

PROJ 5711
BAX MEAS - 10/1/02
A.G.

**STORMWATER DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.**

Amber Meadows & Brook Hollow - CITY OF O'FALLON
BAX PROJECT NO. 00-11289
June 3, 2002 Revised: September 20, 2002

INTRODUCTION

The presently undeveloped tract of land lies directly northeast of the intersection of Bryan and Feise Roads in O'Fallon, Missouri. The proposed project will be composed of two single-family subdivisions named Brook Hollow and Amber Meadows. The overall tract encompassing the two subdivisions contains approximately 91.71 acres. This analysis includes only the two single-family subdivisions; the adjoining commercial property is excluded and will require its own detention facilities.

Nearly all of the two proposed subdivisions drain to one discharge channel, that being the creek bisecting the overall property flowing from west to east. The outfall point of the existing creek occurs at the eastern property line where the project adjoins the Annabrook subdivision. At the property line the flow from the creek enters a double 5'H x 9'W box culvert that discharges into Annabrook's detention facility. In order to ensure that storm water detention will be provided for the project, three basins are proposed in the improvements to the property. Two located in the Amber Meadows project and one within the Brook Hollow boundaries. The basins are labeled as Basins 1,2 and 3 and can be seen on the attached Post Developed Drainage Area Map. This report will show the proposed basins working in conjunction to provide enough storm water detention so as the runoff to the double box culvert in Annabrook under post-developed conditions is less than or equal to the runoff under pre-developed conditions.

Two additional outfall points of the property are also analyzed in this report. One is an existing double area inlet near the northern property boundary; more specifically located in Glen Maro Plat Five at the corner of Lot 58. This analysis will show that the post developed flows to the existing double area inlet will be less than or equal to the pre-developed flows to the Glen Maro inlet, the flows are shown on the attached Post Developed Drainage Area Map. The second outfall point is an existing flared end in the Annabrook subdivision. The flowpath from Amber Meadows to the existing flared end travels offsite to the east through a natural drainage way before being picked up by the structure and the resulting storm sewer system, see attached Annabrook Drainage Map. Again the analysis will show that the post developed flow to the existing flared end will be less than or equal to the pre-developed as set in the Annabrook improvement of Miss.

APPROVED

10/10/02

Frank Edwin



A large amount of the runoff draining to Basin 3 is generated from an offsite area to the west that is within commercial zoning but is presently undeveloped. To be conservative with the analysis, the offsite area was excluded for the pre-developed runoff calculations and included as improved (3.85 PI, 15 year) for the post-developed runoff calculations. Therefore the offsite runoff from the commercial area to the basin will be added directly into the allowable runoff at the existing creeks outfall point. This analysis in no shape or form insinuates that Basin 3 will provide detention for any portion of the commercial area; it is strictly for conservative analysis purposes only. All flows are shown on the Pre and Post Developed Drainage Area Maps that are attached to this report.

Each of the basins will be analyzed for the 15 year and 25 year, 20 minute design storms where the 25-year storm is the controlling storm. Each will also be checked for safe passage of the 100 year, 20 minute design storm under low-flow blocked conditions.

GENERAL SITE DATA AND RUNOFF CALCULATIONS

The pre-developed P.I. factors to be used for the analysis are:

15 Year - 20 Minute storm (5% Imperious):	1.87 cfs/acre
25Year - 20 Minute storm (5% Impervious):	2.31 cfs/acre

The post-developed P.I. factors to be used for the analysis are:

R-1 ZONING (SINGLE FAMILY RESIDENTIAL)

15 Year - 20 Minute storm (50% Impervious):	2.64 cfs/acre
25 Year - 20 Minute storm (50% Impervious):	3.26 cfs/acre
100 year - 20 Minute storm (50% Impervious):	4.17 cfs/acre

EXISTING RUNOFF TO OUTFALL POINTS

EXISTING 5'H x 9'W BOX CULVERT

Existing runoff to the box culvert has been determined from the attached Pre-Developed Drainage Area Map. (see attached)

15 Year, 20 Minute storm:	142.77 cfs
25 Year, 20 Minute storm:	176.37 cfs

EXISTING DAI

Existing runoff from the proposed Amber Meadows project area to the existing double area inlet in Glen Maro subdivision has been determined from the Pre-Developed Drainage Area Map. (see attached)

15 Year, 20 Minute storm:	15.80 cfs
25 Year, 20 Minute storm:	19.52 cfs

EXISTING FLARED END

Existing runoff from the proposed Amber Meadows project area to the existing flared end in the Annabrook subdivision has been determined from the Pre-Developed Drainage Area Map. (see attached)

15 Year, 20 Minute storm:	6.73 cfs
25 Year, 20 Minute storm:	8.32 cfs

TIME OF CONCENTRATION

BASIN 1

The time of concentration flow path begins in the middle of Lot 21 of Amber Meadows at the rear of the buildable area. Runoff flows overland for approximately 100 feet to the northwest into the rear yard swale, continuing in the swale along lots 21 and 20 for approximately 180 feet before entering the storm sewer system at area inlet 420. Flow then travels 791.98 feet thru the storm sewer system before entering the Basin 1. Time of concentration is estimated as follows:

T(overland): L = 100 feet
Elevation difference = 1.8 feet
T(overland) = 2.5 minutes: see figure 1

T(swale): L = 180 feet
Elevation difference = 2.6 feet
T(swale) = 2.1 minutes: see figure 1

T(pipe): L = 791.98 feet
Overall Estimated Average Velocity of 7.5 ft./sec.
T(pipe) = 105.60 seconds

T(pipe total) = 105.60 sec. \approx 1.76 Min.
T(overland total) = 4.6 Min
T(Total) = 6.35 Min **Use 6.0 Min.**

BASIN 2

The time of concentration flow path begins in the middle of Lot 103 of Amber Meadows at the rear of the buildable area. Runoff flows overland for approximately 100 feet to the south and east into the rear yard swale, continuing in the swale along lots 103, 104 and 105 for approximately 175 feet before entering the storm sewer system at area inlet 441. Flow then travels 783 feet thru the storm sewer system before entering the Basin 2. Time of concentration is estimated as follows:

T(overland): L = 100 feet
Elevation difference = 3.0 feet
T(overland) = 2.0 minutes: see figure 1

T(swale): L = 175 feet
Elevation difference = 8.4 feet
T(swale) = 1.3 minutes: see figure 1

T(pipe): L = 783 feet
Overall Estimated Average Velocity of 7.5 ft./sec.
T(pipe) = 104.40 seconds

T(pipe total) = 104.40 sec. \approx 1.76 Min.
T(overland total) = 3.3 Min
T(Total) = 5.06 Min **Use 5.0 Min.**

BASIN 3

The time of concentration flow path begins at the common lot line of lots 154 and 153 in Brook Hollow. Runoff flows overland for approximately 100 feet to the south and east into the rear yard swale, continuing in the swale along lots 153, 152, 151, 150 and 149 for approximately 440 feet before entering the storm sewer system at area inlet 215. Flow then travels 1254.38 feet thru the storm sewer system before entering the Basin 3. Time of concentration is estimated as follows:

T(overland): L = 100 feet
Elevation difference = 1.5 feet
T(overland) = 2.8 minutes: see figure 1

T(swale): L = 440 feet
Elevation difference = 8.8 feet
T(swale) = 3.85 minutes: see figure 1

T(pipe): L = 1,254.38 feet
Overall Estimated Average Velocity of 7.5 ft./sec.
T(pipe) = 167.25 seconds

T(pipe total) = 167.25 sec. \approx 2.79 Min.
T(overland total) = 6.65 Min
T(Total) = 9.44 Min **Use 9.0 Min.**

BASIN PEAK INFLOW

Inflows to the basin have been determined from the Post Developed Drainage Area Maps (see attached):

BASIN 1

2 Year, 20 Minute storm:	29.83 cfs
15 Year, 20 Minute storm:	43.03 cfs
25 Year, 20 Minute storm:	53.13 cfs
100 Year, 20 Minute storm:	67.96 cfs

BASIN 2

2 Year, 20 Minute storm:	30.64 cfs
15 Year, 20 Minute storm:	44.20 cfs
25 Year, 20 Minute storm:	54.58 cfs
100 Year, 20 Minute storm:	69.82 cfs

BASIN 3

2 Year, 20 Minute storm:	52.21 cfs
15 Year, 20 Minute storm:	91.54 cfs
25 Year, 20 Minute storm:	113.04 cfs
100 Year, 20 Minute storm:	144.60 cfs

Note: Flows to Basin 3 include those from the adjoining commercially zoned property.

PERMITTED RELEASE RATE

To Existing Double Box Culvert from All Basins

The permitted release rate from the sum of all three basins is controlled by the pre-developed flow to the existing double box culvert. The permitted release rate is calculated by subtracting the post-developed direct runoff to the double box culvert from the pre-developed flow to the double box culvert. Additionally, any offsite flow to any basin must be added to the permitted release rate. This situation arises with Basin 3, which receives a large amount of runoff from the west. See the attached Post Developed Drainage Area Map for direct runoff locations

Permitted Release Rate:

15 Year:	$142.77 - 58.66 + 28.49 = 112.60$ cfs
25 Year:	$167.37 - 72.45 + 35.15 = 130.07$ cfs

To Existing Double Area Inlet in Glen Maro

The permitted release rate to the existing double area inlet following development is controlled by the pre-developed flow from Amber Meadows to the double area inlet. Since this area is a small area with a single outflow point and no detention basin provided, we have decided to break the overall area up into 100% impervious and 5% impervious areas and determining a weighted PI factor for the overall area. This will provide a more accurate flow rate to the double area inlet. Calculations for the weighted PI factor are shown below.

Flows were found to be: See attached Post Developed Drainage Area Map for flows

Permitted Release Rate:

15 Year:	15.80 cfs
25 Year:	19.52 cfs

Weighted PI Calculations

100% impervious areas:

Street Pavement Area:	25,195.57 s.f.
Sidewalk Area:	1,960.04 s.f.
Homes (Assumed 2000 s.f. per lot):	36,000.00 s.f.
Lot 28 has half a home included:	1,000.00 s.f.
Driveways (20'w x 40'l for each lot):	<u>14,400.00 s.f.</u>
Total Area of 100% Imperviousness	78,555.61 ≈ 1.803 ac.

