION ANALYSIS
BASIN A

25 YEAR STORM

----INITIAL CONDITIONS----
Elevation = 517.06 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA / INTERMEDIATE ROUTING COMPUTATIONS

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
517.06	0.0	0	0.0	0.0
517.31	1.5	108	3.6	5.1
517.56	4.2	864	28.8	33.0
517.81	7.8	2,915	97.2	105.0
518.06	12.0	6,841	228.0	240.0
518.31	16.8	11,500	383.3	400.1
518.56	22.0	16,267	542.2	564.2
518.81	27.8	21,144	704.8	732.6
519.06	33.9	26,133	871.1	905.0
519.31	40.5	31,233	1041.1	1081.6
519.56	47.4	36,448	1214.9	1262.3
519.81	54.7	41,777	1392.6	1447.3
520.06	62.4	47,223	1574.1	1636.5
520.31	70.3	52,783	1759.4	1829.7
520.56	78.6	58,457	1948.6	2027.2
520.81	87.1	64,248	2141.6	2228.7
521.06	96.0	70,156	2338.5	2434.5
521.31	105.1	76,183	2539.4	2644.5
521.56	114.6	82,329	2744.3	2858.9
521.81	124.2	88,595	2953.2	3077.4
522.06	133.4	94,984	3166.1	3299.5
522.31	138.9	101,494	3383.1	3522.0
522.56	144.1	108,128	3604.2	3748.3
522.81	149.2	114,884	3829.5	3978.7
523.06	154.1	121,766	4058.9	4213.0
523.31	158.8	128,773	4292.4	4451.2
523.56	163.4	135,908	4530.3	4693.7
523.81	167.9	143,171	4772.4	4940.3
524.06	172.3	150,563	5018.8	5191.1
524.31	178.6	158,085	5269.5	5448.1
524.56	193.2	165,737	5524.6	5717.8
524.81	212.4	173,520	5784.0	5996.4
525.06	235.0	181,435	6047.8	6282.8
525.31	260.4	189,484	6316.1	6576.5
525.56	288.4	197,667	6588.9	6877.3
525.81	318.6	205,986	6866.2	7184.8
526.06	350.9	214,441	7148.0	7498.9
526.31	385.2	223,034	7434.4	7819.6
526.56	421.2	231,764	7725.5	8146.7
526.81	459.0	240,633	8021.1	8480.1
527.00	488.8	247,467	8248.9	8737.7

Time increment (t) = 1.0 min.

INFLOW HYDROGRAPH / ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	------	0.0	0.0	0.00	517.06
1.0	52.47	52.5	42.1	52.5	5.17	517.63
2.0	78.71	131.2	153.5	173.3	9.92	517.94
3.0	131.18	209.9	331.9	363.3	15.70	518.25
4.0	183.65	314.8	597.1	646.8	24.84	518.68
5.0	209.89	393.5	916.4	990.6	37.10	519.18
6.0	262.36	472.3	1283.9	1388.7	52.39	519.73
7.0	262.36	524.7	1669.8	1808.6	69.44	520.28
8.0	262.36	524.7	2023.2	2194.5	85.66	520.77
9.0	262.36	524.7	2346.1	2547.9	100.91	521.19
10.0	262.36	524.7	2640.5	2870.8	115.12	521.57
11.0	262.36	524.7	2909.6	3165.2	127.84	521.91
12.0	262.36	524.7	3160.8	3434.3	136.73	522.21
13.0	262.36	524.7	3400.2	3685.5	142.66	522.49
14.0	262.36	524.7	3628.9	3925.0	148.01	522.75
15.0	262.36	524.7	3847.9	4153.7	152.86	523.00
16.0	262.36	524.7	4058.2	4372.7	157.25	523.23
17.0	262.36	524.7	4260.3	4582.9	161.30	523.45
18.0	262.36	524.7	4454.9	4785.0	165.07	523.65
19.0	262.36	524.7	4642.4	4979.6	168.59	523.85
20.0	262.36	524.7	4823.4	5167.1	171.88	524.04
21.0	209.89	472.3	4945.9	5295.6	174.86	524.16
22.0	183.65	393.5	4987.6	5339.4	175.94	524.20
23.0	131.18	314.8	4952.3	5302.4	175.03	524.17
24.0	78.71	209.9	4818.6	5162.2	171.79	524.03
25.0	52.47	131.2	4613.7	4949.8	168.07	523.82
26.0	0.00	52.5	4340.4	4666.1	162.88	523.53
27.0	0.00	0.0	4027.2	4340.4	156.61	523.19
28.0	0.00	0.0	3726.7	4027.2	150.21	522.86
29.0	0.00	0.0	3439.5	3726.7	143.60	522.54
30.0	0.00	0.0	3165.8	3439.5	136.86	522.22
31.0	0.00	0.0	2910.1	3165.8	127.86	521.91
32.0	0.00	0.0	2676.4	2910.1	116.85	521.62
33.0	0.00	0.0	2463.4	2676.4	106.51	521.35
34.0	0.00	0.0	2268.9	2463.4	97.25	521.09
35.0	0.00	0.0	2091.2	2268.9	88.84	520.86
36.0	0.00	0.0	1928.6	2091.2	81.30	520.64
37.0	0.00	0.0	1779.7	1928.6	74.46	520.44
38.0	0.00	0.0	1643.2	1779.7	68.25	520.25
39.0	0.00	0.0	1517.8	1643.2	62.67	520.07
40.0	0.00	0.0	1402.7	1517.8	57.57	519.90
41.0	0.00	0.0	1296.8	1402.7	52.94	519.75
42.0	0.00	0.0	1199.3	1296.8	48.76	519.61
43.0	0.00	0.0	1109.3	1199.3	44.99	519.47
44.0	0.00	0.0	1026.2	1109.3	41.56	519.35
45.0	0.00	0.0	949.3	1026.2	38.43	519.23
46.0	0.00	0.0	878.2	949.3	35.56	519.12
47.0	0.00	0.0	812.3	878.2	32.95	519.02
48.0	0.00	0.0	751.1	812.3	30.62	518.93
49.0	0.00	0.0	694.2	751.1	28.45	518.84
50.0	0.00	0.0	641.2	694.2	26.48	518.75
51.0	0.00	0.0	591.9	641.2	24.65	518.67
52.0	0.00	0.0	546.0	591.9	22.95	518.60
53.0	0.00	0.0	503.2	546.0	21.42	518.53
54.0	0.00	0.0	463.0	503.2	20.06	518.47
55.0	0.00	0.0	425.4	463.0	18.79	518.41
56.0	0.00	0.0	390.2	425.4	17.60	518.35
57.0	0.00	0.0	357.2	390.2	16.50	518.29
58.0	0.00	0.0	326.2	357.2	15.51	518.24
59.0	0.00	0.0	297.0	326.2	14.58	518.19
60.0	0.00	0.0	269.6	297.0	13.71	518.15

