ENGINEERING

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STORMWATER DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING

STATE OF MISSOURI
TODD C. FLAUAUS
NUMBER PE-2005000982
PROFESSIONAL ENGINEER
10/1/07

WILLOW WALK ESTATES – PHASE 2
BAX PROJECT NO. 04-12901
March, 2007 **Rev.** May, 2007 **Rev.** Sept. 2007

INTRODUCTION

This presently undeveloped tract of land lies to the south of Diehr Road, approximately 2-1/2 miles west of the intersection of Highway DD and Diehr Road in O'Fallon Missouri. The overall tract consists of approximately 39.33 acres to be developed into a single-family subdivision.

The overall drainage for the site empties into Dardenne Creek. Two basins will provide detention for the entire site. In addition, the flows to each of the three individual outfall points are shown on the summary page of this report, under pre- and post-developed conditions for the 15-year, 20 minute storm.

The basins have been analyzed for the 2, 15 and 25-year, 20 minute design storms and checked for safe passage of the 100-year, 20 minute design storm under low-flow blocked conditions. As is shown in the routing calculations, the basins will provide detention for these storms while satisfying the City of O'Fallon requirement of two years of sediment storage volume.

Per the City of O'Fallon, the 100-year, 20 minute design storm has been routed for informational purposes only.

GENERAL SITE AND RUNOFF CALCULATIONS

The pre-developed and post-developed P.I. factors used in the analysis are:

	20 minute storm	**20 minute storm**	**20 minute storm**	**20 minute storm**
	2 year	**15 year**	**25 year**	**100 year**
Imperviousness				
un-developed	1.15	1.87	2.31	2.95
10,000 Sq. Ft. S.F.	1.61	2.64	3.26	4.17

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Existing On-Site Runoff

15 year-20 minute storm:

39.33 ac x 1.87 cfs/ac =	73.54 cfs

2 year-20 minute storm:	45.23 cfs
15 year-20 minute storm:	73.54 cfs
25 year-20 minute storm:	90.85 cfs
100 year-20 minute storm:	116.02 cfs

Proposed On-Site Runoff

15 year-20 minute storm:

31.54 ac x 2.64 cfs/ac =	83.27 cfs
+ 7.79 ac x 1.87 cfs/ac =	14.56 cfs
Total =	97.83 cfs

2 year-20 minute storm:	59.74 cfs
15 year-20 minute storm:	97.83 cfs
25 year-20 minute storm:	120.82 cfs
100 year-20 minute storm:	154.50 cfs

Required Attenuation:

To calculate the required attenuation, the existing discharge rate will be subtracted from the proposed discharge rate. This will determine the amount of runoff that needs to be detained in the basins.

DESIGN STORM	PROPOSED RUNOFF	-	EXISTING RUNOFF	=	REQUIRED ATTENUATION
15 year	97.83 cfs	-	73.54 cfs	=	24.29 cfs

2 year-20 minute storm:	14.51 cfs
15 year-20 minute storm:	24.29 cfs
25 year-20 minute storm:	29.97 cfs

TIME OF CONCENTRATION

Basin F

The time of concentration flow path begins at the northwest end of lot 6 and travels east approximately 235 feet overland to AI72. From there it flows approximately 523 feet via pipe to FE66 at the basin. Time of concentration is estimated as follows:

Tc = tc1 + tc2

tc1 L=235'
Elevation Difference = 5.5'
tc1 (overland) = **4.20 minutes**: (see chart)

tc2 L=523'
Velocity of 7.0 ft./sec.
tc2 (pipe) = **1.25 minutes**

Tc = 4.20 minutes + 1.25 minutes = 5.45 minutes => **Use 5 minutes**

Basin G

The time of concentration flow path begins at the east end of lot 58 and travels north approximately 318 feet overland to AI63. From there it flows approximately 656 feet via pipe to FE50 at the basin. Time of concentration is estimated as follows:

Tc = tc1 + tc2

tc1 L=318'
Elevation Difference = 9'
tc1 (overland) = **5.40 minutes**: (see chart)

tc2 L=656'
Velocity of 7.0 ft./sec.
tc2 (pipe) = **1.56 minutes**

Tc = 5.40 minutes + 1.56 minutes = 6.96 minutes => **Use 7 minutes**

BASIN PEAK INFLOWS:

Inflows to each basin have been estimated from the drainage area map included in the construction plans.

Basin F
15 year-20 minute storm:

6.02 ac x 2.64 cfs/ac = 15.89 cfs

2 year-20 minute storm:	9.69 cfs
15 year-20 minute storm:	15.89 cfs
25 year-20 minute storm:	19.63 cfs
100 year-20 minute storm:	25.10 cfs

Basin G
15 year-20 minute storm:

14.36 ac x 2.64 cfs/ac = 37.91 cfs

2 year-20 minute storm:	23.12 cfs
15 year-20 minute storm:	37.91 cfs
25 year-20 minute storm:	46.81 cfs
100 year-20 minute storm:	59.88 cfs

PERMITTED RELEASE RATE:

The Permitted Release Rate for the basins can be determined by subtracting the Required Attenuation from the Basin Inflow as shown below.

DESIGN STORM	COMBINED BASIN INFLOW	-	REQUIRED ATTENUATION	=	PERMITTED RELEASE
15 year	53.80 cfs	-	24.29 cfs	=	29.51 cfs

2 year-20 minute storm:	18.30 cfs
15 year-20 minute storm:	29.51 cfs
25 year-20 minute storm:	36.47 cfs

STORM ROUTING CALCULATIONS AND RESULTS:

A computer program, PONDPACK 10.0 was used in routing the design storms through the basins. As found in the routing calculations, the results are as follows:

20 MIN STORM	BASIN F CALCULATED RELEASE RATE	BASIN G CALCULATED RELEASE RATE	COMBINED CALCULATED RELEASE RATE	PERMITTED RELEASE RATE
2 YR	3.04 cfs	5.71 cfs	8.76 cfs	< 18.30 cfs
15 YR	3.44 cfs	6.54 cfs	9.98 cfs	< 29.51 cfs
25 YR	3.61 cfs	6.91 cfs	10.53 cfs	< 36.47 cfs
100 YR	3.81 cfs	7.39 cfs	11.20 cfs	N/A

20 MIN STORM	BASIN F CALCULATED ELEVATIONS	BASIN G CALCULATED ELEVATIONS
2 YR	596.54 ft	576.33 ft
15 YR	598.35 ft	578.08 ft
25 YR	599.18 ft	578.87 ft
100 YR	600.20 ft	580.13 ft

578.97

SEDIMENT STORAGE VOLUME:

Basin F

2 Year Sediment Volume (see chart) = 1930 ft^3
Volume of Basin at 100 Year H.W. = 26015 ft^3 25608
Total Volume = 27945 ft^3 27538
Elevation at Total Volume = 600.47 ft 600.42
Emergency Overflow Sill Elevation = 600.50 ft

Basin G

2 Year Sediment Volume (see chart) = 4021 ft^3
Volume of Basin at 100 Year H.W. = 62896 ft^3 62691
Total Volume = 66883 ft^3 66712
Elevation at Total Volume = 580.39 ft 580.38
Emergency Overflow Sill Elevation = 580.40 ft

CHECK 100 YR OUTFLOW: (low-flow slot blocked)

Weir Flow Q = C X L X H (3/2)

Basin F

Where 100-Year Flow Q	=	25.15 cfs
C	=	3.0
L	=	12.57 ft
H	=	0.76 ft
Sill	=	600.50 ft
100 yr h/w	=	601.26 ft ← Controls

Check Pipe Inlet Control Chart: 100 yr h/w = 590.50 ft

Basin G

Where 100-Year Flow Q	=	59.88 cfs
C	=	3.0
L	=	18.76 ft
H	=	1.04 ft
Sill	=	580.40 ft
100 yr h/w	=	581.44 ft ← Controls

Check Pipe Inlet Control Chart: 100 yr h/w = 570.85 ft

OUTFALL STRUCTURE DESIGN

Basin F

The outfall structure proposed to control flow in the basin will consist of a 48" RCP standpipe with a grate top. The structure body shall have a 6" wide by 6" high slot cut into it at 589.90 elevation. The sill of the standpipe shall be at a 600.50 elevation. 125' of 24" RCP will serve as the outfall pipe, having an upper flow line of 586.50 and lower flow line of 581.50. A detail of the structure is included with this report.

Basin G

The outfall structure proposed to control flow in the basin will consist of a standard double curb inlet with a grate top. The structure body shall have a 6" wide by 12" high slot cut into it at 570.20 elevation. The sill of the double curb inlet shall be at a 580.40 elevation. 170' of 36" RCP will serve as the outfall pipe, having an upper flow line of 565.90 and lower flow line of 562.00. A detail of the structure is included with this report.

SUMMARY

Basin F

2 year, 20 Minute H.W.	596.54 ft
15 Year, 20 Minute H.W.	598.35 ft
25 Year, 20 Minute H.W.	599.18 ft
100 Year, 20 Minute H.W.	600.20 ft
100 Year, 20 Minute Low Flow Blocked H.W.	601.26 ft
Structure	48" RCP standpipe w/grate top
Low Flow Slot	6"w x 6"h opening
Elevation	589.90
Sill Elevation	600.50
Top of Dam	604.00
Freeboard for 100 Year with low flow blocked	2.74'

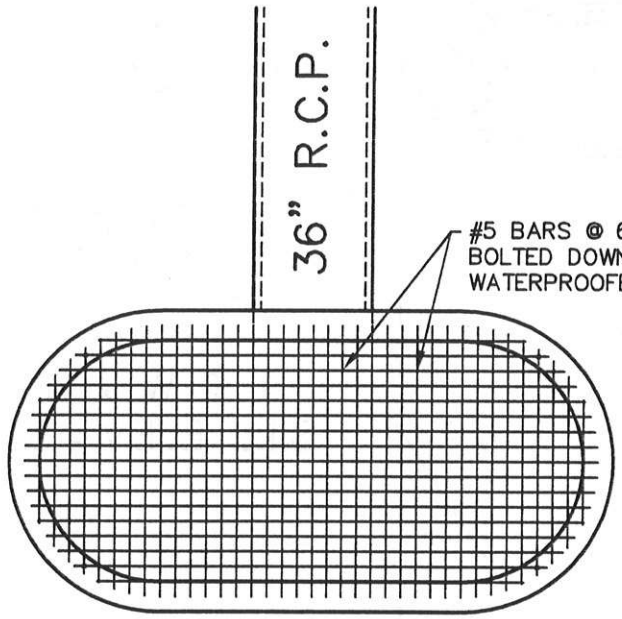
Basin G

2 year, 20 Minute H.W.	576.33 ft
15 Year, 20 Minute H.W.	578.08 ft
25 Year, 20 Minute H.W.	578.97 ft
100 Year, 20 Minute H.W.	580.13 ft
100 Year, 20 Minute Low Flow Blocked H.W.	581.44 ft
Structure	Standard Double Curb Inlet w/grate top
Low Flow Slot	6"w x 12"h opening
Elevation	570.20
Sill Elevation	580.40
Top of Dam	590.00
Freeboard for 100 Year with low flow blocked	8.56'

AREA	EXISTING RUNOFF	PROPOSED DIRECT RUNOFF	PROPOSED OUTFLOW FROM BASIN	PROPOSED TOTAL RUNOFF
F	23.45 cfs	16.68 cfs	3.44 cfs	20.12 cfs
G	33.85 cfs	12.00 cfs	6.54 cfs	18.54 cfs
H	16.25 cfs	16.41 cfs	N/A	16.41 cfs**

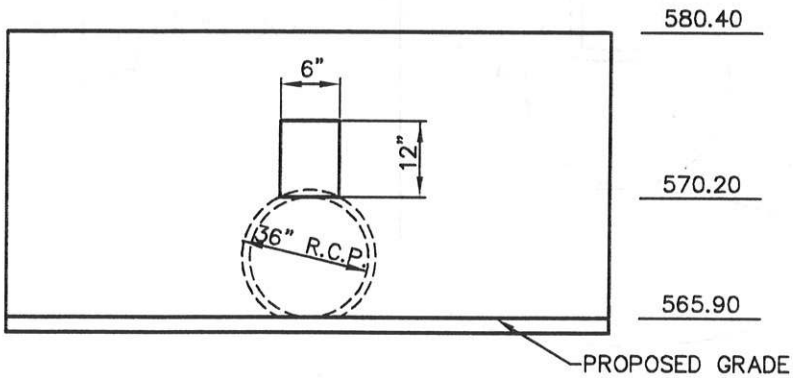
** The proposed runoff of the sub-watershed is greater than the existing runoff for the 15 year storm event. However, it is felt that this is an acceptable release considering how small the increase is compared to the existing runoff.