Total area draining to Area Inlet in Glen Maro: 299,551.34 s.f. \approx 6.866 ac.

Remaining area @ 5% imperviousness: $299,551.34 - 78,551.61 = 220,995.73$ s.f.
5.063 ac. @ 5% Impervious

PI Factors used in calculations:

15 Year 5% impervious: 1.87
15 Year 100% impervious: 3.85

25 Year 5% impervious: 2.31
25 Year 100% impervious: 4.75

Calculations

$$15 \text{ Year Weighted PI} = \frac{1.803 \text{ ac.}(3.85) + 5.063 \text{ ac.}(1.87)}{6.866 \text{ ac.}} = 2.39$$

$$25 \text{ Year Weighted PI} = \frac{1.803 \text{ ac.}(4.75) + 5.063 \text{ ac.}(2.31)}{6.866 \text{ ac.}} = 2.95$$

Post-Developed Flow to Double Area Inlet

15 Year Flow: $6.866 \text{ ac.} \times 2.39 = 16.41 \text{ cfs}$

25 Year Flow: $6.866 \text{ ac.} \times 2.95 = 20.25 \text{ cfs}$

Difference Between Post and Pre-Developed Flows

15 Year: **Post 16.41 cfs – Pre 15.80 = 0.61 cfs \leq 1 \checkmark**

25 Year: **Post 20.25 cfs – Pre 19.52 = 0.73 cfs \leq 1 \checkmark**

Both Post-Developed flows are less than an increase of 1 cfs to the existing double area inlet, thereby meeting requirements of the City of O'Fallon.

To Existing Flared End in Annabrook

The permitted release rate to the existing flared end following development is controlled by the design parameters used for the design of the Annabrook improvements. The permitted flow is determined from improvement plans for Annabrook Phase 2. Flows were found to be: See attached Post Developed Drainage Area Map for flows

Permitted Release Rate:

15 Year:	42.77 cfs
25 Year:	52.81 cfs

Proposed Flows:

15 Year:	41.28 cfs
25 Year:	50.97 cfs

STORM ROUTING CALCULATIONS AND RESULTS

As found in the routing calculations attached, the results are as follows:

BASIN 1

20 Minute Storm	Calculated Release Rate	Peak Elevation
15 Year	6.88 cfs	608.55
25 Year	9.93 cfs	609.19
100 Year	23.20 cfs	609.92
100 Year Blocked	28.17 cfs	610.13

BASIN 2

20 Minute Storm	Calculated Release Rate	Peak Elevation
15 Year	21.84 cfs	596.13
25 Year	29.43 cfs	596.64
100 Year	51.49 cfs	597.17
100 Year Blocked	61.47 cfs	597.35

BASIN 3

20 Minute Storm	Calculated Release Rate	Peak Elevation
15 Year	58.99 cfs	599.37
25 Year	76.82 cfs	600.26
100 Year	120.84 cfs	601.09
100 Year Blocked	134.70 cfs	601.62

Total From 3 Basins

20 Minute Storm	Permitted Release Rate		Calculated summation Release Rate	
15 Year	112.60 cfs	>	87.71 cfs	✓
25 Year	130.07 cfs	>	116.18 cfs	✓

130
- 116

14 cfs
ADDITIONAL STORAGE
= 14 X 20 X 60 = 16,800
CF OF ADDITIONAL STORAGE

SUMMARY

BASIN 1

15 Year, 20 Minute H.W.	608.55
25 Year, 20 Minute H.W.	609.19
100 Year, 20 Minute H.W.	609.92
100 Year, 20 Minute H.W.-Low-Flow Blocked	610.13

Standard Double Untrapped Street Inlet	Sill Elevation = 609.75
Precast Concrete (without top)	
Low-Flow Configuration	8"W x 16"H Rectangular Slot
Low-Flow Elevation	604.70
Additional Slot	3' w @ 608.75 Elev.
Top of Berm	611.50

BASIN 2

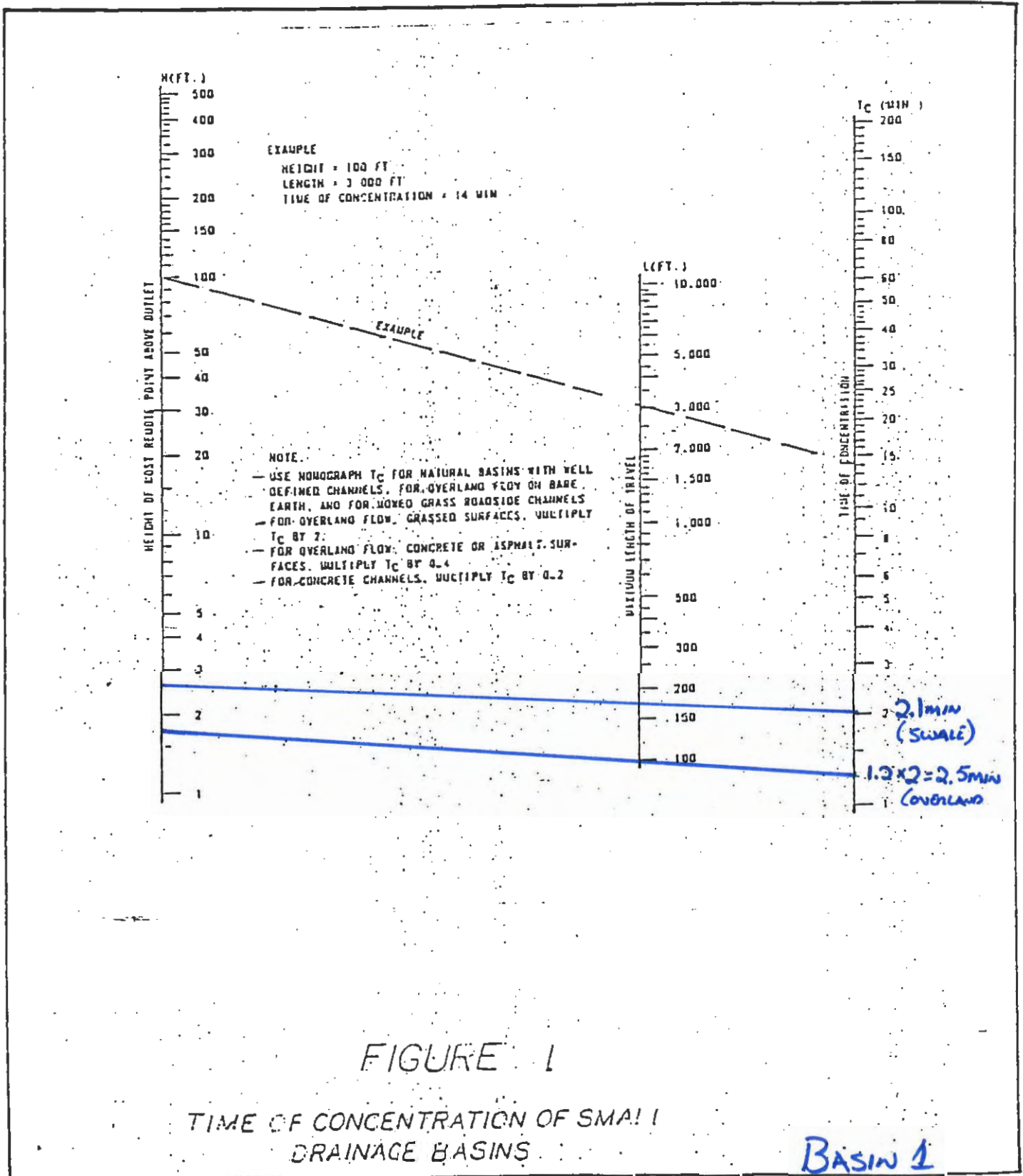
15 Year, 20 Minute H.W.	596.13
25 Year, 20 Minute H.W.	596.64
100 Year, 20 Minute H.W.	597.17
100 Year, 20 Minute H.W.-Low-Flow Blocked	597.35

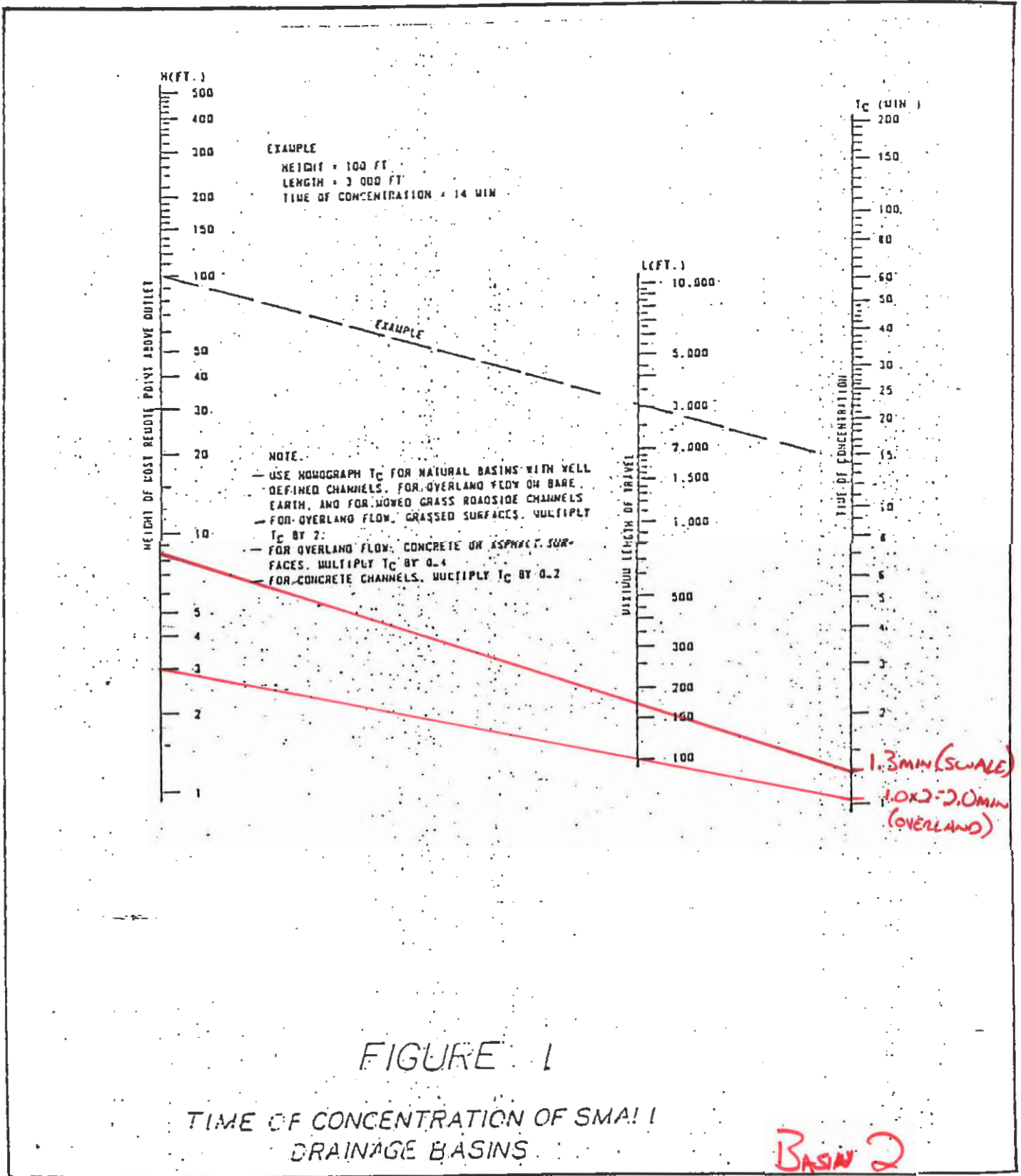
Standard Double Untrapped Street Inlet	Sill Elevation = 596.76
Precast Concrete (without top)	
Low-Flow Configuration	18"W x 20"H Rectangular Slot
Low-Flow Elevation	592.30
Additional Slot	3' w @ 595.26 Elev.
Top of Berm	598.10