****************** SUMMARY OF ROUTING COMPUTATIONS ******************

Starting Pond W.S. Elevation = 517.06 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 262.36 cfs
Peak Outflow = 175.94 cfs
Peak Elevation = 524.20 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
Peak Storage From Storm = 154,905 cu-ft

Total Storage in Pond = 154,905 cu-ft

262.36 – 175.94 = 86.42 cfs
Required Attenuation: 54.82 cfs

AVONDALE HEIGHTS - PLAT FIVE
DETENTION ANALYSIS
BASIN A

100 YEAR STORM

----INITIAL CONDITIONS----
Elevation = 517.06 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA / INTERMEDIATE ROUTING COMPUTATIONS

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
517.06	0.0	0	0.0	0.0
517.31	1.5	108	3.6	5.1
517.56	4.2	864	28.8	33.0
517.81	7.8	2,915	97.2	105.0
518.06	12.0	6,841	228.0	240.0
518.31	16.8	11,500	383.3	400.1
518.56	22.0	16,267	542.2	564.2
518.81	27.8	21,144	704.8	732.6
519.06	33.9	26,133	871.1	905.0
519.31	40.5	31,233	1041.1	1081.6
519.56	47.4	36,448	1214.9	1262.3
519.81	54.7	41,777	1392.6	1447.3
520.06	62.4	47,223	1574.1	1636.5
520.31	70.3	52,783	1759.4	1829.7
520.56	78.6	58,457	1948.6	2027.2
520.81	87.1	64,248	2141.6	2228.7
521.06	96.0	70,156	2338.5	2434.5
521.31	105.1	76,183	2539.4	2644.5
521.56	114.6	82,329	2744.3	2858.9
521.81	124.2	88,595	2953.2	3077.4
522.06	133.4	94,984	3166.1	3299.5
522.31	138.9	101,494	3383.1	3522.0
522.56	144.1	108,128	3604.2	3748.3
522.81	149.2	114,884	3829.5	3978.7
523.06	154.1	121,766	4058.9	4213.0
523.31	158.8	128,773	4292.4	4451.2
523.56	163.4	135,908	4530.3	4693.7
523.81	167.9	143,171	4772.4	4940.3
524.06	172.3	150,563	5018.8	5191.1
524.31	178.6	158,085	5269.5	5448.1
524.56	193.2	165,737	5524.6	5717.8
524.81	212.4	173,520	5784.0	5996.4
525.06	235.0	181,435	6047.8	6282.8
525.31	260.4	189,484	6316.1	6576.5
525.56	288.4	197,667	6588.9	6877.3
525.81	318.6	205,986	6866.2	7184.8
526.06	350.9	214,441	7148.0	7498.9
526.31	385.2	223,034	7434.4	7819.6
526.56	421.2	231,764	7725.5	8146.7
526.81	459.0	240,633	8021.1	8480.1
527.00	488.8	247,467	8248.9	8737.7

Time increment (t) = 1.0 min.