STRUCTURE DETAILS

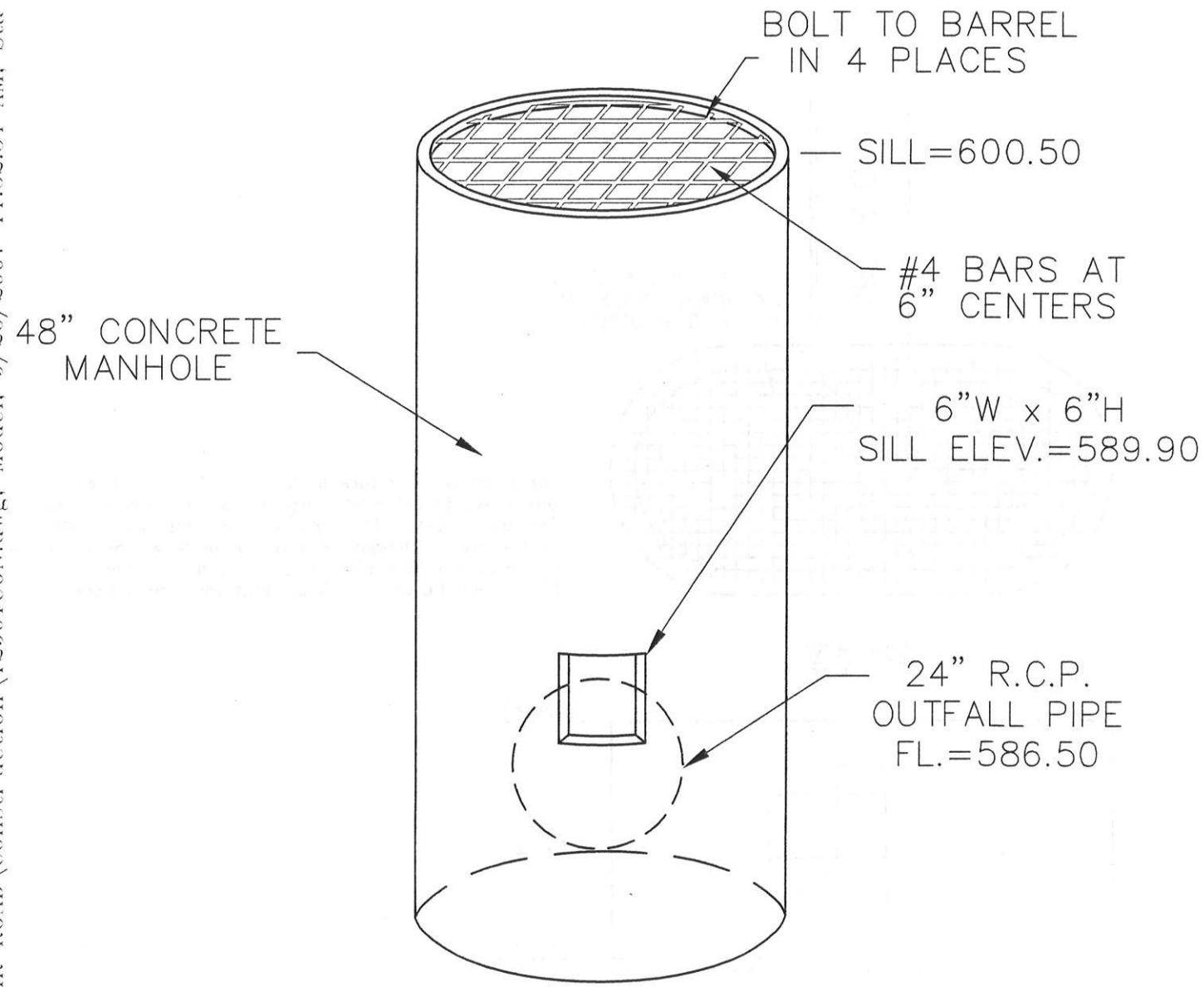


TOP VIEW
N.T.S.

The Overflow Structure is to be a Standard Double Untrapped Street Inlet Precast Concrete (without top). See M.S.D. Detail 35. The bottom must be constructed to the correct height so that no brick will be used. A rectangular orifice 6"w. x 12" h, with a flowline of 570.20 will be used. (See Detention Calculations.)



OVERFLOW STRUCTURE
DETAIL BASIN G
NOT TO SCALE



OVERFLOW STRUCTURE
DETAIL BASIN F

NOT TO SCALE

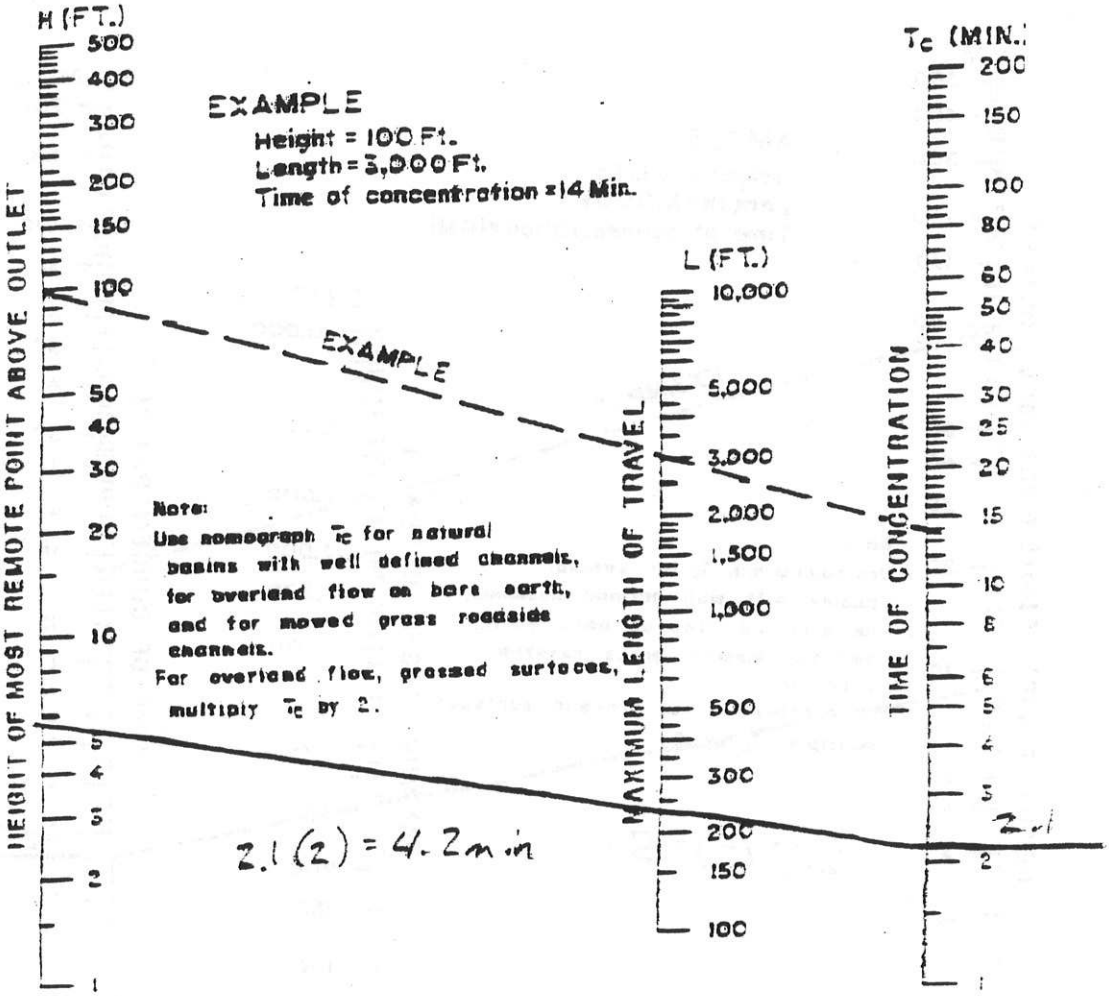
CALCULATIONS

Engineering - Planning – Surveying
221 Point West Blvd.
St. Charles, MO 63301
636 928-5552 FAX 636 928-1718

Project: Willow [illegible]
Date: _____ Project No: 12901
Designer: SAS Checked: _____

Basin F

TIME OF CONCENTRATION FOR SMALL DRAINAGE BASINS



Δ Height = 5.5'

Length = 235'

T_c = 4.2 min

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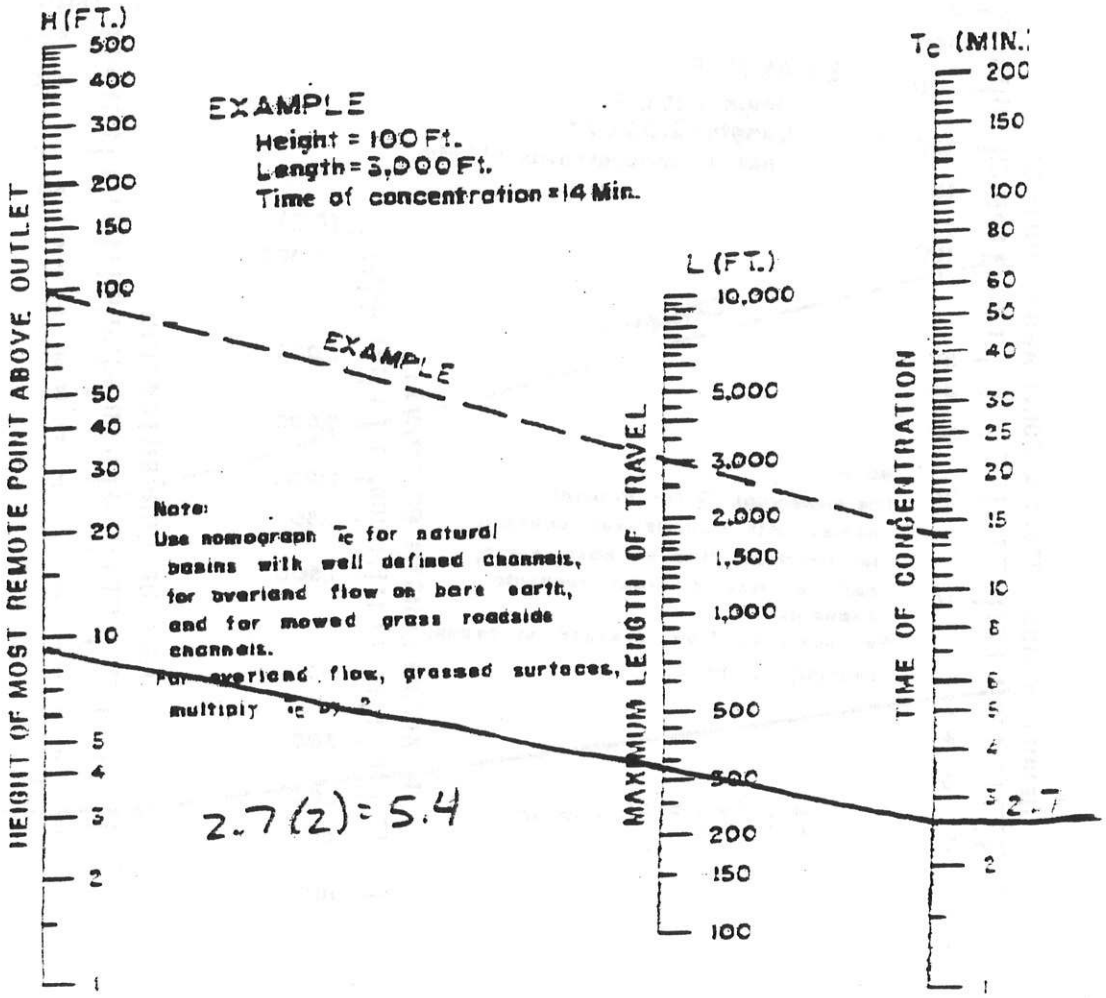
Project: Willow Walk - Phase 2
Date: _____ Project No: 12901
Designer: SAS Checked: _____

Basin G

TIME OF CONCENTRATION FOR SMALL DRAINAGE BASINS



Δ Height = 9'

Length = 318'