BASIN 3

15 Year, 20 Minute H.W.	599.37
25 Year, 20 Minute H.W.	600.26
100 Year, 20 Minute H.W.	601.09
100 Year, 20 Minute H.W.-Low-Flow Blocked	601.62

Standard Double Untrapped Street Inlet	Sill Elevation = 600.41
Precast Concrete (without top)	
Low-Flow Configuration	20"W x 36"H Rectangular Slot
Low-Flow Elevation	592.60
Additional Slot	3' w @ 597.95 Elev.
Top of Berm	602.10



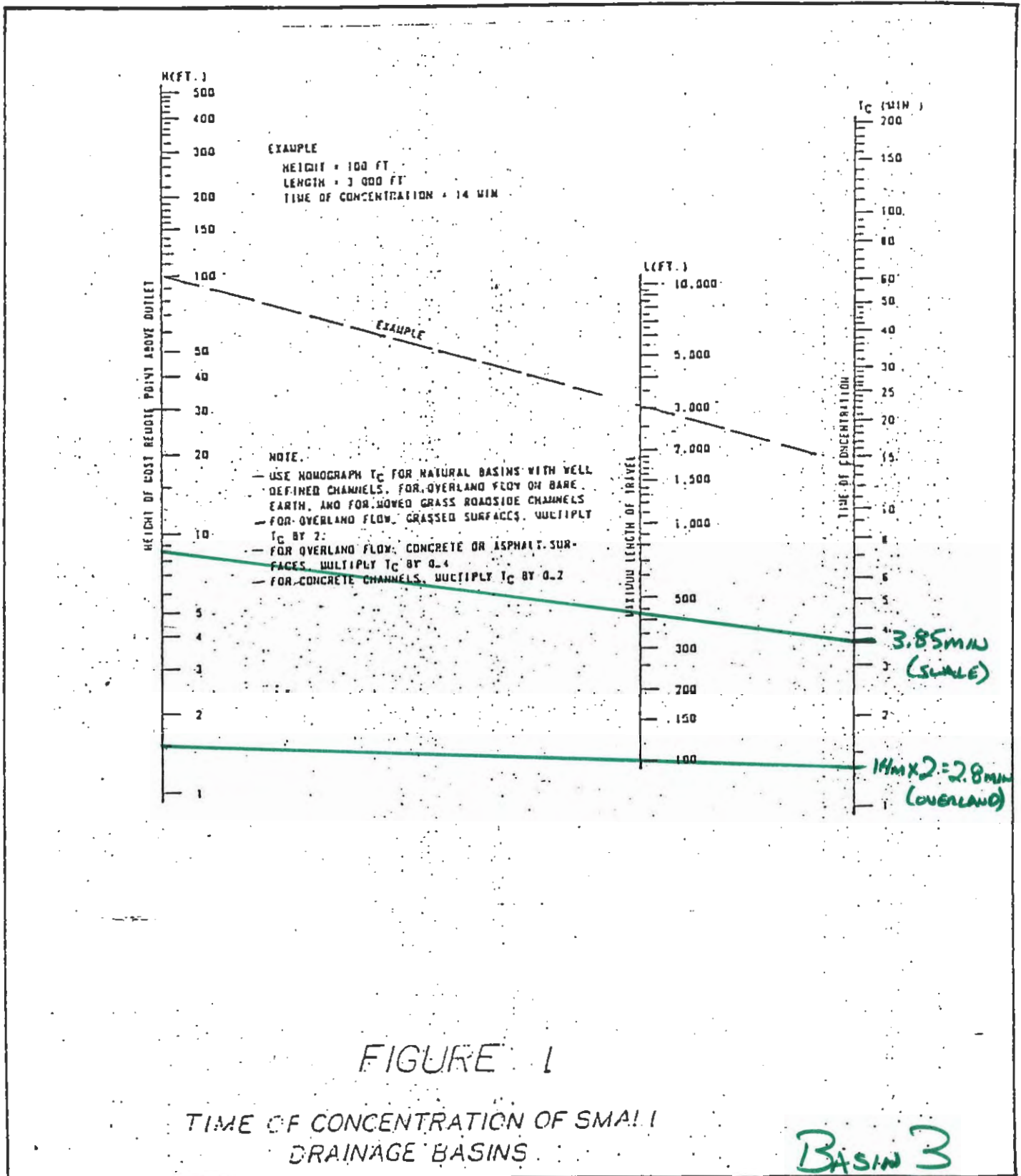




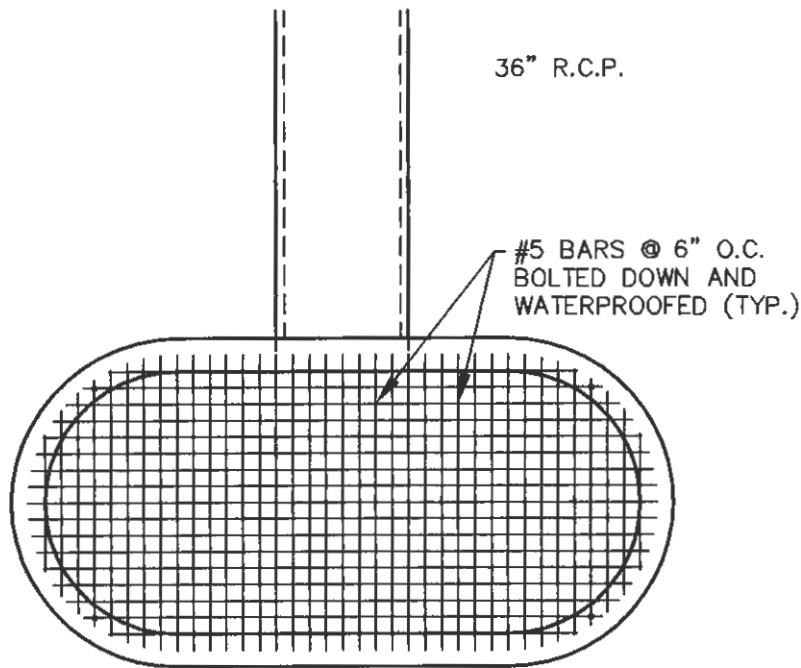
Project: Amber Meadows & Brook Hollow

Date: JUNE 3, 2002 Project No: 00-1289

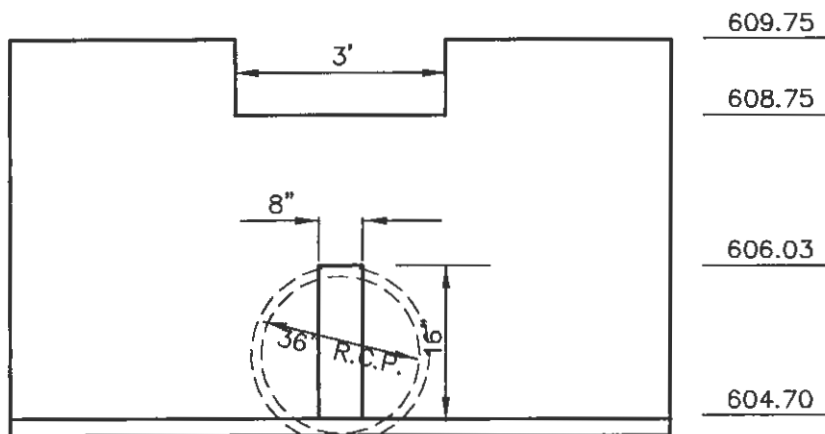
Designed: JD Checked: _____



BASIN 3



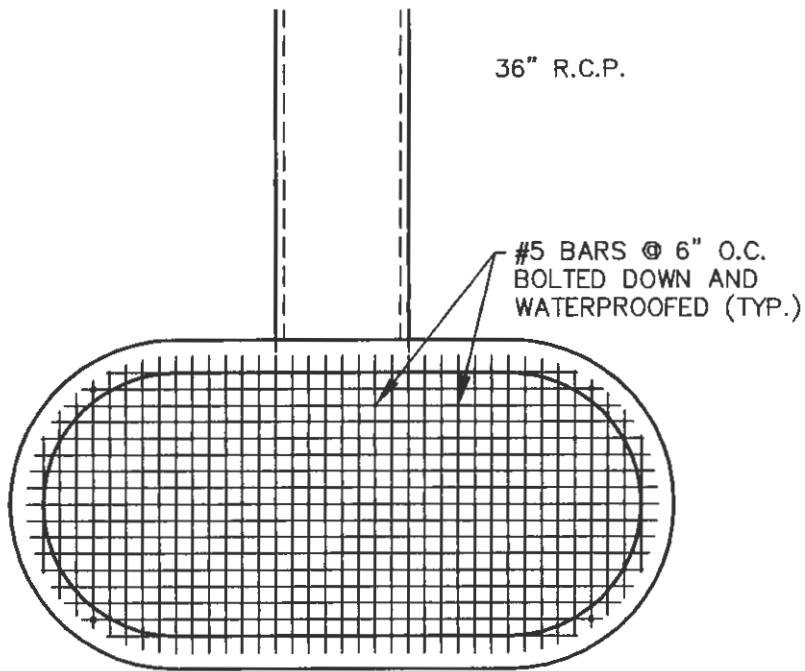
TOP VIEW
N.T.S.