INFLOW HYDROGRAPH / ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	------	0.0	0.0	0.00	517.06
1.0	67.74	67.7	55.9	67.7	5.94	517.68
2.0	101.62	169.4	202.1	225.2	11.54	518.03
3.0	169.36	271.0	434.9	473.1	19.11	518.42
4.0	237.10	406.5	778.1	841.4	31.65	518.97
5.0	270.98	508.1	1189.5	1286.1	48.34	519.59
6.0	338.72	609.7	1661.1	1799.2	69.05	520.27
7.0	338.72	677.4	2154.8	2338.5	91.85	520.94
8.0	338.72	677.4	2605.4	2832.2	113.42	521.53
9.0	338.72	677.4	3017.4	3282.8	132.71	522.04
10.0	338.72	677.4	3409.1	3694.9	142.87	522.50
11.0	338.72	677.4	3783.7	4086.6	151.46	522.93
12.0	338.72	677.4	4143.1	4461.1	158.99	523.32
13.0	338.72	677.4	4489.1	4820.6	165.72	523.69
14.0	338.72	677.4	4822.8	5166.6	171.87	524.04
15.0	338.72	677.4	5137.4	5500.3	181.42	524.36
16.0	338.72	677.4	5415.1	5814.9	199.89	524.65
17.0	338.72	677.4	5652.5	6092.5	219.98	524.89
18.0	338.72	677.4	5851.8	6330.0	239.08	525.10
19.0	338.72	677.4	6016.6	6529.3	256.31	525.27
20.0	338.72	677.4	6151.4	6694.1	271.34	525.41
21.0	270.98	609.7	6205.9	6761.1	277.58	525.46
22.0	237.10	508.1	6167.6	6714.0	273.20	525.42
23.0	169.36	406.5	6053.7	6574.1	260.19	525.31
24.0	101.62	271.0	5847.4	6324.7	238.62	525.10
25.0	67.74	169.4	5588.8	6016.8	214.01	524.83
26.0	0.00	67.7	5276.7	5656.5	189.88	524.50
27.0	0.00	0.0	4927.9	5276.7	174.40	524.14
28.0	0.00	0.0	4592.6	4927.9	167.68	523.80
29.0	0.00	0.0	4269.6	4592.6	161.48	523.46
30.0	0.00	0.0	3959.2	4269.6	155.22	523.12
31.0	0.00	0.0	3661.7	3959.2	148.77	522.79
32.0	0.00	0.0	3377.4	3661.7	142.11	522.46
33.0	0.00	0.0	3106.8	3377.4	135.33	522.15
34.0	0.00	0.0	2856.0	3106.8	125.42	521.84
35.0	0.00	0.0	2627.0	2856.0	114.47	521.56
36.0	0.00	0.0	2418.3	2627.0	104.34	521.29
37.0	0.00	0.0	2227.7	2418.3	95.30	521.04
38.0	0.00	0.0	2053.6	2227.7	87.06	520.81
39.0	0.00	0.0	1894.2	2053.6	79.72	520.59
40.0	0.00	0.0	1748.2	1894.2	73.01	520.39
41.0	0.00	0.0	1614.2	1748.2	66.97	520.20
42.0	0.00	0.0	1491.2	1614.2	61.49	520.03
43.0	0.00	0.0	1378.3	1491.2	56.49	519.87
44.0	0.00	0.0	1274.3	1378.3	51.98	519.72
45.0	0.00	0.0	1178.6	1274.3	47.87	519.58
46.0	0.00	0.0	1090.2	1178.6	44.20	519.44
47.0	0.00	0.0	1008.5	1090.2	40.83	519.32
48.0	0.00	0.0	933.0	1008.5	37.77	519.21
49.0	0.00	0.0	863.1	933.0	34.95	519.10
50.0	0.00	0.0	798.2	863.1	32.42	519.00
51.0	0.00	0.0	738.0	798.2	30.12	518.91
52.0	0.00	0.0	682.0	738.0	27.99	518.82
53.0	0.00	0.0	629.9	682.0	26.06	518.73
54.0	0.00	0.0	581.4	629.9	24.26	518.66
55.0	0.00	0.0	536.2	581.4	22.59	518.59
56.0	0.00	0.0	494.0	536.2	21.11	518.52
57.0	0.00	0.0	454.4	494.0	19.77	518.45
58.0	0.00	0.0	417.4	454.4	18.52	518.39
59.0	0.00	0.0	382.7	417.4	17.35	518.34
60.0	0.00	0.0	350.1	382.7	16.28	518.28

****************** SUMMARY OF ROUTING COMPUTATIONS ******************

Starting Pond W.S. Elevation = 517.06 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 338.72 cfs
Peak Outflow = 277.58 cfs
Peak Elevation = 525.46 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
Peak Storage From Storm = 194,506 cu-ft

Total Storage in Pond = 194,506 cu-ft

338.72 – 277.58 = 61.14
Required Attenuation: 70.39 cfs

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