T_c = 5.4 min

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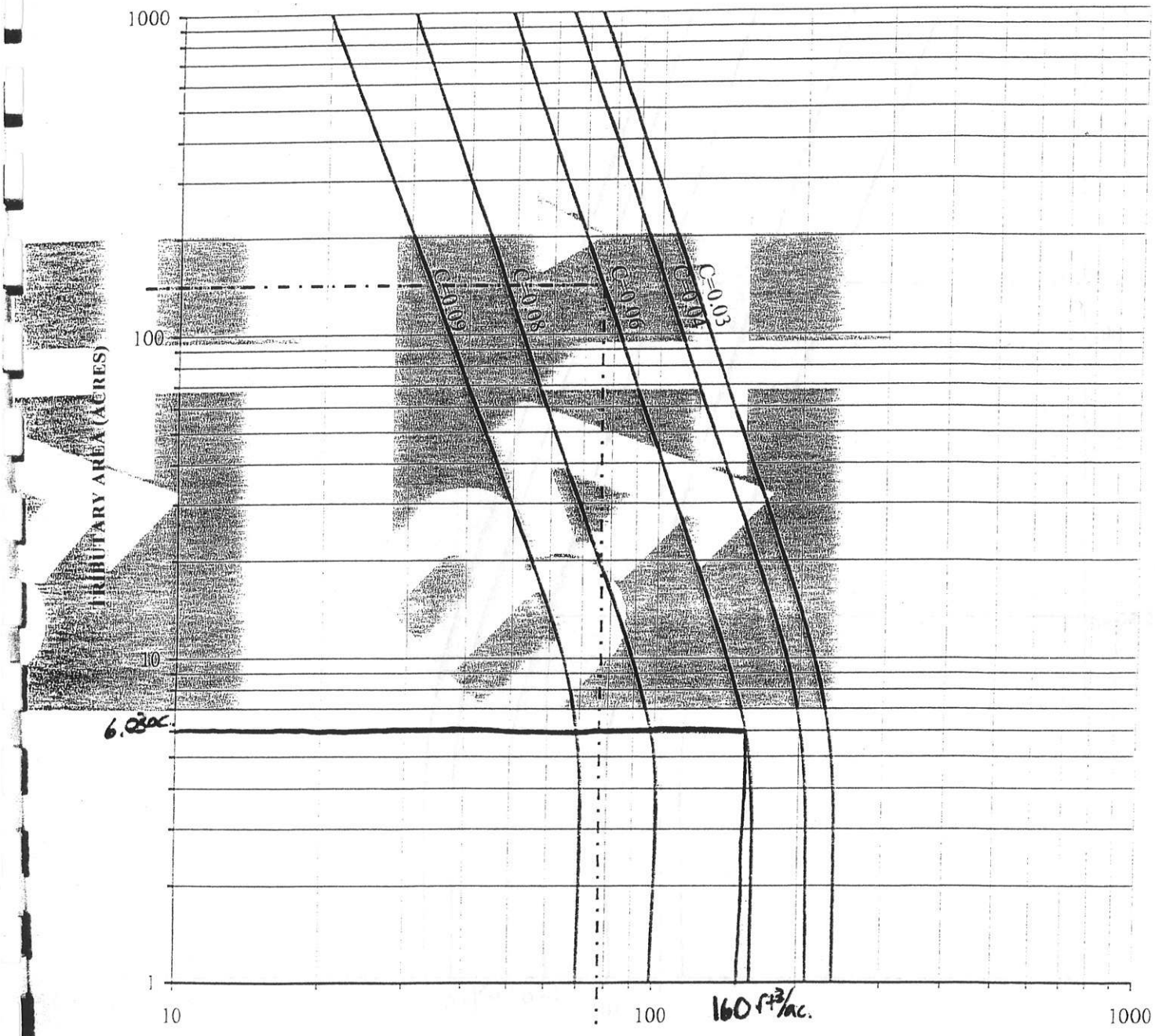
Project: Willow Walk - Phase 2
Date: _____ Project: 1290
Designer: SAS Checked: _____

Basin F

ANNUAL SEDIMENT STORAGE



Storage Required = Year of Storage * Annual Sediment * Drainage Area

RUNOFF C VALUE = 0.06
DRAINAGE AREA = 6.03 Ac.
ANNUAL SEDIMENT = 160 ft³/ac

YEARS OF STORAGE = 2 yr
STORAGE REQUIRED = 1930 ft³

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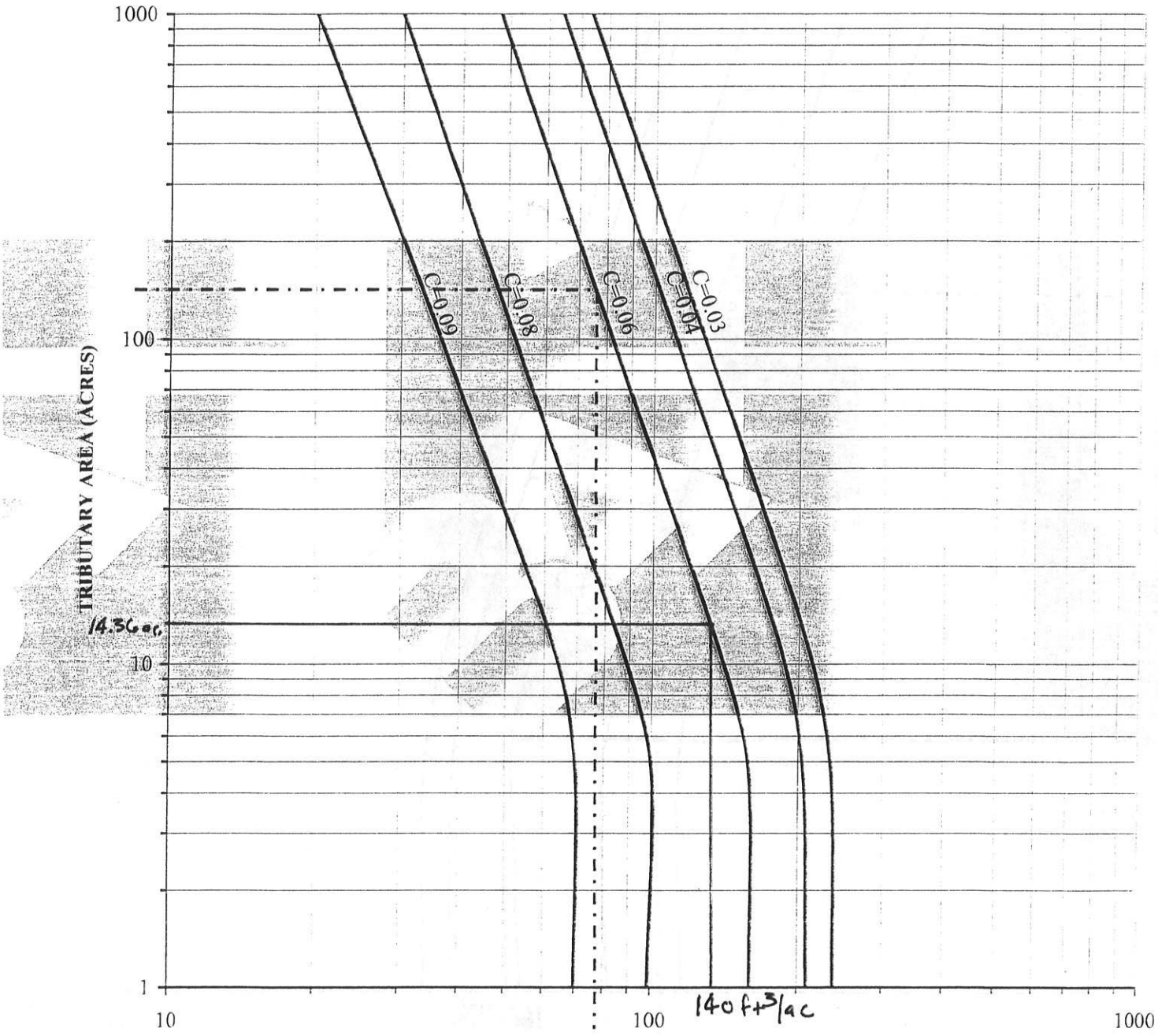
Project: Willow Walk Estates-Ph. 2
Date: 9-26-07 Project: 04-12901
Designer: JEL Checked: TCF

ANNUAL SEDIMENT STORAGE



ANNUAL SEDIMENT STORAGE VOLUME CU FT PER ACRE TRIBUTARY AREA

Storage Required = Year of Storage * Annual Sediment * Drainage Area

RUNOFF C VALUE = 0.60
DRAINAGE AREA = 14.36 ac.
ANNUAL SEDIMENT = 140 ft³/ac

YEARS OF STORAGE = 2 years
STORAGE REQUIRED = 4,021 ft³

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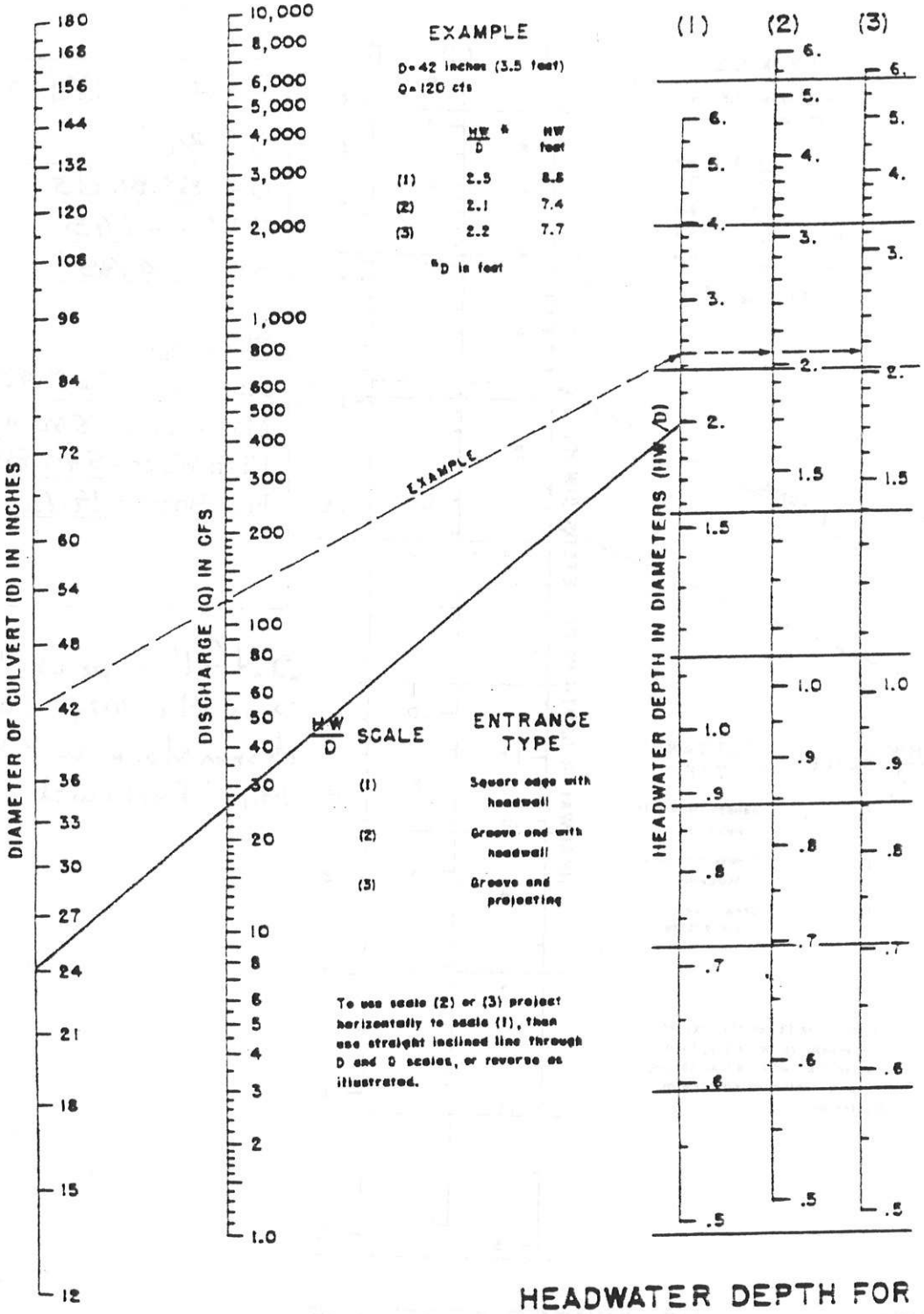
636 928-5552 FAX 636 928-1718

Project: Willow Walk - Phase 2
Date: _____ Project No: 4-12901
Designer: SAS Checked: _____

Basin F



HEADWATER SCALES 2 & 3
REVISED MAY 1964
BUREAU OF PUBLIC ROADS JAN. 1963

HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

Design Storm 100 yr

D = 24"
Q = 25.10 cfs
(HW/D) = 2.0
HW = 4.0

Elevations
Flow Line = 586.50
Max Ground = 604.00
High Water = 590.50
Free Board = 13.50'