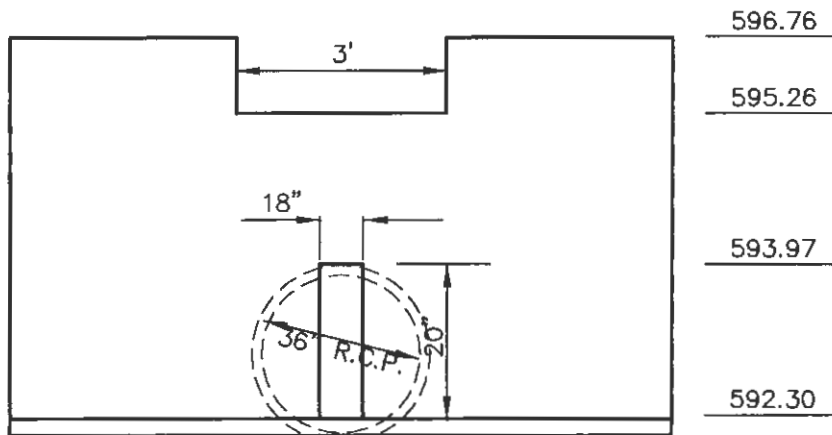
OVERFLOW STRUCTURE #480
N.T.S.

BASIN 1

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 8" w. x 16" h, with a flowline of 604.70 will be used. (See Detention Calculations.)



TOP VIEW
N.T.S.



OVERFLOW STRUCTURE #482
N.T.S.

BASIN 2

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 18" w. x 20" h, with a flowline of 592.30 will be used. (See Detention Calculations.)

POND 7
Routing Calculations for
2, 15 and 100 Year 20 Minute Design Storms
Basin 1

Table of Contents

***** RUNOFF HYDROGRAPHS *****

20 MIN STORMS... A15YR	
Read HYG	1.01
20 MIN STORMS... B25YR	
Read HYG	1.02
20 MIN STORMS... C100YR	
Read HYG	1.03

***** POND VOLUMES *****

BASIN 1..... Vol: Planimeter	2.01
------------------------------------	------

***** OUTLET STRUCTURES *****

BASIN 1 OS..... Outlet Input Data	3.01
Composite Rating Curve	3.07

***** POND ROUTING *****

BASIN 1	OUT A15YR	
	Pond Routing Summary	4.01
	Pond Routed HYG (total out)	4.02
BASIN 1	OUT B25YR	
	Pond Routing Summary	4.04
	Pond Routed HYG (total out)	4.05
BASIN 1	OUT C100YR	
	Pond Routing Summary	4.07
	Pond Routed HYG (total out)	4.08

Type.... Read HYG
 Name.... 20 MIN STORMS Tag: A15YR
 File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
 Title... 15, 25 and 100 Year 20 Minute Design Storms
 Storm... Tag: A15YR

Page 1.01
 Event: A15YR

HYG file = C:\HAESTAD\PPKW\SAMPLE\AM1-15.HYG
 HYG ID = 15 Yr Storm
 HYG Tag = 15YR

 Peak Discharge = 43.03 cfs
 Time to Peak = 6.00 min
 HYG Volume = 51734 cu.ft

HYDROGRAPH ORDINATES (cfs)
 Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	7.17	14.34	21.51	28.68
5.00	35.85	43.03	43.03	43.03	43.03
10.00	43.03	43.03	43.03	43.03	43.03
15.00	43.03	43.03	43.03	43.03	43.03
20.00	43.03	35.85	28.68	21.51	14.34
25.00	8.85	.00	.00	.00	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00				

Type.... Read HYG
 Name.... 20 MIN STORMS
 File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
 Storm... Tag: B25YR

HYG file = C:\HAESTAD\PPKW\SAMPLE\AM1-25.HYG
 HYG ID = 25 Year Storm
 HYG Tag = 25YR

 Peak Discharge = 53.13 cfs
 Time to Peak = 6.00 min
 HYG Volume = 63752 cu.ft

HYDROGRAPH ORDINATES (cfs)
 Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	8.85	17.71	26.56	35.41
5.00	44.26	53.13	53.13	53.13	53.13
10.00	53.13	53.13	53.13	53.13	53.13
15.00	53.13	53.13	53.13	53.13	53.13
20.00	53.13	44.26	35.41	26.56	17.71
25.00	8.85	.00	.00	.00	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00				

Type.... Read HYG
 Name.... 20 MIN STORMS
 File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
 Storm... Tag: C100YR

HYG file = C:\HAESTAD\PPKW\SAMPLE\AM1-100.HYG
 HYG ID = 100 Year Storm
 HYG Tag = 100YR

 Peak Discharge = 67.96 cfs
 Time to Peak = 6.00 min
 HYG Volume = 81558 cu.ft

HYDROGRAPH ORDINATES (cfs)
 Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	11.33	22.66	33.99	45.32
5.00	56.65	67.96	67.96	67.96	67.96
10.00	67.96	67.96	67.96	67.96	67.96
15.00	67.96	67.96	67.96	67.96	67.96
20.00	67.96	56.65	45.32	33.99	22.66
25.00	11.33	.00	.00	.00	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00				

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)
604.70	4.000	.0001	.0000	0	0
605.00	3113.000	.0715	.0741	323	323
606.00	12485.000	.2866	.5012	7277	7600
608.00	15719.000	.3609	.9691	28142	35742
610.00	19192.000	.4406	1.2002	34853	70596
611.00	21013.000	.4824	1.3840	20096	90691

POND VOLUME EQUATIONS

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

$$\text{Volume} = (1/3) * (\text{EL2}-\text{EL1}) * (\text{Area1} + \text{Area2} + \text{sq.rt.}(\text{Area1}*\text{Area2}))$$

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

File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Title... Basin 1 05

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 604.70 ft
Increment = .30 ft
Max. Elev.= 610.00 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
Stand Pipe	AI	--->	CV	609.750	610.000
Weir-Rectangular	SL	--->	CV	609.083	610.000
Orifice-Area	LF	--->	CV	606.030	610.000
Weir-Rectangular	LW	--->	CV	604.700	606.030
Culvert-Circular	CV	--->	TW	604.700	610.000
TW SETUP, DS Channel					

OUTLET STRUCTURE INPUT DATA

Structure ID = AI
Structure Type = Stand Pipe

of Openings = 1
Invert Elev. = 609.75 ft
Diameter = 5.9715 ft
Orifice Area = 28.0064 sq.ft
Orifice Coeff. = .600
Weir Length = 18.76 ft
Weir Coeff. = 3.000
K, Submerged = .000
K, Reverse = 1.000
Kb,Barrel = .000000 (per ft of full flow)
Barrel Length = .00 ft
Mannings n = .0000

Structure ID = SL
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 608.75 ft
Weir Length = 3.00 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

Structure ID = LF
Structure Type = Orifice-Area

of Openings = 1
Invert Elev. = 604.70 ft
Area = .8889 sq.ft
Top of Orifice = 606.03 ft
Datum Elev. = 605.37 ft
Orifice Coeff. = .600

Type.... Outlet Input Data
Name.... BASIN 1 OS

Page 3.03

File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Title... Basin 1 OS

OUTLET STRUCTURE INPUT DATA

Structure ID = LW
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 604.70 ft
Weir Length = .67 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

S/N: f21101d06a84 Bax Engineering

PondPack Ver: 7.0 (325)

Compute Time: 13:09:57

Date: 05-29-2002

Type... Outlet Input Data
Name... BASIN 1 05

Page 3.04

File... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Title... Basin 1 05

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels = 1
Barrel Diameter = 3.0000 ft
Upstream Invert = 604.70 ft
Dnstream Invert = 604.14 ft
Horiz. Length = 55.76 ft
Barrel Length = 55.76 ft
Barrel Slope = .01004 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130
Ke = .5000 (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 = .0078
Inlet Control M = 2.0000
Inlet Control c = .02920
Inlet Control Y = .7400
T1 ratio (HW/D) = 1.131
T2 ratio (HW/D) = 1.202
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 = 608.09 ft ---> Flow = 42.85 cfs
At T2 Elev = 608.31 ft ---> Flow = 48.97 cfs

S/N: f21101d06a84 Bax Engineering
PondPack Ver: 7.0 (325)

Compute Time: 13:09:57

Date: 05-29-2002

Type.... Outlet Input Data
Name.... OS

Page 3.05

File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
Title... Overflow Structure for Basin 2

OUTLET STRUCTURE INPUT DATA

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

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

CONVERGENCE TOLERANCES...
Maximum Iterations= 100
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

Type.... Outlet Input Data
Name.... 05

File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
Title... Overflow Structure for Basin 2

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

COMPOSITE CHANNEL SECTION

Elev.Constant= .00 ft

GROUND ELEVATION POINTS
Cross Section ID: Downstream Creek
Lowest Elev. = 592.00 ft

X Distance (ft)	Y Elev (ft)	Y+Constant (ft)
.00	593.60	593.60
10.00	592.91	592.91
14.91	592.06	592.06
18.74	592.00	592.00
24.01	592.19	592.19
27.34	593.62	593.62

THE INFORMATION BELOW WAS USED TO COMPUTE
FLOW RATE SEPARATELY FOR EACH SEGMENT.

Cross Section ID: Downstream Creek

CROSS SECTION SUBDIVIDED INTO DIFFERENT SEGMENTS

Segment	X Left (ft)	X Right (ft)	Ground n	Descr.
1	.00	14.91	0.04500	Left Overbank
2	14.91	24.01	0.04000	Main Channel
3	24.01	27.34	0.04500	Right Overbank

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

CUMULATIVE HGL CONVERGENCE ERROR .010 (+/- ft)
 FLOW PATH: Elev= 594.1; Branch: LF-CV-TW

* Max. convergence errors shown may also occur for
 flow paths other than the ones listed above.

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
592.30	.00	592.00	.000	(no Q: AI,SL,LF,LW,CV)
592.60	.00	592.00	.000	(no Q: AI,SL,LF,LW,CV)
592.90	1.22	592.19	.001	LW,CV (no Q: AI,SL,LF)
593.20	2.39	592.24	.007	LW,CV (no Q: AI,SL,LF)
593.50	3.90	592.30	.009	LW,CV (no Q: AI,SL,LF)
593.80	5.60	592.36	.008	LW,CV (no Q: AI,SL,LF)
594.10	8.07	592.43	.010	LF,CV (no Q: AI,SL,LW)
594.40	9.42	592.46	.009	LF,CV (no Q: AI,SL,LW)
594.70	10.84	592.49	.008	LF,CV (no Q: AI,SL,LW)
595.00	12.05	592.52	.005	LF,CV (no Q: AI,SL,LW)
595.26	13.13	592.54	.006	LF,CV (no Q: AI,SL,LW)
595.30	13.34	592.54	.006	SL,LF,CV (no Q: AI,LW)
595.60	15.67	592.59	.009	SL,LF,CV (no Q: AI,LW)
595.90	18.91	592.65	.006	SL,LF,CV (no Q: AI,LW)
596.20	22.78	592.71	.005	SL,LF,CV (no Q: AI,LW)
596.50	27.17	592.78	.005	SL,LF,CV (no Q: AI,LW)
596.76	31.34	592.84	.007	SL,LF,CV (no Q: AI,LW)
596.80	32.55	592.85	.004	AI,SL,LF,CV (no Q: LW)
597.10	47.21	593.03	.009	AI,SL,LF,CV (no Q: LW)
597.40	65.80	593.22	.000	AI,CV (no Q: SL,LF,LW)
597.70	68.66	593.25	.000	AI,CV (no Q: SL,LF,LW)
598.00	74.39	593.30	.000	AI,CV (no Q: SL,LF,LW)

Type.... Pond Routing Summary Page 4.01
 Name.... BASIN 2 OUT Tag: A15YR Event: A15YR
 File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
 Storm... A15YR Tag: A15YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = E:\PONDPACK\11289\POND 7 FILES\
 Inflow HYG file = NONE STORED - BASIN 2 IN A15YR
 Outflow HYG file = NONE STORED - BASIN 2 OUT A15YR

Pond Node Data = BASIN 2
 Pond Volume Data = Basin 2
 Pond Outlet Data = OS

No Infiltration

INITIAL CONDITIONS

```
-----
Starting WS Elev = 592.30 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 = 44.20 cfs at 5.00 min
Peak Outflow = 21.84 cfs at 23.00 min
-----
Peak Elevation = 596.13 ft
Peak Storage = 35623 cu.ft
=====
```

MASS BALANCE (cu.ft)

```
-----
+ Initial Vol = 0
+ HYG Vol IN = 53040
- Infiltration = 0
- HYG Vol OUT = 52982
- Retained Vol = 58
-----
Unrouted Vol = - cu.ft (.001% of Inflow Volume)
```

Type... Pond Routed HYG (total out) Page 4.02
 Name... BASIN 2 OUT Tag: A15YR Event: A15YR
 File... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOW5 BASIN 2.PPW
 Storm... A15YR Tag: A15YR

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
 HYG ID = BASIN 2 OUT
 HYG Tag = A15YR

 Peak Discharge = 21.84 cfs
 Time to Peak = 23.00 min
 HYG Volume = 52982 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	.68	2.00	3.28	4.63
5.00	6.15	7.82	8.74	9.52	10.29
10.00	11.01	11.62	12.22	12.81	13.49
15.00	14.51	15.49	16.69	17.90	19.08
20.00	20.36	21.34	21.83	21.84	21.41
25.00	20.55	19.50	18.57	17.75	16.97
30.00	16.22	15.55	15.03	14.54	14.06
35.00	13.60	13.21	12.95	12.71	12.48
40.00	12.25	12.02	11.80	11.59	11.37
45.00	11.16	10.96	10.74	10.50	10.27
50.00	10.04	9.81	9.59	9.38	9.17
55.00	8.97	8.78	8.59	8.40	8.21
60.00	8.00	7.64	7.31	6.99	6.68
65.00	6.39	6.11	5.84	5.58	5.35
70.00	5.12	4.90	4.69	4.49	4.29
75.00	4.11	3.93	3.72	3.50	3.29
80.00	3.10	2.92	2.75	2.59	2.44
85.00	2.26	2.08	1.92	1.76	1.62
90.00	1.50	1.38	1.27	1.09	.87
95.00	.70	.57	.46	.37	.29
100.00	.24	.19	.15	.12	.10
105.00	.08	.06	.05	.04	.03
110.00	.03	.02	.02	.01	.01
115.00	.01	.01	.01	.00	.00
120.00	.00	.00			

Type.... Pond Routing Summary Page 4.03
 Name.... BASIN 2 OUT Tag: B25YR Event: B25YR
 File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
 Storm... B25YR Tag: B25YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = E:\PONDPACK\11289\POND 7 FILES\
 Inflow HYG file = NONE STORED - BASIN 2 IN B25YR
 Outflow HYG file = NONE STORED - BASIN 2 OUT B25YR

Pond Node Data = BASIN 2
 Pond Volume Data = Basin 2
 Pond Outlet Data = 05

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 592.30 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 = 54.58 cfs at 5.00 min
 Peak Outflow = 29.43 cfs at 22.00 min

 Peak Elevation = 596.64 ft
 Peak Storage = 43532 cu.ft
 =====

MASS BALANCE (cu.ft)

 + Initial Vol = 0
 + HYG Vol IN = 65497
 - Infiltration = 0
 - HYG Vol OUT = 65439
 - Retained Vol = 58

 Unrouted Vol = - cu.ft (.001% of Inflow Volume)

Type.... Pond Routing Summary Page 4.05
 Name.... BASIN 2 OUT Tag: C100YR Event: C100YR
 File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
 Storm... C100YR Tag: C100YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = E:\PONDPACK\11289\POND 7 FILES\
 Inflow HYG file = NONE STORED - BASIN 2 IN C100YR
 Outflow HYG file = NONE STORED - BASIN 2 OUT C100YR

Pond Node Data = BASIN 2
 Pond Volume Data = Basin 2
 Pond Outlet Data = 05

No Infiltration

INITIAL CONDITIONS

```
-----
Starting WS Elev = 592.30 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 = 69.82 cfs at 5.00 min
Peak Outflow = 51.49 cfs at 21.00 min
-----
Peak Elevation = 597.17 ft
Peak Storage = 52105 cu.ft
=====
```

MASS BALANCE (cu.ft)

```
-----
+ Initial Vol = 0
+ HYG Vol IN = 83783
- Infiltration = 0
- HYG Vol OUT = 83725
- Retained Vol = 58
-----
Unrouted Vol = - cu.ft (.000% of Inflow Volume)
```


Type.... Pond Routed HYG (total out) Page 4.04
 Name.... BASIN 2 OUT Tag: B25YR Event: B25YR
 File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
 Storm... B25YR Tag: B25YR

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
 HYG ID = BA5IN 2 OUT
 HYG Tag = B25YR

 Peak Discharge = 29.43 cfs
 Time to Peak = 22.00 min
 HYG Volume = 65439 cu.ft

HYDROGRAPH ORDINATES (cfs)
 Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	.88	2.31	3.80	5.30
5.00	7.21	8.68	9.69	10.69	11.53
10.00	12.32	13.09	14.34	15.66	17.38
15.00	19.03	20.83	22.54	24.30	25.98
20.00	27.60	28.87	29.43	29.30	28.54
25.00	27.17	25.66	24.23	22.88	21.72
30.00	20.61	19.57	18.62	17.80	17.02
35.00	16.27	15.58	15.07	14.57	14.09
40.00	13.62	13.23	12.97	12.73	12.49
45.00	12.26	12.04	11.82	11.60	11.39
50.00	11.18	10.97	10.76	10.52	10.28
55.00	10.05	9.83	9.61	9.39	9.19
60.00	8.99	8.79	8.60	8.41	8.23
65.00	8.02	7.67	7.33	7.01	6.70
70.00	6.41	6.13	5.86	5.60	5.36
75.00	5.13	4.91	4.70	4.50	4.31
80.00	4.12	3.95	3.73	3.51	3.31
85.00	3.11	2.93	2.76	2.60	2.45
90.00	2.27	2.09	1.93	1.77	1.63
95.00	1.50	1.38	1.27	1.10	.89
100.00	.71	.57	.46	.37	.30
105.00	.24	.19	.16	.12	.10
110.00	.08	.06	.05	.04	.03
115.00	.03	.02	.02	.01	.01
120.00	.01	.01	.01	.00	.00
125.00	.00	.00			

Type.... Pond Routed HYG (total out) Page 4.06
 Name.... BASIN 2 OUT Tag: C100YR Event: C100YR
 File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
 Storm... C100YR Tag: C100YR

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
 HYG ID = BASIN 2 OUT
 HYG Tag = C100YR

 Peak Discharge = 51.49 cfs
 Time to Peak = 21.00 min
 HYG Volume = 83725 cu.ft

HYDROGRAPH ORDINATES (cfs)
 Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	1.18	2.67	4.38	6.30
5.00	8.43	9.78	11.07	12.15	13.23
10.00	15.04	17.24	19.66	22.20	24.79
15.00	27.31	29.82	33.06	39.12	44.19
20.00	48.67	51.49	50.97	47.77	43.25
25.00	37.26	31.62	29.62	27.87	26.28
30.00	24.81	23.43	22.19	21.06	20.00
35.00	18.98	18.14	17.34	16.57	15.84
40.00	15.28	14.77	14.29	13.82	13.36
45.00	13.07	12.83	12.59	12.36	12.13
50.00	11.91	11.69	11.48	11.26	11.06
55.00	10.85	10.61	10.38	10.15	9.92
60.00	9.70	9.48	9.27	9.07	8.87
65.00	8.68	8.49	8.30	8.12	7.81
70.00	7.47	7.14	6.83	6.53	6.24
75.00	5.97	5.71	5.46	5.23	5.00
80.00	4.79	4.58	4.39	4.20	4.02
85.00	3.83	3.60	3.39	3.19	3.01
90.00	2.83	2.66	2.51	2.35	2.16
95.00	1.99	1.84	1.69	1.56	1.43
100.00	1.32	1.20	.97	.78	.63
105.00	.50	.41	.33	.26	.21
110.00	.17	.14	.11	.09	.07
115.00	.06	.05	.04	.03	.02
120.00	.02	.02	.01	.01	.01
125.00	.01	.01	.00	.00	.00