Outfall pipe will pass 100 yr storm w/ 13.50' of freeboard

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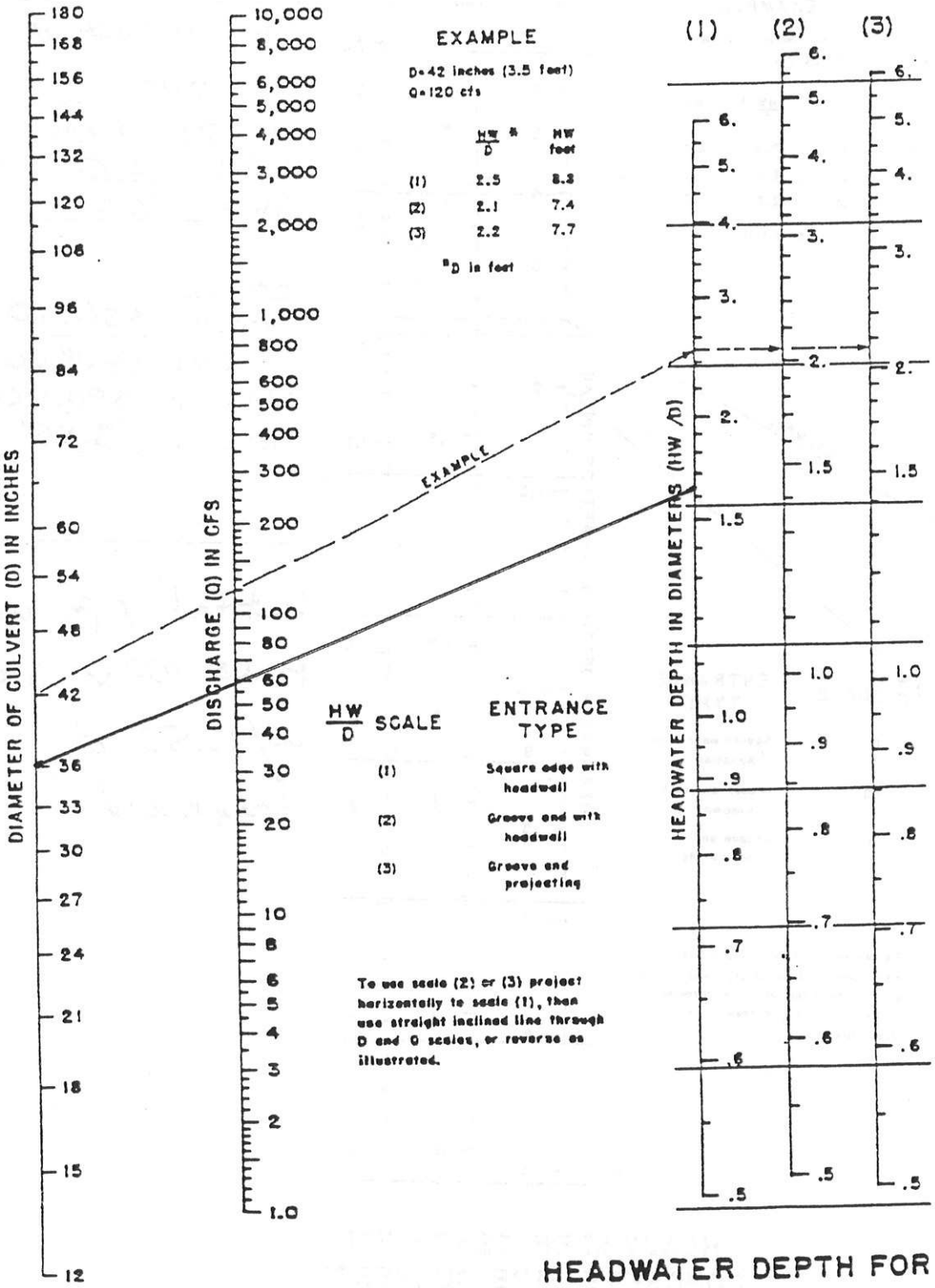
Project: Willow Walk Estates - Ph. 2
Date: 9-26-07 Project No 04-R901
Designer: JEL Checked: TCF



Design Storm 100/20

D = 36"
Q = 59.88 cfs
(HW/D) = 1.65
HW = 4.95'

Elevations
Flow Line = 565.90
Max Ground = 590.00
High Water = 570.85
Free Board = 19.15'

Outfall Pipe will pass the 100yr, 20min design storm with 19.15' freeboard

HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

HEADWATER SCALES 2 & 3
REVISED MAY 1964

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POND 10
Routing Calculations for the
2, 15, 25 and 100 Year-20 Minute Design Storms
Through the Basins

Table of Contents

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POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (cu.ft)	Volume Sum (cu.ft)
589.90	.000	.0000	.0000	0	0
590.00	45.000	.0010	.0010	1	1
592.00	550.000	.0126	.0173	502	503
594.00	1465.000	.0336	.0669	1942	2445
596.00	2705.000	.0621	.1414	4107	6552
598.00	4298.000	.0987	.2390	6942	13494
600.00	6571.000	.1508	.3715	10789	24283
602.00	9253.000	.2124	.5423	15748	40030
604.00	12403.000	.2847	.7431	21579	61610

POND VOLUME EQUATIONS

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

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (cu.ft)	Volume Sum (cu.ft)
570.20	.000	.0000	.0000	0	0
572.00	1144.000	.0263	.0263	686	686
574.00	4497.000	.1032	.1816	5273	5959
576.00	7771.000	.1784	.4173	12120	18079
578.00	10750.000	.2468	.6350	18441	36519
580.00	13692.000	.3143	.8396	24383	60902
582.00	17040.000	.3912	1.0562	30671	91573
584.00	20871.000	.4791	1.3032	37846	129420
586.00	25289.000	.5806	1.5871	46089	175509
588.00	30078.000	.6905	1.9042	55298	230807
590.00	35298.000	.8103	2.2488	65306	296113

POND VOLUME EQUATIONS

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

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 589.90 ft
Increment = .10 ft
Max. Elev.= 604.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Orifice-Area	2	--->	3	590.400	604.000
Weir-Rectangular	1	--->	3	589.900	590.400
Culvert-Circular	3	--->	TW	586.500	604.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID = 2
Structure Type = Orifice-Area

# of Openings	=	1
Invert Elev.	=	589.90 ft
Area	=	.2500 sq.ft
Top of Orifice	=	590.40 ft
Datum Elev.	=	590.15 ft
Orifice Coeff.	=	.600

Structure ID = 1
Structure Type = Weir-Rectangular

# of Openings	=	1
Crest Elev.	=	589.90 ft
Weir Length	=	.50 ft
Weir Coeff.	=	3.000000

Weir TW effects (Use adjustment equation)

OUTLET STRUCTURE INPUT DATA

Structure ID = 3
Structure Type = Culvert-Circular

No. Barrels	=	1	
Barrel Diameter	=	2.0000	ft
Upstream Invert	=	586.50	ft
Dnstream Invert	=	581.50	ft
Horiz. Length	=	125.00	ft
Barrel Length	=	125.10	ft
Barrel Slope	=	.04000	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.2000	(forward entrance loss)
Kb	=	.012411	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0045
Inlet Control M	=	2.0000
Inlet Control c	=	.03170
Inlet Control Y	=	.6900
T1 ratio (HW/D)	=	1.075
T2 ratio (HW/D)	=	1.177
Slope Factor	=	-.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...
At T1 Elev = 588.65 ft ---> Flow = 15.55 cfs
At T2 Elev = 588.85 ft ---> Flow = 17.77 cfs

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations=	40	
Min. TW tolerance =	.01	ft
Max. TW tolerance =	.01	ft
Min. HW tolerance =	.01	ft
Max. HW tolerance =	.01	ft
Min. Q tolerance =	.00	cfs
Max. Q tolerance =	.00	cfs

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
589.90	.00	Free Outfall		(no Q: 2,1,3)
590.00	.05	Free Outfall	1,3	(no Q: 2)
590.10	.13	Free Outfall	1,3	(no Q: 2)
590.20	.25	Free Outfall	1,3	(no Q: 2)
590.30	.38	Free Outfall	1,3	(no Q: 2)
590.40	.60	Free Outfall	2,3	(no Q: 1)
590.50	.71	Free Outfall	2,3	(no Q: 1)
590.60	.81	Free Outfall	2,3	(no Q: 1)
590.70	.89	Free Outfall	2,3	(no Q: 1)
590.80	.97	Free Outfall	2,3	(no Q: 1)
590.90	1.04	Free Outfall	2,3	(no Q: 1)
591.00	1.11	Free Outfall	2,3	(no Q: 1)
591.10	1.17	Free Outfall	2,3	(no Q: 1)
591.20	1.23	Free Outfall	2,3	(no Q: 1)
591.30	1.29	Free Outfall	2,3	(no Q: 1)
591.40	1.35	Free Outfall	2,3	(no Q: 1)
591.50	1.40	Free Outfall	2,3	(no Q: 1)
591.60	1.45	Free Outfall	2,3	(no Q: 1)
591.70	1.50	Free Outfall	2,3	(no Q: 1)
591.80	1.54	Free Outfall	2,3	(no Q: 1)
591.90	1.59	Free Outfall	2,3	(no Q: 1)
592.00	1.64	Free Outfall	2,3	(no Q: 1)
592.10	1.68	Free Outfall	2,3	(no Q: 1)
592.20	1.72	Free Outfall	2,3	(no Q: 1)
592.30	1.76	Free Outfall	2,3	(no Q: 1)
592.40	1.80	Free Outfall	2,3	(no Q: 1)
592.50	1.84	Free Outfall	2,3	(no Q: 1)
592.60	1.88	Free Outfall	2,3	(no Q: 1)
592.70	1.92	Free Outfall	2,3	(no Q: 1)
592.80	1.96	Free Outfall	2,3	(no Q: 1)
592.90	1.99	Free Outfall	2,3	(no Q: 1)
593.00	2.03	Free Outfall	2,3	(no Q: 1)
593.10	2.07	Free Outfall	2,3	(no Q: 1)
593.20	2.10	Free Outfall	2,3	(no Q: 1)
593.30	2.13	Free Outfall	2,3	(no Q: 1)
593.40	2.17	Free Outfall	2,3	(no Q: 1)
593.50	2.20	Free Outfall	2,3	(no Q: 1)
593.60	2.23	Free Outfall	2,3	(no Q: 1)

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
593.70	2.27	Free Outfall	2,3	(no Q: 1)
593.80	2.30	Free Outfall	2,3	(no Q: 1)
593.90	2.33	Free Outfall	2,3	(no Q: 1)
594.00	2.36	Free Outfall	2,3	(no Q: 1)
594.10	2.39	Free Outfall	2,3	(no Q: 1)
594.20	2.42	Free Outfall	2,3	(no Q: 1)
594.30	2.45	Free Outfall	2,3	(no Q: 1)
594.40	2.48	Free Outfall	2,3	(no Q: 1)
594.50	2.51	Free Outfall	2,3	(no Q: 1)
594.60	2.54	Free Outfall	2,3	(no Q: 1)
594.70	2.57	Free Outfall	2,3	(no Q: 1)
594.80	2.59	Free Outfall	2,3	(no Q: 1)
594.90	2.62	Free Outfall	2,3	(no Q: 1)
595.00	2.65	Free Outfall	2,3	(no Q: 1)
595.10	2.68	Free Outfall	2,3	(no Q: 1)
595.20	2.70	Free Outfall	2,3	(no Q: 1)
595.30	2.73	Free Outfall	2,3	(no Q: 1)
595.40	2.76	Free Outfall	2,3	(no Q: 1)
595.50	2.78	Free Outfall	2,3	(no Q: 1)
595.60	2.81	Free Outfall	2,3	(no Q: 1)
595.70	2.83	Free Outfall	2,3	(no Q: 1)
595.80	2.86	Free Outfall	2,3	(no Q: 1)
595.90	2.88	Free Outfall	2,3	(no Q: 1)
596.00	2.91	Free Outfall	2,3	(no Q: 1)
596.10	2.94	Free Outfall	2,3	(no Q: 1)
596.20	2.96	Free Outfall	2,3	(no Q: 1)
596.30	2.98	Free Outfall	2,3	(no Q: 1)
596.40	3.01	Free Outfall	2,3	(no Q: 1)
596.50	3.03	Free Outfall	2,3	(no Q: 1)
596.60	3.06	Free Outfall	2,3	(no Q: 1)
596.70	3.08	Free Outfall	2,3	(no Q: 1)
596.80	3.10	Free Outfall	2,3	(no Q: 1)
596.90	3.13	Free Outfall	2,3	(no Q: 1)
597.00	3.15	Free Outfall	2,3	(no Q: 1)
597.10	3.17	Free Outfall	2,3	(no Q: 1)
597.20	3.19	Free Outfall	2,3	(no Q: 1)
597.30	3.22	Free Outfall	2,3	(no Q: 1)
597.40	3.24	Free Outfall	2,3	(no Q: 1)

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
597.50	3.26	Free Outfall	2,3	(no Q: 1)
597.60	3.28	Free Outfall	2,3	(no Q: 1)
597.70	3.30	Free Outfall	2,3	(no Q: 1)
597.80	3.33	Free Outfall	2,3	(no Q: 1)
597.90	3.35	Free Outfall	2,3	(no Q: 1)
598.00	3.37	Free Outfall	2,3	(no Q: 1)
598.10	3.39	Free Outfall	2,3	(no Q: 1)
598.20	3.41	Free Outfall	2,3	(no Q: 1)
598.30	3.43	Free Outfall	2,3	(no Q: 1)
598.40	3.45	Free Outfall	2,3	(no Q: 1)
598.50	3.47	Free Outfall	2,3	(no Q: 1)
598.60	3.49	Free Outfall	2,3	(no Q: 1)
598.70	3.52	Free Outfall	2,3	(no Q: 1)
598.80	3.54	Free Outfall	2,3	(no Q: 1)
598.90	3.56	Free Outfall	2,3	(no Q: 1)
599.00	3.58	Free Outfall	2,3	(no Q: 1)
599.10	3.60	Free Outfall	2,3	(no Q: 1)
599.20	3.62	Free Outfall	2,3	(no Q: 1)
599.30	3.64	Free Outfall	2,3	(no Q: 1)
599.40	3.66	Free Outfall	2,3	(no Q: 1)
599.50	3.68	Free Outfall	2,3	(no Q: 1)
599.60	3.70	Free Outfall	2,3	(no Q: 1)
599.70	3.72	Free Outfall	2,3	(no Q: 1)
599.80	3.74	Free Outfall	2,3	(no Q: 1)
599.90	3.76	Free Outfall	2,3	(no Q: 1)
600.00	3.77	Free Outfall	2,3	(no Q: 1)
600.10	3.79	Free Outfall	2,3	(no Q: 1)
600.20	3.81	Free Outfall	2,3	(no Q: 1)
600.30	3.83	Free Outfall	2,3	(no Q: 1)
600.40	3.85	Free Outfall	2,3	(no Q: 1)
600.50	3.87	Free Outfall	2,3	(no Q: 1)
600.60	3.89	Free Outfall	2,3	(no Q: 1)
600.70	3.91	Free Outfall	2,3	(no Q: 1)
600.80	3.93	Free Outfall	2,3	(no Q: 1)
600.90	3.95	Free Outfall	2,3	(no Q: 1)
601.00	3.96	Free Outfall	2,3	(no Q: 1)
601.10	3.99	Free Outfall	2,3	(no Q: 1)
601.20	4.00	Free Outfall	2,3	(no Q: 1)

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
601.30	4.02	Free Outfall	2,3	(no Q: 1)
601.40	4.04	Free Outfall	2,3	(no Q: 1)
601.50	4.06	Free Outfall	2,3	(no Q: 1)
601.60	4.07	Free Outfall	2,3	(no Q: 1)
601.70	4.09	Free Outfall	2,3	(no Q: 1)
601.80	4.11	Free Outfall	2,3	(no Q: 1)
601.90	4.12	Free Outfall	2,3	(no Q: 1)
602.00	4.14	Free Outfall	2,3	(no Q: 1)
602.10	4.16	Free Outfall	2,3	(no Q: 1)
602.20	4.18	Free Outfall	2,3	(no Q: 1)
602.30	4.19	Free Outfall	2,3	(no Q: 1)
602.40	4.21	Free Outfall	2,3	(no Q: 1)
602.50	4.23	Free Outfall	2,3	(no Q: 1)
602.60	4.25	Free Outfall	2,3	(no Q: 1)
602.70	4.26	Free Outfall	2,3	(no Q: 1)
602.80	4.28	Free Outfall	2,3	(no Q: 1)
602.90	4.30	Free Outfall	2,3	(no Q: 1)
603.00	4.31	Free Outfall	2,3	(no Q: 1)
603.10	4.33	Free Outfall	2,3	(no Q: 1)
603.20	4.34	Free Outfall	2,3	(no Q: 1)
603.30	4.36	Free Outfall	2,3	(no Q: 1)
603.40	4.38	Free Outfall	2,3	(no Q: 1)
603.50	4.39	Free Outfall	2,3	(no Q: 1)
603.60	4.41	Free Outfall	2,3	(no Q: 1)
603.70	4.43	Free Outfall	2,3	(no Q: 1)
603.80	4.45	Free Outfall	2,3	(no Q: 1)
603.90	4.47	Free Outfall	2,3	(no Q: 1)
604.00	4.48	Free Outfall	2,3	(no Q: 1)

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 570.20 ft
Increment = .10 ft
Max. Elev.= 590.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Orifice-Area	5	--->	6	571.200	590.000
Weir-Rectangular	4	--->	6	570.200	571.200
Culvert-Circular	6	--->	TW	565.900	590.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID = 5
Structure Type = Orifice-Area

# of Openings	=	1
Invert Elev.	=	570.20 ft
Area	=	.5000 sq.ft
Top of Orifice	=	571.20 ft
Datum Elev.	=	570.70 ft
Orifice Coeff.	=	.600

Structure ID = 4
Structure Type = Weir-Rectangular

# of Openings	=	1
Crest Elev.	=	570.20 ft
Weir Length	=	.50 ft
Weir Coeff.	=	3.000000

Weir TW effects (Use adjustment equation)

OUTLET STRUCTURE INPUT DATA

Structure ID = 6
Structure Type = Culvert-Circular

No. Barrels	=	1
Barrel Diameter	=	3.0000 ft
Upstream Invert	=	565.90 ft
Dnstream Invert	=	562.00 ft
Horiz. Length	=	170.00 ft
Barrel Length	=	170.04 ft
Barrel Slope	=	.02294 ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.2000	(forward entrance loss)
Kb	=	.007228	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0045
Inlet Control M	=	2.0000
Inlet Control c	=	.03170
Inlet Control Y	=	.6900
T1 ratio (HW/D)	=	1.084
T2 ratio (HW/D)	=	1.186
Slope Factor	=	-.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...
At T1 Elev = 569.15 ft ---> Flow = 42.85 cfs
At T2 Elev = 569.46 ft ---> Flow = 48.97 cfs

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations	=	40
Min. TW tolerance	=	.01 ft
Max. TW tolerance	=	.01 ft
Min. HW tolerance	=	.01 ft
Max. HW tolerance	=	.01 ft
Min. Q tolerance	=	.00 cfs
Max. Q tolerance	=	.00 cfs

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
570.20	.00	Free Outfall		(no Q: 5,4,6)
570.30	.05	Free Outfall	4,6	(no Q: 5)
570.40	.13	Free Outfall	4,6	(no Q: 5)
570.50	.25	Free Outfall	4,6	(no Q: 5)
570.60	.38	Free Outfall	4,6	(no Q: 5)
570.70	.53	Free Outfall	4,6	(no Q: 5)
570.80	.70	Free Outfall	4,6	(no Q: 5)
570.90	.88	Free Outfall	4,6	(no Q: 5)
571.00	1.07	Free Outfall	4,6	(no Q: 5)
571.10	1.28	Free Outfall	4,6	(no Q: 5)
571.20	1.70	Free Outfall	5,6	(no Q: 4)
571.30	1.86	Free Outfall	5,6	(no Q: 4)
571.40	2.01	Free Outfall	5,6	(no Q: 4)
571.50	2.15	Free Outfall	5,6	(no Q: 4)
571.60	2.28	Free Outfall	5,6	(no Q: 4)
571.70	2.41	Free Outfall	5,6	(no Q: 4)
571.80	2.52	Free Outfall	5,6	(no Q: 4)
571.90	2.64	Free Outfall	5,6	(no Q: 4)
572.00	2.74	Free Outfall	5,6	(no Q: 4)
572.10	2.85	Free Outfall	5,6	(no Q: 4)
572.20	2.95	Free Outfall	5,6	(no Q: 4)
572.30	3.04	Free Outfall	5,6	(no Q: 4)
572.40	3.14	Free Outfall	5,6	(no Q: 4)
572.50	3.23	Free Outfall	5,6	(no Q: 4)
572.60	3.32	Free Outfall	5,6	(no Q: 4)
572.70	3.40	Free Outfall	5,6	(no Q: 4)
572.80	3.48	Free Outfall	5,6	(no Q: 4)
572.90	3.57	Free Outfall	5,6	(no Q: 4)
573.00	3.65	Free Outfall	5,6	(no Q: 4)
573.10	3.72	Free Outfall	5,6	(no Q: 4)
573.20	3.80	Free Outfall	5,6	(no Q: 4)
573.30	3.88	Free Outfall	5,6	(no Q: 4)
573.40	3.95	Free Outfall	5,6	(no Q: 4)
573.50	4.03	Free Outfall	5,6	(no Q: 4)
573.60	4.10	Free Outfall	5,6	(no Q: 4)
573.70	4.17	Free Outfall	5,6	(no Q: 4)
573.80	4.24	Free Outfall	5,6	(no Q: 4)
573.90	4.30	Free Outfall	5,6	(no Q: 4)

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
574.00	4.37	Free Outfall	5,6	(no Q: 4)
574.10	4.44	Free Outfall	5,6	(no Q: 4)
574.20	4.50	Free Outfall	5,6	(no Q: 4)
574.30	4.57	Free Outfall	5,6	(no Q: 4)
574.40	4.63	Free Outfall	5,6	(no Q: 4)
574.50	4.69	Free Outfall	5,6	(no Q: 4)
574.60	4.75	Free Outfall	5,6	(no Q: 4)
574.70	4.81	Free Outfall	5,6	(no Q: 4)
574.80	4.87	Free Outfall	5,6	(no Q: 4)
574.90	4.94	Free Outfall	5,6	(no Q: 4)
575.00	4.99	Free Outfall	5,6	(no Q: 4)
575.10	5.05	Free Outfall	5,6	(no Q: 4)
575.20	5.10	Free Outfall	5,6	(no Q: 4)
575.30	5.16	Free Outfall	5,6	(no Q: 4)
575.40	5.22	Free Outfall	5,6	(no Q: 4)
575.50	5.27	Free Outfall	5,6	(no Q: 4)
575.60	5.32	Free Outfall	5,6	(no Q: 4)
575.70	5.38	Free Outfall	5,6	(no Q: 4)
575.80	5.43	Free Outfall	5,6	(no Q: 4)
575.90	5.49	Free Outfall	5,6	(no Q: 4)
576.00	5.54	Free Outfall	5,6	(no Q: 4)
576.10	5.59	Free Outfall	5,6	(no Q: 4)
576.20	5.64	Free Outfall	5,6	(no Q: 4)
576.30	5.70	Free Outfall	5,6	(no Q: 4)
576.40	5.74	Free Outfall	5,6	(no Q: 4)
576.50	5.80	Free Outfall	5,6	(no Q: 4)
576.60	5.84	Free Outfall	5,6	(no Q: 4)
576.70	5.89	Free Outfall	5,6	(no Q: 4)
576.80	5.95	Free Outfall	5,6	(no Q: 4)
576.90	5.99	Free Outfall	5,6	(no Q: 4)
577.00	6.04	Free Outfall	5,6	(no Q: 4)
577.10	6.09	Free Outfall	5,6	(no Q: 4)
577.20	6.13	Free Outfall	5,6	(no Q: 4)
577.30	6.18	Free Outfall	5,6	(no Q: 4)
577.40	6.23	Free Outfall	5,6	(no Q: 4)
577.50	6.28	Free Outfall	5,6	(no Q: 4)
577.60	6.32	Free Outfall	5,6	(no Q: 4)
577.70	6.36	Free Outfall	5,6	(no Q: 4)

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
577.80	6.42	Free Outfall	5,6	(no Q: 4)
577.90	6.46	Free Outfall	5,6	(no Q: 4)
578.00	6.50	Free Outfall	5,6	(no Q: 4)
578.10	6.55	Free Outfall	5,6	(no Q: 4)
578.20	6.60	Free Outfall	5,6	(no Q: 4)
578.30	6.63	Free Outfall	5,6	(no Q: 4)
578.40	6.67	Free Outfall	5,6	(no Q: 4)
578.50	6.72	Free Outfall	5,6	(no Q: 4)
578.60	6.77	Free Outfall	5,6	(no Q: 4)
578.70	6.81	Free Outfall	5,6	(no Q: 4)
578.80	6.84	Free Outfall	5,6	(no Q: 4)
578.90	6.88	Free Outfall	5,6	(no Q: 4)
579.00	6.93	Free Outfall	5,6	(no Q: 4)
579.10	6.97	Free Outfall	5,6	(no Q: 4)
579.20	7.01	Free Outfall	5,6	(no Q: 4)
579.30	7.05	Free Outfall	5,6	(no Q: 4)
579.40	7.09	Free Outfall	5,6	(no Q: 4)
579.50	7.13	Free Outfall	5,6	(no Q: 4)
579.60	7.17	Free Outfall	5,6	(no Q: 4)
579.70	7.22	Free Outfall	5,6	(no Q: 4)
579.80	7.26	Free Outfall	5,6	(no Q: 4)
579.90	7.30	Free Outfall	5,6	(no Q: 4)
580.00	7.34	Free Outfall	5,6	(no Q: 4)
580.10	7.38	Free Outfall	5,6	(no Q: 4)
580.20	7.42	Free Outfall	5,6	(no Q: 4)
580.30	7.46	Free Outfall	5,6	(no Q: 4)
580.40	7.50	Free Outfall	5,6	(no Q: 4)
580.50	7.54	Free Outfall	5,6	(no Q: 4)
580.60	7.57	Free Outfall	5,6	(no Q: 4)
580.70	7.60	Free Outfall	5,6	(no Q: 4)
580.80	7.64	Free Outfall	5,6	(no Q: 4)
580.90	7.68	Free Outfall	5,6	(no Q: 4)
581.00	7.73	Free Outfall	5,6	(no Q: 4)
581.10	7.77	Free Outfall	5,6	(no Q: 4)
581.20	7.79	Free Outfall	5,6	(no Q: 4)
581.30	7.83	Free Outfall	5,6	(no Q: 4)
581.40	7.87	Free Outfall	5,6	(no Q: 4)
581.50	7.91	Free Outfall	5,6	(no Q: 4)