Index of Starting Page Numbers for ID Names

----- 2 -----
20 MIN STORMS A15YR... 1.01, 1.02,
1.03

----- B -----
BASIN 2... 2.01, 4.01, 4.02, 4.03,
4.04, 4.05, 4.06

----- 0 -----
05... 3.01, 3.07

POND 7
Routing Calculations for
100 Year 20 Minute Design Storm
With Low Flow 100% Blocked

Basin 2

Table of Contents

```
***** OUTLET STRUCTURES *****
OS LOW FLOW BLKD Outlet Input Data ..... 1.01
                   Composite Rating Curve ..... 1.06
***** POND ROUTING *****

BASIN 2      OUT C100YR
              Pond Routing Summary ..... 2.01
              Pond Routed HYG (total out) ..... 2.02
```

Type... Outlet Input Data
Name... OS LOW FLOW BLKD

File... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
Title... Overflow Structure for Basin 2

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 592.30 ft
Increment = .30 ft
Max. Elev.= 598.00 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
Stand Pipe	AI	--->	CV	596.760	598.000
Weir-Rectangular	SL	--->	CV	595.260	598.000
Culvert-Circular	CV	--->	TW	592.280	598.000
TW SETUP, DS Channel					

OUTLET STRUCTURE INPUT DATA

Structure ID = AI
Structure Type = Stand Pipe

of Openings = 1
Invert Elev. = 596.76 ft
Diameter = 8.9572 ft
Orifice Area = 63.0136 sq.ft
Orifice Coeff. = .600
Weir Length = 28.14 ft
Weir Coeff. = 3.000
K, Submerged = .000
K, Reverse = 1.000
Kb, Barrel = .000000 (per ft of full flow)
Barrel Length = .00 ft
Mannings n = .0000

Structure ID = SL
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 595.26 ft
Weir Length = 3.00 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

Type... Outlet Input Data
Name... OS LOW FLOW BLKD

Page 1.03

File... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
Title... Overflow Structure for Basin 2

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels = 1
Barrel Diameter = 3.0000 ft
Upstream Invert = 592.28 ft
Dnstream Invert = 592.08 ft
Horiz. Length = 41.22 ft
Barrel Length = 41.22 ft
Barrel Slope = .00485 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130
Ke = .5000 (forward entrance loss)
Kb = .007228 (per ft of full flow)
Kr = .5000 (reverse entrance loss)
HW Convergence = .200 +/- ft

INLET CONTROL DATA...

Equation form = 1
Inlet Control K = .0078
Inlet Control M = 2.0000
Inlet Control c = .02920
Inlet Control Y = .7400
T1 ratio (HW/D) = 1.133
T2 ratio (HW/D) = 1.205
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 = 595.68 ft ---> Flow = 42.85 cfs
At T2 Elev = 595.89 ft ---> Flow = 48.97 cfs

S/N: f21101d06a84 Bax Engineering

PondPack Ver: 7.0 (325)

Compute Time: 08:30:25

Date: 09-20-2002

Type.... Outlet Input Data
Name.... OS LOW FLOW BLKD

Page 1.04

File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
Title... Overflow Structure for Basin 2

OUTLET STRUCTURE INPUT DATA

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

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

CONVERGENCE TOLERANCES...
Maximum Iterations= 100
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

Type.... Outlet Input Data
Name.... OS LOW FLOW BLKD

File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
Title... Overflow Structure for Basin 2

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

COMPOSITE CHANNEL SECTION

Elev.Constant= .00 ft

GROUND ELEVATION POINTS
Cross Section ID: Downstream Creek
Lowest Elev. = 592.00 ft

X Distance (ft)	Y Elev (ft)	Y+Constant (ft)
.00	593.60	593.60
10.00	592.91	592.91
14.91	592.06	592.06
18.74	592.00	592.00
24.01	592.19	592.19
27.34	593.62	593.62

THE INFORMATION BELOW WAS USED TO COMPUTE
FLOW RATE SEPARATELY FOR EACH SEGMENT.

Cross Section ID: Downstream Creek

CROSS SECTION SUBDIVIDED INTO DIFFERENT SEGMENTS

Segment	X Left (ft)	X Right (ft)	Ground n	Descr.
1	.00	14.91	0.04500	Left Overbank
2	14.91	24.01	0.04000	Main Channel
3	24.01	27.34	0.04500	Right Overbank

File... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
 Title... Overflow Structure for Basin 2

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

CUMULATIVE HGL CONVERGENCE ERROR .003 (+/- ft)
 FLOW PATH: Elev= 597.1; Branch: SL-CV-TW

* Max. convergence errors shown may also occur for
 flow paths other than the ones listed above.

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
592.30	.00	592.00	.000	(no Q: AI,SL,CV)
592.60	.00	592.00	.000	(no Q: AI,SL,CV)
592.90	.00	592.00	.000	(no Q: AI,SL,CV)
593.20	.00	592.00	.000	(no Q: AI,SL,CV)
593.50	.00	592.00	.000	(no Q: AI,SL,CV)
593.80	.00	592.00	.000	(no Q: AI,SL,CV)
594.10	.00	592.00	.000	(no Q: AI,SL,CV)
594.40	.00	592.00	.000	(no Q: AI,SL,CV)
594.70	.00	592.00	.000	(no Q: AI,SL,CV)
595.00	.00	592.00	.000	(no Q: AI,SL,CV)
595.26	.00	592.00	.000	(no Q: AI,SL,CV)
595.30	.07	592.05	.000	5L,CV (no Q: AI)
595.60	1.78	592.22	.000	5L,CV (no Q: AI)
595.90	4.61	592.33	.000	SL,CV (no Q: AI)
596.20	8.20	592.43	.000	SL,CV (no Q: AI)
596.50	12.43	592.53	.000	SL,CV (no Q: AI)
596.76	16.53	592.61	.000	SL,CV (no Q: AI)
596.80	17.87	592.63	.000	AI,SL,CV
597.10	38.30	592.93	.003	AI,SL,CV
597.40	65.80	593.22	.000	AI,CV (no Q: 5L)
597.70	68.66	593.25	.000	AI,CV (no Q: SL)
598.00	74.39	593.30	.000	AI,CV (no Q: SL)

Type... Pond Routing Summary Page 2.01
 Name... BASIN 2 OUT Tag: C100YR Event: C100YR
 File... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
 Storm... C100YR Tag: C100YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = E:\PONDPACK\11289\POND 7 FILES\
 Inflow HYG file = NONE STORED - BASIN 2 IN C100YR
 Outflow HYG file = NONE STORED - BASIN 2 OUT C100YR

Pond Node Data = BASIN 2
 Pond Volume Data = Basin 2
 Pond Outlet Data = OS LOW FLOW BLKD

No Infiltration

INITIAL CONDITIONS

```

-----
Starting WS Elev = 592.30 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 = 69.82 cfs at 5.00 min
Peak Outflow = 61.47 cfs at 21.00 min
-----
Peak Elevation = 597.35 ft
Peak Storage = 55194 cu.ft
=====
  
```

MASS BALANCE (cu.ft)

```

-----
+ Initial Vol = 0
+ HYG Vol IN = 83783
- Infiltration = 0
- HYG Vol OUT = 60545
- Retained Vol = 23237
-----
Unrouted Vol = - cu.ft (.000% of Inflow Volume)
  
```

Type... Pond Routed HYG (total out) Page 2.02
 Name... BASIN 2 OUT Tag: C100YR Event: C100YR
 File... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
 Storm... C100YR Tag: C100YR

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
 HYG ID = BASIN 2 OUT
 HYG Tag = C100YR

 Peak Discharge = 61.47 cfs
 Time to Peak = 21.00 min
 HYG Volume = 60545 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	.00	.00	.00	.00
5.00	.00	.00	.00	.00	1.47
10.00	3.92	6.88	10.07	13.35	16.75
15.00	27.58	36.98	45.87	52.61	57.45
20.00	60.93	61.47	57.92	51.45	42.87
25.00	33.93	26.37	20.50	16.85	15.71
30.00	14.79	13.93	13.12	12.36	11.70
35.00	11.07	10.48	9.91	9.38	8.88
40.00	8.40	7.98	7.61	7.25	6.90
45.00	6.58	6.27	5.97	5.69	5.42
50.00	5.17	4.92	4.69	4.49	4.32
55.00	4.15	3.99	3.84	3.69	3.55
60.00	3.41	3.28	3.16	3.04	2.92
65.00	2.81	2.70	2.59	2.49	2.40
70.00	2.31	2.22	2.13	2.05	1.97
75.00	1.90	1.82	1.76	1.72	1.68
80.00	1.64	1.60	1.56	1.52	1.49
85.00	1.45	1.41	1.38	1.35	1.31
90.00	1.28	1.25	1.22	1.19	1.16
95.00	1.13	1.11	1.08	1.05	1.03
100.00	1.00	.98	.95	.93	.91
105.00	.89	.86	.84	.82	.80
110.00	.78	.76	.75	.73	.71
115.00	.69	.68	.66	.64	.63
120.00	.61	.60	.58	.57	.56
125.00	.54	.53	.52	.50	.49
130.00	.48	.47	.46	.45	.43
135.00	.42	.41	.40	.39	.38
140.00	.37	.37	.36	.35	.34
145.00	.33	.32	.32	.31	.30
150.00	.29	.29	.28	.27	.27
155.00	.26	.25	.25	.24	.24
160.00	.23	.22	.22	.21	.21

HYDROGRAPH ORDINATES (cfs)
 Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
165.00	.20	.20	.19	.19	.18
170.00	.18	.18	.17	.17	.16
175.00	.16	.15	.15	.15	.14
180.00	.14	.14	.13	.13	.13
185.00	.12	.12	.12	.12	.11
190.00	.11	.11	.10	.10	.10
195.00	.10	.09	.09	.09	.09
200.00	.09	.08	.08	.08	.08
205.00	.08	.07	.07	.07	.07
210.00	.07	.07	.07	.07	.07
215.00	.07	.07	.07	.07	.07
220.00	.07	.06	.06	.06	.06
225.00	.06	.06	.06	.06	.06
230.00	.06	.06	.06	.06	.06
235.00	.06	.06	.06	.06	.06
240.00	.06	.06	.05	.05	.05
245.00	.05	.05	.05	.05	.05
250.00	.05	.05	.05	.05	.05
255.00	.05	.05	.05	.05	.05
260.00	.05	.05	.05	.05	.05
265.00	.05	.05	.04	.04	.04
270.00	.04	.04	.04	.04	.04
275.00	.04	.04	.04	.04	.04
280.00	.04	.04	.04	.04	.04
285.00	.04	.04	.04	.04	.04
290.00	.04	.04	.04	.04	.04
295.00	.04	.04	.04	.04	.03
300.00	.03	.03	.03	.03	.03
305.00	.03	.03	.03	.03	.03
310.00	.03	.03	.03	.03	.03
315.00	.03	.03	.03	.03	.03
320.00	.03	.03	.03	.03	.03
325.00	.03	.03	.03	.03	.03
330.00	.03	.03	.03	.03	.03
335.00	.03	.03	.03	.03	.03
340.00	.03	.03	.02	.02	.02
345.00	.02	.02	.02	.02	.02
350.00	.02	.02	.02	.02	.02
355.00	.02	.02	.02	.02	.02
360.00	.02	.02	.02	.02	.02
365.00	.02	.02	.02	.02	.02
370.00	.02	.02	.02	.02	.02
375.00	.02	.02	.02	.02	.02
380.00	.02	.02	.02	.02	.02
385.00	.02	.02	.02	.02	.02
390.00	.02	.02	.02	.02	.02
395.00	.02	.02	.02	.02	.02

Type.... Pond Routed HYG (total out) Page 2.04
 Name.... BASIN 2 OUT Tag: C100YR Event: C100YR
 File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
 Storm... C100YR Tag: C100YR

HYDROGRAPH ORDINATES (cfs)
 Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
400.00	.02	.02	.02	.02	.02
405.00	.02	.01	.01	.01	.01
410.00	.01	.01	.01	.01	.01
415.00	.01	.01	.01	.01	.01
420.00	.01	.01	.01	.01	.01
425.00	.01	.01	.01	.01	.01
430.00	.01	.01	.01	.01	.01
435.00	.01	.01	.01	.01	.01
440.00	.01	.01	.01	.01	.01
445.00	.01	.01	.01	.01	.01
450.00	.01	.01	.01	.01	.01
455.00	.01	.01	.01	.01	.01
460.00	.01	.01	.01	.01	.01
465.00	.01	.01	.01	.01	.01
470.00	.01	.01	.01	.01	.01
475.00	.01	.01	.01	.01	.01
480.00	.01	.01	.01	.01	.01
485.00	.01	.01	.01	.01	.01
490.00	.01	.01	.01	.01	.01
495.00	.01	.01	.01	.01	.01
500.00	.01	.01	.01	.01	.01
505.00	.01	.01	.01	.01	.01
510.00	.01	.01	.01	.01	.01
515.00	.01	.01	.01	.01	.01
520.00	.01	.01	.01	.01	.01
525.00	.01	.01	.01	.01	.01
530.00	.01	.01	.01	.01	.01
535.00	.01	.01	.01	.01	.01
540.00	.01	.01	.01	.01	.01
545.00	.00	.00	.00	.00	.00
550.00	.00	.00	.00	.00	.00
555.00	.00	.00	.00	.00	.00
560.00	.00	.00	.00	.00	.00
565.00	.00	.00	.00	.00	.00
570.00	.00	.00	.00	.00	.00
575.00	.00	.00	.00	.00	.00
580.00	.00	.00	.00	.00	.00
585.00	.00	.00	.00	.00	.00
590.00	.00	.00	.00	.00	.00
595.00	.00	.00	.00	.00	.00
600.00	.00	.00	.00	.00	.00
605.00	.00	.00	.00	.00	.00
610.00	.00				

Index of Starting Page Numbers for ID Names

----- 0 -----
05 LOW FLOW BLKD... 1.01, 1.06

POND 7
Routing Calculations for
2, 15 and 100 Year 20 Minute Design Storms

Basin 3

Table of Contents

***** RUNOFF HYDROGRAPHS *****

20 MIN STORMS... A15YR
 Read HYG 1.01

20 MIN STORMS... B25YR
 Read HYG 1.02

20 MIN STORMS... C100YR
 Read HYG 1.03

***** POND VOLUMES *****

BASIN 3..... Vol: Planimeter 2.01

***** OUTLET STRUCTURES *****

OS..... Outlet Input Data 3.01
 Composite Rating Curve 3.07

***** POND ROUTING *****

BASIN 3 OUT A15YR
 Pond Routing Summary 4.01
 Pond Routed HYG (total out) 4.02

BASIN 3 OUT B25YR
 Pond Routing Summary 4.03
 Pond Routed HYG (total out) 4.04

BASIN 3 OUT C100YR
 Pond Routing Summary 4.05
 Pond Routed HYG (total out) 4.06

Type... Read HYG Page 1.01
 Name... 20 MIN STORMS Tag: A15YR Event: A15YR
 File... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Title... 15, 25 and 100 Year, 20 Minute Design Storms
 Storm... Tag: A15YR

HYG file = E:\PONDPACK\11289\POND 7 FILES\BH3-15.HYG
 HYG ID = 15 Year Inflow
 HYG Tag = 15YR

 Peak Discharge = 91.54 cfs
 Time to Peak = 9.00 min
 HYG Volume = 109843 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min

Time on left represents time for first value in each row.

Time min	Output Time increment = 1.00 min				
.00	.00	10.17	20.34	30.51	40.68
5.00	50.85	61.02	71.19	81.36	91.54
10.00	91.54	91.54	91.54	91.54	91.54
15.00	91.54	91.54	91.54	91.54	91.54
20.00	91.54	81.36	71.19	61.02	50.85
25.00	40.68	30.51	20.34	10.17	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00	.00	.00	.00	.00

Type.... Read HYG
 Name.... 20 MIN STORMS
 File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Storm... Tag: B25YR

HYG file = E:\PONDPACK\11289\POND 7 FILES\BH3-25.HYG
 HYG ID = 25 Year Inflow
 HYG Tag = 25YR

 Peak Discharge = 113.04 cfs
 Time to Peak = 9.00 min
 HYG Volume = 135648 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min

Time on left represents time for first value in each row.

Time min					
.00	.00	12.56	25.12	37.68	50.24
5.00	62.80	75.36	87.92	100.48	113.04
10.00	113.04	113.04	113.04	113.04	113.04
15.00	113.04	113.04	113.04	113.04	113.04
20.00	113.04	100.48	87.92	75.36	62.80
25.00	50.24	37.68	25.12	12.56	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00				

Type.... Read HYG
 Name.... 20 MIN STORMS
 File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Storm... Tag: C100YR

HYG file = E:\PONDPACK\11289\POND 7 FILES\BH3-100.HYG
 HYG ID = 100 Year Inflow
 HYG Tag = 100YR

 Peak Discharge = 144.60 cfs
 Time to Peak = 9.00 min
 HYG Volume = 173531 cu.ft

HYDROGRAPH ORDINATES (cfs)						
Output Time increment = 1.00 min						
Time min	Time on left represents time for first value in each row.					
.00	.00	16.07	32.14	48.20	64.28	
5.00	80.35	96.41	112.49	128.55	144.60	
10.00	144.60	144.60	144.60	144.60	144.60	
15.00	144.60	144.60	144.60	144.60	144.60	
20.00	144.60	128.55	112.49	96.41	80.35	
25.00	64.28	48.20	32.14	16.07	.00	
30.00	.00	.00	.00	.00	.00	
35.00	.00	.00	.00	.00	.00	
40.00	.00	.00	.00	.00	.00	
45.00	.00	.00	.00	.00	.00	
50.00	.00	.00	.00	.00	.00	
55.00	.00	.00	.00	.00	.00	
60.00	.00	.00	.00	.00	.00	
65.00	.00	.00	.00	.00	.00	
70.00	.00	.00	.00	.00	.00	
75.00	.00	.00	.00	.00	.00	
80.00	.00	.00	.00	.00	.00	
85.00	.00	.00	.00	.00	.00	
90.00	.00	.00	.00	.00	.00	

Type.... Vol: Planimeter
Name.... BASIN 3

Page 2.01

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Basin 3 of Brook Hollow

POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sq ^{rt} (A1*A2) (acres)	Volume (cu.ft)	Volume Sum (cu.ft)
592.60	1.000	.0000	.0000	0	0
593.00	548.000	.0126	.0131	76	76
594.00	6794.000	.1560	.2128	3091	3167
596.00	9062.000	.2080	.5441	15802	18968
598.00	11579.000	.2658	.7090	20590	39558
600.00	14318.000	.3287	.8901	25849	65407
602.00	17284.000	.3968	1.0866	31556	96962

POND VOLUME EQUATIONS

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

$$\text{Volume} = (1/3) * (\text{EL2}-\text{EL1}) * (\text{Area1} + \text{Area2} + \text{sq.rt.}(\text{Area1}*\text{Area2}))$$

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

S/N: f21101d06a84 Bax Engineering

PondPack Ver: 7.0 (325)

Compute Time: 08:50:23

Date: 09-20-2002

Type.... Outlet Input Data
Name.... OS

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Overflow Structure for Basin 3 of Brook Hollow

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 592.60 ft
Increment = .10 ft
Max. Elev.= 601.50 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
Stand Pipe	AI	--->	CV	600.410	601.500
Weir-Rectangular	SL	--->	CV	597.950	601.500
Orifice-Area	LF	--->	CV	595.600	601.500
Weir-Rectangular	LW	--->	CV	592.600	595.600
Culvert-Circular	CV	--->	TW	592.600	601.500
TW SETUP, DS Channel					

File... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Overflow Structure for Basin 3 of Brook Hollow

OUTLET STRUCTURE INPUT DATA

Structure ID = AI
Structure Type = Stand Pipe

of Openings = 1
Invert Elev. = 600.41 ft
Diameter = 5.9715 ft
Orifice Area = 28.0064 sq.ft
Orifice Coeff. = .600
Weir Length = 18.76 ft
Weir Coeff. = 3.000
K, Submerged = .000
K, Reverse = 1.000
Kb, Barrel = .000000 (per ft of full flow)
Barrel Length = .00 ft
Mannings n = .0000

Structure ID = 5L
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 597.95 ft
Weir Length = 3.00 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

Structure ID = LF
Structure Type = Orifice-Area

of Openings = 1
Invert Elev. = 592.60 ft
Area = 5.0000 sq.ft
Top of Orifice = 595.60 ft
Datum Elev. = 594.10 ft
Orifice Coeff. = .600

Type.... Outlet Input Data
Name.... OS

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Overflow Structure for Basin 3 of Brook Hollow

OUTLET STRUCTURE INPUT DATA

Structure ID = LW
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 592.60 ft
Weir Length = 1.67 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Overflow Structure for Basin 3 of Brook Hollow

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels = 1
Barrel Diameter = 4.0000 ft
Upstream Invert = 592.60 ft
Dnstream Invert = 592.00 ft
Horiz. Length = 54.52 ft
Barrel Length = 54.52 ft
Barrel Slope = .01100 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130
Ke = .5000 (forward entrance loss)
Kb = .004925 (per ft of full flow)
Kr = .5000 (reverse entrance loss)
HW Convergence = 1.000 +/- ft

INLET CONTROL DATA...