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

WS Elev, Total Q		Notes		
		Converge		
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
581.60	7.94	Free Outfall	5,6	(no Q: 4)
581.70	7.98	Free Outfall	5,6	(no Q: 4)
581.80	8.01	Free Outfall	5,6	(no Q: 4)
581.90	8.06	Free Outfall	5,6	(no Q: 4)
582.00	8.08	Free Outfall	5,6	(no Q: 4)
582.10	8.13	Free Outfall	5,6	(no Q: 4)
582.20	8.16	Free Outfall	5,6	(no Q: 4)
582.30	8.20	Free Outfall	5,6	(no Q: 4)
582.40	8.23	Free Outfall	5,6	(no Q: 4)
582.50	8.26	Free Outfall	5,6	(no Q: 4)
582.60	8.30	Free Outfall	5,6	(no Q: 4)
582.70	8.34	Free Outfall	5,6	(no Q: 4)
582.80	8.37	Free Outfall	5,6	(no Q: 4)
582.90	8.41	Free Outfall	5,6	(no Q: 4)
583.00	8.44	Free Outfall	5,6	(no Q: 4)
583.10	8.47	Free Outfall	5,6	(no Q: 4)
583.20	8.51	Free Outfall	5,6	(no Q: 4)
583.30	8.54	Free Outfall	5,6	(no Q: 4)
583.40	8.57	Free Outfall	5,6	(no Q: 4)
583.50	8.61	Free Outfall	5,6	(no Q: 4)
583.60	8.64	Free Outfall	5,6	(no Q: 4)
583.70	8.68	Free Outfall	5,6	(no Q: 4)
583.80	8.70	Free Outfall	5,6	(no Q: 4)
583.90	8.74	Free Outfall	5,6	(no Q: 4)
584.00	8.78	Free Outfall	5,6	(no Q: 4)
584.10	8.80	Free Outfall	5,6	(no Q: 4)
584.20	8.84	Free Outfall	5,6	(no Q: 4)
584.30	8.87	Free Outfall	5,6	(no Q: 4)
584.40	8.91	Free Outfall	5,6	(no Q: 4)
584.50	8.93	Free Outfall	5,6	(no Q: 4)
584.60	8.97	Free Outfall	5,6	(no Q: 4)
584.70	9.01	Free Outfall	5,6	(no Q: 4)
584.80	9.03	Free Outfall	5,6	(no Q: 4)
584.90	9.07	Free Outfall	5,6	(no Q: 4)
585.00	9.10	Free Outfall	5,6	(no Q: 4)
585.10	9.14	Free Outfall	5,6	(no Q: 4)
585.20	9.16	Free Outfall	5,6	(no Q: 4)
585.30	9.20	Free Outfall	5,6	(no Q: 4)

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

WS Elev, Total Q		Notes		
		Converge		
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
585.40	9.22	Free Outfall	5,6	(no Q: 4)
585.50	9.26	Free Outfall	5,6	(no Q: 4)
585.60	9.28	Free Outfall	5,6	(no Q: 4)
585.70	9.32	Free Outfall	5,6	(no Q: 4)
585.80	9.35	Free Outfall	5,6	(no Q: 4)
585.90	9.39	Free Outfall	5,6	(no Q: 4)
586.00	9.41	Free Outfall	5,6	(no Q: 4)
586.10	9.45	Free Outfall	5,6	(no Q: 4)
586.20	9.47	Free Outfall	5,6	(no Q: 4)
586.30	9.51	Free Outfall	5,6	(no Q: 4)
586.40	9.53	Free Outfall	5,6	(no Q: 4)
586.50	9.56	Free Outfall	5,6	(no Q: 4)
586.60	9.60	Free Outfall	5,6	(no Q: 4)
586.70	9.62	Free Outfall	5,6	(no Q: 4)
586.80	9.66	Free Outfall	5,6	(no Q: 4)
586.90	9.68	Free Outfall	5,6	(no Q: 4)
587.00	9.72	Free Outfall	5,6	(no Q: 4)
587.10	9.74	Free Outfall	5,6	(no Q: 4)
587.20	9.77	Free Outfall	5,6	(no Q: 4)
587.30	9.81	Free Outfall	5,6	(no Q: 4)
587.40	9.83	Free Outfall	5,6	(no Q: 4)
587.50	9.87	Free Outfall	5,6	(no Q: 4)
587.60	9.89	Free Outfall	5,6	(no Q: 4)
587.70	9.92	Free Outfall	5,6	(no Q: 4)
587.80	9.95	Free Outfall	5,6	(no Q: 4)
587.90	9.98	Free Outfall	5,6	(no Q: 4)
588.00	10.02	Free Outfall	5,6	(no Q: 4)
588.10	10.04	Free Outfall	5,6	(no Q: 4)
588.20	10.06	Free Outfall	5,6	(no Q: 4)
588.30	10.10	Free Outfall	5,6	(no Q: 4)
588.40	10.12	Free Outfall	5,6	(no Q: 4)
588.50	10.15	Free Outfall	5,6	(no Q: 4)
588.60	10.19	Free Outfall	5,6	(no Q: 4)
588.70	10.21	Free Outfall	5,6	(no Q: 4)
588.80	10.24	Free Outfall	5,6	(no Q: 4)
588.90	10.27	Free Outfall	5,6	(no Q: 4)
589.00	10.29	Free Outfall	5,6	(no Q: 4)
589.10	10.32	Free Outfall	5,6	(no Q: 4)

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
589.20	10.36	Free Outfall	5,6	(no Q: 4)
589.30	10.38	Free Outfall	5,6	(no Q: 4)
589.40	10.40	Free Outfall	5,6	(no Q: 4)
589.50	10.44	Free Outfall	5,6	(no Q: 4)
589.60	10.46	Free Outfall	5,6	(no Q: 4)
589.70	10.48	Free Outfall	5,6	(no Q: 4)
589.80	10.52	Free Outfall	5,6	(no Q: 4)
589.90	10.54	Free Outfall	5,6	(no Q: 4)
590.00	10.57	Free Outfall	5,6	(no Q: 4)

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 2
Outflow HYG file = NONE STORED - BASIN F OUT 2

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 589.90 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
589.90	.00	0	.0000	.00	.00	.00
590.00	.05	1	.0010	.00	.05	.10
590.10	.13	7	.0013	.00	.13	.35
590.20	.25	13	.0016	.00	.25	.68
590.30	.38	21	.0020	.00	.38	1.07
590.40	.60	30	.0023	.00	.60	1.60
590.50	.71	41	.0027	.00	.71	2.08
590.60	.81	54	.0032	.00	.81	2.60
590.70	.89	69	.0036	.00	.89	3.18
590.80	.97	85	.0041	.00	.97	3.82
590.90	1.04	105	.0047	.00	1.04	4.53
591.00	1.11	126	.0052	.00	1.11	5.31
591.10	1.17	150	.0058	.00	1.17	6.17
591.20	1.23	177	.0064	.00	1.23	7.12
591.30	1.29	206	.0071	.00	1.29	8.17
591.40	1.35	239	.0078	.00	1.35	9.30
591.50	1.40	274	.0085	.00	1.40	10.54
591.60	1.45	313	.0093	.00	1.45	11.88
591.70	1.50	355	.0101	.00	1.50	13.33
591.80	1.54	401	.0109	.00	1.54	14.90

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 2
Outflow HYG file = NONE STORED - BASIN F OUT 2

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 589.90 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
591.90	1.59	450	.0117	.00	1.59	16.59
592.00	1.64	503	.0126	.00	1.64	18.40
592.10	1.68	560	.0134	.00	1.68	20.34
592.20	1.72	620	.0143	.00	1.72	22.40
592.30	1.76	684	.0151	.00	1.76	24.57
592.40	1.80	752	.0160	.00	1.80	26.87
592.50	1.84	824	.0169	.00	1.84	29.30
592.60	1.88	900	.0179	.00	1.88	31.87
592.70	1.92	980	.0188	.00	1.92	34.57
592.80	1.96	1064	.0198	.00	1.96	37.41
592.90	1.99	1152	.0208	.00	1.99	40.40
593.00	2.03	1245	.0219	.00	2.03	43.54
593.10	2.07	1343	.0229	.00	2.07	46.82
593.20	2.10	1445	.0240	.00	2.10	50.27
593.30	2.13	1552	.0251	.00	2.13	53.87
593.40	2.17	1664	.0263	.00	2.17	57.64
593.50	2.20	1781	.0274	.00	2.20	61.57
593.60	2.23	1903	.0286	.00	2.23	65.67
593.70	2.27	2030	.0298	.00	2.27	69.95
593.80	2.30	2163	.0311	.00	2.30	74.40

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 2
Outflow HYG file = NONE STORED - BASIN F OUT 2

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 589.90 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
593.90	2.33	2301	.0323	.00	2.33	79.04
594.00	2.36	2445	.0336	.00	2.36	83.85
594.10	2.39	2594	.0348	.00	2.39	88.86
594.20	2.42	2748	.0361	.00	2.42	94.04
594.30	2.45	2908	.0374	.00	2.45	99.40
594.40	2.48	3074	.0386	.00	2.48	104.94
594.50	2.51	3245	.0399	.00	2.51	110.68
594.60	2.54	3422	.0413	.00	2.54	116.60
594.70	2.57	3605	.0426	.00	2.57	122.72
594.80	2.59	3793	.0440	.00	2.59	129.03
594.90	2.62	3988	.0454	.00	2.62	135.54
595.00	2.65	4188	.0468	.00	2.65	142.26
595.10	2.68	4395	.0482	.00	2.68	149.19
595.20	2.70	4608	.0497	.00	2.70	156.32
595.30	2.73	4828	.0512	.00	2.73	163.67
595.40	2.76	5054	.0526	.00	2.76	171.23
595.50	2.78	5287	.0542	.00	2.78	179.01
595.60	2.81	5526	.0557	.00	2.81	187.01
595.70	2.83	5772	.0573	.00	2.83	195.24
595.80	2.86	6025	.0589	.00	2.86	203.70

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 2
Outflow HYG file = NONE STORED - BASIN F OUT 2

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 589.90 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
595.90	2.88	6285	.0605	.00	2.88	212.38
596.00	2.91	6552	.0621	.00	2.91	221.31
596.10	2.94	6826	.0637	.00	2.94	230.47
596.20	2.96	7107	.0654	.00	2.96	239.86
596.30	2.98	7396	.0670	.00	2.98	249.51
596.40	3.01	7691	.0687	.00	3.01	259.39
596.50	3.03	7994	.0705	.00	3.03	269.51
596.60	3.06	8305	.0722	.00	3.06	279.90
596.70	3.08	8623	.0739	.00	3.08	290.52
596.80	3.10	8949	.0757	.00	3.10	301.41
596.90	3.13	9283	.0775	.00	3.13	312.56
597.00	3.15	9625	.0793	.00	3.15	323.97
597.10	3.17	9974	.0812	.00	3.17	335.65
597.20	3.19	10332	.0830	.00	3.19	347.59
597.30	3.22	10698	.0849	.00	3.22	359.80
597.40	3.24	11072	.0868	.00	3.24	372.29
597.50	3.26	11454	.0887	.00	3.26	385.06
597.60	3.28	11845	.0907	.00	3.28	398.11
597.70	3.30	12244	.0926	.00	3.30	411.43
597.80	3.33	12652	.0946	.00	3.33	425.06

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 2
Outflow HYG file = NONE STORED - BASIN F OUT 2

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	589.90 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
597.90	3.35	13068	.0966	.00	3.35	438.96
598.00	3.37	13494	.0987	.00	3.37	453.16
598.10	3.39	13929	.1010	.00	3.39	467.69
598.20	3.41	14374	.1034	.00	3.41	482.54
598.30	3.43	14830	.1058	.00	3.43	497.75
598.40	3.45	15296	.1082	.00	3.45	513.31
598.50	3.47	15772	.1107	.00	3.47	529.22
598.60	3.49	16260	.1132	.00	3.49	545.49
598.70	3.52	16758	.1157	.00	3.52	562.12
598.80	3.54	17268	.1182	.00	3.54	579.13
598.90	3.56	17788	.1208	.00	3.56	596.50
599.00	3.58	18320	.1234	.00	3.58	614.24
599.10	3.60	18863	.1260	.00	3.60	632.37
599.20	3.62	19418	.1287	.00	3.62	650.87
599.30	3.64	19984	.1313	.00	3.64	669.78
599.40	3.66	20562	.1340	.00	3.66	689.06
599.50	3.68	21152	.1368	.00	3.68	708.74
599.60	3.70	21754	.1395	.00	3.70	728.82
599.70	3.72	22367	.1423	.00	3.72	749.29
599.80	3.74	22994	.1451	.00	3.74	770.19

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 2
Outflow HYG file = NONE STORED - BASIN F OUT 2

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 589.90 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
599.90	3.76	23632	.1480	.00	3.76	791.48
600.00	3.77	24283	.1508	.00	3.77	813.19
600.10	3.79	24946	.1537	.00	3.79	835.33
600.20	3.81	25622	.1565	.00	3.81	857.87
600.30	3.83	26310	.1594	.00	3.83	880.83
600.40	3.85	27011	.1623	.00	3.85	904.20
600.50	3.87	27724	.1653	.00	3.87	928.00
600.60	3.89	28450	.1682	.00	3.89	952.24
600.70	3.91	29189	.1712	.00	3.91	976.89
600.80	3.93	29942	.1742	.00	3.93	1001.99
600.90	3.95	30707	.1773	.00	3.95	1027.52
601.00	3.96	31486	.1803	.00	3.96	1053.50
601.10	3.99	32278	.1834	.00	3.99	1079.93
601.20	4.00	33084	.1865	.00	4.00	1106.80
601.30	4.02	33904	.1897	.00	4.02	1134.14
601.40	4.04	34737	.1928	.00	4.04	1161.92
601.50	4.06	35583	.1960	.00	4.06	1190.17
601.60	4.07	36445	.1993	.00	4.07	1218.89
601.70	4.09	37320	.2025	.00	4.09	1248.07
601.80	4.11	38209	.2058	.00	4.11	1277.74

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 2
Outflow HYG file = NONE STORED - BASIN F OUT 2

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 589.90 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
601.90	4.12	39112	.2091	.00	4.12	1307.87
602.00	4.14	40030	.2124	.00	4.14	1338.48
602.10	4.16	40963	.2158	.00	4.16	1369.60
602.20	4.18	41910	.2192	.00	4.18	1401.19
602.30	4.19	42873	.2226	.00	4.19	1433.29
602.40	4.21	43850	.2260	.00	4.21	1465.87
602.50	4.23	44842	.2295	.00	4.23	1498.95
602.60	4.25	45849	.2330	.00	4.25	1532.56
602.70	4.26	46872	.2365	.00	4.26	1566.65
602.80	4.28	47910	.2401	.00	4.28	1601.29
602.90	4.30	48964	.2437	.00	4.30	1636.41
603.00	4.31	50032	.2473	.00	4.31	1672.06
603.10	4.33	51118	.2509	.00	4.33	1708.25
603.20	4.34	52218	.2545	.00	4.34	1744.95
603.30	4.36	53335	.2582	.00	4.36	1782.21
603.40	4.38	54468	.2619	.00	4.38	1819.98
603.50	4.39	55617	.2657	.00	4.39	1858.29
603.60	4.41	56783	.2694	.00	4.41	1897.17
603.70	4.43	57964	.2732	.00	4.43	1936.57
603.80	4.45	59163	.2770	.00	4.45	1976.55

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 2
Outflow HYG file = NONE STORED - BASIN F OUT 2

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	589.90 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
603.90	4.47	60378	.2809	.00	4.47	2017.06
604.00	4.48	61610	.2847	.00	4.48	2058.12

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 2
Outflow HYG file = NONE STORED - BASIN F OUT 2

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	589.90 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	9.69 cfs	at	5.00 min
Peak Outflow	=	3.04 cfs	at	23.00 min
Peak Elevation	=	596.54 ft		
Peak Storage	=	8128 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	11628
- Infiltration	=	0
- HYG Vol OUT	=	11628
- Retained Vol	=	0
Unrouted Vol	= -	cu.ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 15
Outflow HYG file = NONE STORED - BASIN F OUT 15

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	589.90 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	15.89 cfs	at	5.00 min
Peak Outflow	=	3.44 cfs	at	24.00 min
Peak Elevation	=	598.35 ft		
Peak Storage	=	15053 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	19068
- Infiltration	=	0
- HYG Vol OUT	=	19068
- Retained Vol	=	0
Unrouted Vol	= -	cu.ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 25
Outflow HYG file = NONE STORED - BASIN F OUT 25

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	589.90 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	19.63 cfs	at	5.00 min
Peak Outflow	=	3.61 cfs	at	24.00 min
Peak Elevation	=	599.18 ft		
Peak Storage	=	19316 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	23556
- Infiltration	=	0
- HYG Vol OUT	=	23556
- Retained Vol	=	0
Unrouted Vol	= -	cu.ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN F IN 100
Outflow HYG file = NONE STORED - BASIN F OUT 100

Pond Node Data = BASIN F
Pond Volume Data = BASIN F
Pond Outlet Data = Outlet F

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	589.90 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	25.10 cfs	at	5.00 min
Peak Outflow	=	3.81 cfs	at	24.00 min
Peak Elevation	=	600.20 ft		
Peak Storage	=	25608 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	30120
- Infiltration	=	0
- HYG Vol OUT	=	30120
- Retained Vol	=	0
Unrouted Vol	= -	cu.ft (.000% of Inflow Volume)

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 2
Outflow HYG file = NONE STORED - BASIN G OUT 2

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 570.20 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
570.20	.00	0	.0000	.00	.00	.00
570.30	.05	0	.0001	.00	.05	.05
570.40	.13	1	.0003	.00	.13	.17
570.50	.25	3	.0007	.00	.25	.35
570.60	.38	8	.0013	.00	.38	.63
570.70	.53	15	.0020	.00	.53	1.02
570.80	.70	25	.0029	.00	.70	1.54
570.90	.88	40	.0040	.00	.88	2.22
571.00	1.07	60	.0052	.00	1.07	3.08
571.10	1.28	86	.0066	.00	1.28	4.14
571.20	1.70	118	.0081	.00	1.70	5.62
571.30	1.86	157	.0098	.00	1.86	7.08
571.40	2.01	203	.0117	.00	2.01	8.79
571.50	2.15	259	.0137	.00	2.15	10.77
571.60	2.28	323	.0159	.00	2.28	13.05
571.70	2.41	397	.0182	.00	2.41	15.65
571.80	2.52	482	.0208	.00	2.52	18.59
571.90	2.64	578	.0234	.00	2.64	21.91
572.00	2.74	686	.0263	.00	2.74	25.62
572.10	2.85	807	.0289	.00	2.85	29.74

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 2
Outflow HYG file = NONE STORED - BASIN G OUT 2

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 570.20 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
572.20	2.95	938	.0317	.00	2.95	34.23
572.30	3.04	1083	.0346	.00	3.04	39.13
572.40	3.14	1240	.0376	.00	3.14	44.47
572.50	3.23	1410	.0408	.00	3.23	50.24
572.60	3.32	1595	.0440	.00	3.32	56.49
572.70	3.40	1794	.0474	.00	3.40	63.21
572.80	3.48	2008	.0510	.00	3.48	70.43
572.90	3.57	2238	.0546	.00	3.57	78.18
573.00	3.65	2485	.0584	.00	3.65	86.47
573.10	3.72	2748	.0623	.00	3.72	95.31
573.20	3.80	3028	.0664	.00	3.80	104.73
573.30	3.88	3326	.0705	.00	3.88	114.74
573.40	3.95	3642	.0748	.00	3.95	125.37
573.50	4.03	3978	.0792	.00	4.03	136.62
573.60	4.10	4333	.0838	.00	4.10	148.53
573.70	4.17	4708	.0885	.00	4.17	161.10
573.80	4.24	5104	.0933	.00	4.24	174.36
573.90	4.30	5521	.0982	.00	4.30	188.33
574.00	4.37	5959	.1032	.00	4.37	203.01
574.10	4.44	6416	.1065	.00	4.44	218.31

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 2
Outflow HYG file = NONE STORED - BASIN G OUT 2

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	570.20 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
574.20	4.50	6887	.1098	.00	4.50	234.08
574.30	4.57	7373	.1132	.00	4.57	250.33
574.40	4.63	7874	.1166	.00	4.63	267.08
574.50	4.69	8389	.1201	.00	4.69	284.33
574.60	4.75	8920	.1236	.00	4.75	302.09
574.70	4.81	9466	.1272	.00	4.81	320.36
574.80	4.87	10028	.1308	.00	4.87	339.15
574.90	4.94	10607	.1345	.00	4.94	358.49
575.00	4.99	11201	.1383	.00	4.99	378.34
575.10	5.05	11811	.1420	.00	5.05	398.76
575.20	5.10	12438	.1459	.00	5.10	419.71
575.30	5.16	13082	.1498	.00	5.16	441.22
575.40	5.22	13743	.1537	.00	5.22	463.32
575.50	5.27	14421	.1577	.00	5.27	485.98
575.60	5.32	15117	.1617	.00	5.32	509.23
575.70	5.38	15830	.1658	.00	5.38	533.06
575.80	5.43	16561	.1700	.00	5.43	557.48
575.90	5.49	17311	.1742	.00	5.49	582.53
576.00	5.54	18079	.1784	.00	5.54	608.17
576.10	5.59	18863	.1816	.00	5.59	634.36

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 2
Outflow HYG file = NONE STORED - BASIN G OUT 2

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 570.20 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
576.20	5.64	19661	.1847	.00	5.64	660.99
576.30	5.70	20472	.1879	.00	5.70	688.10
576.40	5.74	21298	.1912	.00	5.74	715.68
576.50	5.80	22138	.1945	.00	5.80	743.73
576.60	5.84	22993	.1978	.00	5.84	772.26
576.70	5.89	23861	.2011	.00	5.89	801.26
576.80	5.95	24744	.2044	.00	5.95	830.74
576.90	5.99	25642	.2078	.00	5.99	860.72
577.00	6.04	26554	.2112	.00	6.04	891.18
577.10	6.09	27482	.2146	.00	6.09	922.17
577.20	6.13	28425	.2181	.00	6.13	953.62
577.30	6.18	29382	.2216	.00	6.18	985.58
577.40	6.23	30355	.2251	.00	6.23	1018.07
577.50	6.28	31343	.2287	.00	6.28	1051.05
577.60	6.32	32347	.2322	.00	6.32	1084.56
577.70	6.36	33367	.2358	.00	6.36	1118.58
577.80	6.42	34401	.2394	.00	6.42	1153.13
577.90	6.46	35453	.2431	.00	6.46	1188.21
578.00	6.50	36519	.2468	.00	6.50	1223.81
578.10	6.55	37602	.2500	.00	6.55	1259.94

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 2
Outflow HYG file = NONE STORED - BASIN G OUT 2

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 570.20 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
578.20	6.60	38697	.2532	.00	6.60	1296.51
578.30	6.63	39807	.2564	.00	6.63	1333.53
578.40	6.67	40931	.2596	.00	6.67	1371.05
578.50	6.72	42069	.2629	.00	6.72	1409.03
578.60	6.77	43222	.2662	.00	6.77	1447.49
578.70	6.81	44388	.2695	.00	6.81	1486.42
578.80	6.84	45569	.2728	.00	6.84	1525.81
578.90	6.88	46765	.2762	.00	6.88	1565.73
579.00	6.93	47975	.2795	.00	6.93	1606.10
579.10	6.97	49201	.2829	.00	6.97	1647.00
579.20	7.01	50440	.2863	.00	7.01	1688.36
579.30	7.05	51695	.2898	.00	7.05	1730.21
579.40	7.09	52965	.2932	.00	7.09	1772.59
579.50	7.13	54249	.2967	.00	7.13	1815.44
579.60	7.17	55550	.3002	.00	7.17	1858.83
579.70	7.22	56865	.3037	.00	7.22	1902.70
579.80	7.26	58195	.3072	.00	7.26	1947.08
579.90	7.30	59541	.3108	.00	7.30	1992.00
580.00	7.34	60902	.3143	.00	7.34	2037.41
580.10	7.38	62280	.3180	.00	7.38	2083.37

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 2
Outflow HYG file = NONE STORED - BASIN G OUT 2

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 570.20 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
580.20	7.42	63673	.3216	.00	7.42	2129.83
580.30	7.46	65081	.3253	.00	7.46	2176.83
580.40	7.50	66507	.3290	.00	7.50	2224.39
580.50	7.54	67948	.3328	.00	7.54	2272.47
580.60	7.57	69406	.3365	.00	7.57	2321.11
580.70	7.60	70880	.3403	.00	7.60	2370.26
580.80	7.64	72370	.3441	.00	7.64	2419.97
580.90	7.68	73877	.3479	.00	7.68	2470.26
581.00	7.73	75401	.3517	.00	7.73	2521.08
581.10	7.77	76942	.3556	.00	7.77	2572.49
581.20	7.79	78499	.3594	.00	7.79	2624.41
581.30	7.83	80072	.3633	.00	7.83	2676.90
581.40	7.87	81664	.3672	.00	7.87	2730.01
581.50	7.91	83272	.3712	.00	7.91	2783.64
581.60	7.94	84898	.3751	.00	7.94	2837.87
581.70	7.98	86541	.3791	.00	7.98	2892.65
581.80	8.01	88200	.3831	.00	8.01	2948.02
581.90	8.06	89879	.3871	.00	8.06	3004.00
582.00	8.08	91573	.3912	.00	8.08	3060.52
582.10	8.13	93287	.3954	.00	8.13	3117.69

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 2
Outflow HYG file = NONE STORED - BASIN G OUT 2

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 570.20 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
582.20	8.16	95018	.3996	.00	8.16	3175.42
582.30	8.20	96767	.4038	.00	8.20	3233.77
582.40	8.23	98536	.4081	.00	8.23	3292.77
582.50	8.26	100323	.4123	.00	8.26	3352.34
582.60	8.30	102129	.4166	.00	8.30	3412.59
582.70	8.34	103953	.4210	.00	8.34	3473.42
582.80	8.37	105795	.4253	.00	8.37	3534.87
582.90	8.41	107658	.4297	.00	8.41	3597.00
583.00	8.44	109539	.4340	.00	8.44	3659.72
583.10	8.47	111440	.4385	.00	8.47	3723.12
583.20	8.51	113359	.4429	.00	8.51	3787.13
583.30	8.54	115297	.4473	.00	8.54	3851.77
583.40	8.57	117256	.4518	.00	8.57	3917.11
583.50	8.61	119234	.4563	.00	8.61	3983.06
583.60	8.64	121232	.4608	.00	8.64	4049.69
583.70	8.68	123249	.4654	.00	8.68	4116.96
583.80	8.70	125285	.4699	.00	8.70	4184.87
583.90	8.74	127343	.4745	.00	8.74	4253.50
584.00	8.78	129420	.4791	.00	8.78	4322.76
584.10	8.80	131518	.4840	.00	8.80	4392.73

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 2
Outflow HYG file = NONE STORED - BASIN G OUT 2

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	570.20 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
584.20	8.84	133636	.4888	.00	8.84	4463.38
584.30	8.87	135776	.4937	.00	8.87	4534.72
584.40	8.91	137938	.4986	.00	8.91	4606.83
584.50	8.93	140120	.5036	.00	8.93	4679.60
584.60	8.97	142325	.5085	.00	8.97	4753.14
584.70	9.01	144551	.5135	.00	9.01	4827.36
584.80	9.03	146798	.5185	.00	9.03	4902.29
584.90	9.07	149069	.5236	.00	9.07	4978.02
585.00	9.10	151360	.5286	.00	9.10	5054.41
585.10	9.14	153674	.5337	.00	9.14	5131.61
585.20	9.16	156010	.5388	.00	9.16	5209.47
585.30	9.20	158368	.5440	.00	9.20	5288.10
585.40	9.22	160749	.5491	.00	9.22	5367.51
585.50	9.26	163152	.5543	.00	9.26	5447.64
585.60	9.28	165578	.5595	.00	9.28	5528.55
585.70	9.32	168026	.5647	.00	9.32	5610.19
585.80	9.35	170497	.5700	.00	9.35	5692.57
585.90	9.39	172992	.5753	.00	9.39	5775.78
586.00	9.41	175509	.5806	.00	9.41	5859.70
586.10	9.45	178050	.5858	.00	9.45	5944.45

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 2
Outflow HYG file = NONE STORED - BASIN G OUT 2

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 570.20 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
586.20	9.47	180613	.5911	.00	9.47	6029.89
586.30	9.51	183199	.5964	.00	9.51	6116.13
586.40	9.53	185810	.6018	.00	9.53	6203.17
586.50	9.56	188442	.6071	.00	9.56	6290.95
586.60	9.60	191099	.6125	.00	9.60	6379.57
586.70	9.62	193779	.6180	.00	9.62	6468.90
586.80	9.66	196482	.6234	.00	9.66	6559.04
586.90	9.68	199210	.6289	.00	9.68	6650.00
587.00	9.72	201961	.6343	.00	9.72	6741.73
587.10	9.74	204737	.6398	.00	9.74	6834.29
587.20	9.77	207535	.6454	.00	9.77	6927.60
587.30	9.81	210358	.6509	.00	9.81	7021.73
587.40	9.83	213207	.6565	.00	9.83	7116.70
587.50	9.87	216078	.6621	.00	9.87	7212.45
587.60	9.89	218975	.6677	.00	9.89	7309.06
587.70	9.92	221896	.6734	.00	9.92	7406.43
587.80	9.95	224841	.6791	.00	9.95	7504.63
587.90	9.98	227812	.6848	.00	9.98	7603.70
588.00	10.02	230807	.6905	.00	10.02	7703.56
588.10	10.04	233828	.6963	.00	10.04	7804.30

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 2
Outflow HYG file = NONE STORED - BASIN G OUT 2

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 570.20 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
588.20	10.06	236873	.7020	.00	10.06	7905.81
588.30	10.10	239943	.7079	.00	10.10	8008.19
588.40	10.12	243040	.7137	.00	10.12	8111.45
588.50	10.15	246161	.7196	.00	10.15	8215.51
588.60	10.19	249310	.7254	.00	10.19	8320.49
588.70	10.21	252482	.7313	.00	10.21	8426.25
588.80	10.24	255680	.7373	.00	10.24	8532.87
588.90	10.27	258905	.7432	.00	10.27	8640.43
589.00	10.29	262155	.7492	.00	10.29	8748.78
589.10	10.32	265433	.7552	.00	10.32	8858.07
589.20	10.36	268735	.7612	.00	10.36	8968.17
589.30	10.38	272063	.7673	.00	10.38	9079.13
589.40	10.40	275420	.7734	.00	10.40	9191.05
589.50	10.44	278801	.7795	.00	10.44	9303.80
589.60	10.46	282211	.7856	.00	10.46	9417.49
589.70	10.48	285646	.7917	.00	10.48	9531.99
589.80	10.52	289107	.7979	.00	10.52	9647.42
589.90	10.54	292598	.8041	.00	10.54	9763.79
590.00	10.57	296113	.8103	.00	10.57	9880.99

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 2
Outflow HYG file = NONE STORED - BASIN G OUT 2

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	570.20 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	23.12 cfs	at	7.00 min
Peak Outflow	=	5.71 cfs	at	25.00 min
Peak Elevation	=	576.33 ft		
Peak Storage	=	20730 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	27737
- Infiltration	=	0
- HYG Vol OUT	=	27737
- Retained Vol	=	0
Unrouted Vol	= -	cu.ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 15
Outflow HYG file = NONE STORED - BASIN G OUT 15

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	570.20 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	37.91 cfs	at	7.00 min
Peak Outflow	=	6.54 cfs	at	26.00 min
Peak Elevation	=	578.08 ft		
Peak Storage	=	37415 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	45503
- Infiltration	=	0
- HYG Vol OUT	=	45503
- Retained Vol	=	0
Unrouted Vol	= -	cu.ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 25
Outflow HYG file = NONE STORED - BASIN G OUT 25

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	570.20 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	46.81 cfs	at	7.00 min
Peak Outflow	=	6.91 cfs	at	26.00 min
Peak Elevation	=	578.97 ft		
Peak Storage	=	47613 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	56179
- Infiltration	=	0
- HYG Vol OUT	=	56179
- Retained Vol	=	0
Unrouted Vol	=	0 cu.ft (.000% of Outflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12500PLUS\12901\Detention\
Inflow HYG file = NONE STORED - BASIN G IN 100
Outflow HYG file = NONE STORED - BASIN G OUT 100

Pond Node Data = BASIN G
Pond Volume Data = BASIN G
Pond Outlet Data = Outlet G

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	570.20 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

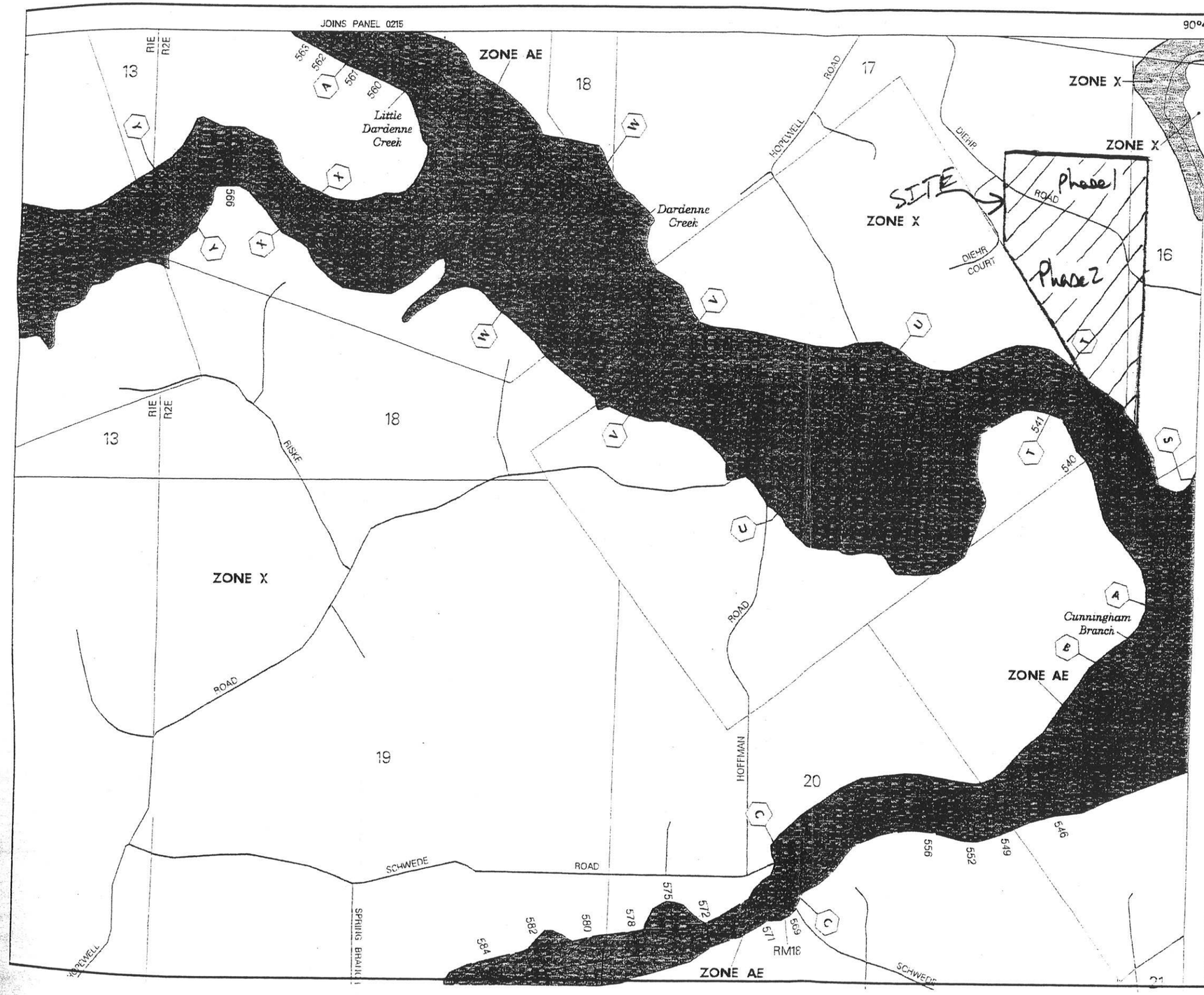
INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	59.88 cfs	at	7.00 min
Peak Outflow	=	7.39 cfs	at	26.00 min
Peak Elevation	=	580.13 ft		
Peak Storage	=	62691 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	71856
- Infiltration	=	0
- HYG Vol OUT	=	71856
- Retained Vol	=	0
Unrouted Vol	=	0 cu.ft (.000% of Outflow Volume)

Index of Starting Page Numbers for ID Names



APPROXIMATE SCALE IN FEET

1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

ST. CHARLES COUNTY, MISSOURI AND INCORPORATED AREAS

PANEL 405 OF 525

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
ST. CHARLES COUNTY, UNINCORPORATED AREAS	290315	0405	E

MAP NUMBER
29183C0405 E

MAP REVISED:
AUGUST 2, 1996

Federal Emergency Management Agency