Equation form = 1
Inlet Control K = .0078
Inlet Control M = 2.0000
Inlet Control c = .02920
Inlet Control Y = .7400
T1 ratio (HW/D) = 1.130
T2 ratio (HW/D) = 1.202
Slope Factor = -.500
Calc inlet only = Yes

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 = 597.12 ft ---> Flow = 87.96 cfs
At T2 Elev = 597.41 ft ---> Flow = 100.53 cfs

Type.... Outlet Input Data
Name.... OS

Page 3.05

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Overflow Structure for Basin 3 of Brook Hollow

OUTLET STRUCTURE INPUT DATA

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

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

CONVERGENCE TOLERANCES...
Maximum Iterations= 50
Min. TW tolerance = .10 ft
Max. TW tolerance = .10 ft
Min. HW tolerance = .10 ft
Max. HW tolerance = .10 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

Type.... Outlet Input Data
Name.... OS

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Overflow Structure for Basin 3 of Brook Hollow

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

COMPOSITE CHANNEL SECTION

Elev.Constant= .00 ft

GROUND ELEVATION POINTS
Cross Section ID: CREEK
Lowest Elev. = 591.53 ft

X Distance (ft)	Y Elev (ft)	Y+Constant (ft)
.00	598.00	598.00
6.00	596.00	596.00
14.91	594.22	594.22
16.81	591.53	591.53
23.30	591.53	591.53
26.53	599.69	599.69

THE INFORMATION BELOW WAS USED TO COMPUTE
FLOW RATE SEPARATELY FOR EACH SEGMENT.

Cross Section ID: CREEK

CROSS SECTION SUBDIVIDED INTO DIFFERENT SEGMENTS

Segment	X Left (ft)	X Right (ft)	Ground n	Descr.
1	.00	14.91	0.04500	Left Overbank
2	14.91	23.30	0.04000	Main Channel
3	23.30	26.53	0.04500	Right Overbank

Type.... Composite Rating Curve
 Name.... OS

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Title... Overflow Structure for Basin 3 of Brook Hollow

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

CUMULATIVE HGL CONVERGENCE ERROR .100 (+/- ft)
 FLOW PATH: Elev= 600.9; Branch: LF-CV-TW

* Max. convergence errors shown may also occur for
 flow paths other than the ones listed above.

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
592.60	.00	591.53	.000	(no Q: AI,SL,LF,LW,CV)
592.70	.00	591.53	.000	(no Q: AI,SL,LF,LW,CV)
592.80	.00	591.53	.000	(no Q: AI,SL,LF,LW,CV)
592.90	.00	591.53	.000	(no Q: AI,SL,LF,LW,CV)
593.00	.00	591.53	.000	(no Q: AI,SL,LF,LW,CV)
593.10	1.32	591.67	.093	LW,CV (no Q: AI,SL,LF)
593.20	1.31	591.67	.089	LW,CV (no Q: AI,SL,LF)
593.30	1.79	591.71	.071	LW,CV (no Q: AI,SL,LF)
593.40	2.29	591.73	.061	LW,CV (no Q: AI,SL,LF)
593.50	2.82	591.75	.054	LW,CV (no Q: AI,SL,LF)
593.60	3.38	591.79	.050	LW,CV (no Q: AI,SL,LF)
593.70	3.98	591.81	.046	LW,CV (no Q: AI,SL,LF)
593.80	4.61	591.83	.042	LW,CV (no Q: AI,SL,LF)
593.90	5.26	591.86	.040	LW,CV (no Q: AI,SL,LF)
594.00	5.95	591.88	.038	LW,CV (no Q: AI,SL,LF)
594.10	6.66	591.90	.036	LW,CV (no Q: AI,SL,LF)
594.20	7.40	591.93	.035	LW,CV (no Q: AI,SL,LF)
594.30	8.17	591.96	.034	LW,CV (no Q: AI,SL,LF)
594.40	8.96	591.98	.033	LW,CV (no Q: AI,SL,LF)
594.50	9.78	592.01	.032	LW,CV (no Q: AI,SL,LF)
594.60	10.62	592.03	.031	LW,CV (no Q: AI,SL,LF)
594.70	11.49	592.06	.031	LW,CV (no Q: AI,SL,LF)
594.80	12.38	592.08	.031	LW,CV (no Q: AI,SL,LF)
594.90	13.28	592.10	.030	LW,CV (no Q: AI,SL,LF)
595.00	14.22	592.13	.030	LW,CV (no Q: AI,SL,LF)
595.10	15.17	592.15	.030	LW,CV (no Q: AI,SL,LF)
595.20	16.14	592.18	.030	LW,CV (no Q: AI,SL,LF)
595.30	17.13	592.20	.030	LW,CV (no Q: AI,SL,LF)
595.40	18.15	592.22	.030	LW,CV (no Q: AI,SL,LF)
595.50	19.18	592.24	.030	LW,CV (no Q: AI,SL,LF)
595.60	24.69	592.36	.070	LF,CV (no Q: AI,SL,LW)
595.70	25.38	592.37	.063	LF,CV (no Q: AI,SL,LW)
595.80	26.08	592.39	.056	LF,CV (no Q: AI,SL,LW)

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Title... Overflow Structure for Basin 3 of Brook Hollow

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

CUMULATIVE HGL CONVERGENCE ERROR .100 (+/- ft)
 FLOW PATH: Elev= 600.9; Branch: LF-CV-TW

* Max. convergence errors shown may also occur for
 flow paths other than the ones listed above.

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
595.90	26.77	592.40	.051	LF,CV (no Q: AI,SL,LW)
596.00	26.44	592.40	.094	LF,CV (no Q: AI,SL,LW)
596.10	27.21	592.41	.088	LF,CV (no Q: AI,SL,LW)
596.20	27.96	592.43	.083	LF,CV (no Q: AI,SL,LW)
596.30	28.70	592.44	.078	LF,CV (no Q: AI,SL,LW)
596.40	29.43	592.45	.073	LF,CV (no Q: AI,SL,LW)
596.50	30.14	592.47	.069	LF,CV (no Q: AI,SL,LW)
596.60	30.83	592.48	.066	LF,CV (no Q: AI,SL,LW)
596.70	31.52	592.49	.062	LF,CV (no Q: AI,SL,LW)
596.80	32.19	592.51	.059	LF,CV (no Q: AI,SL,LW)
596.90	32.86	592.52	.056	LF,CV (no Q: AI,SL,LW)
597.00	33.51	592.53	.054	LF,CV (no Q: AI,SL,LW)
597.10	34.16	592.54	.051	LF,CV (no Q: AI,SL,LW)
597.20	34.79	592.55	.049	LF,CV (no Q: AI,SL,LW)
597.30	35.42	592.57	.047	LF,CV (no Q: AI,SL,LW)
597.40	36.04	592.57	.045	LF,CV (no Q: AI,SL,LW)
597.50	36.65	592.59	.043	LF,CV (no Q: AI,SL,LW)
597.60	37.25	592.60	.041	LF,CV (no Q: AI,SL,LW)
597.70	37.84	592.61	.040	LF,CV (no Q: AI,SL,LW)
597.80	38.43	592.62	.038	LF,CV (no Q: AI,SL,LW)
597.90	39.01	592.63	.037	LF,CV (no Q: AI,SL,LW)
597.95	39.30	592.63	.036	LF,CV (no Q: AI,SL,LW)
598.00	39.66	592.64	.036	SL,LF,CV (no Q: AI,LW)
598.10	40.56	592.65	.035	SL,LF,CV (no Q: AI,LW)
598.20	41.58	592.67	.034	SL,LF,CV (no Q: AI,LW)
598.30	42.72	592.69	.034	SL,LF,CV (no Q: AI,LW)
598.40	43.93	592.71	.034	SL,LF,CV (no Q: AI,LW)
598.50	45.23	592.73	.033	SL,LF,CV (no Q: AI,LW)
598.60	46.60	592.75	.033	SL,LF,CV (no Q: AI,LW)
598.70	48.03	592.77	.033	SL,LF,CV (no Q: AI,LW)
598.80	49.52	592.80	.033	SL,LF,CV (no Q: AI,LW)
598.90	51.07	592.82	.033	SL,LF,CV (no Q: AI,LW)
599.00	52.68	592.84	.034	SL,LF,CV (no Q: AI,LW)

Type... Outlet Input Data
Name... BASIN 1 05

Page 3.05

File... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Title... Basin 1 05

OUTLET STRUCTURE INPUT DATA

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

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

CONVERGENCE TOLERANCES...
Maximum Iterations= 25
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

S/N: f21101d06a84 Bax Engineering

PondPack Ver: 7.0 (325)

Compute Time: 13:09:57

Date: 05-29-2002

Type... Outlet Input Data
Name... BASIN 1 05

File... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Title... Basin 1 05

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

COMPOSITE CHANNEL SECTION

Elev.Constant= .00 ft

GROUND ELEVATION POINTS
Cross Section ID: Downstream creek
Lowest Elev. = 603.90 ft

X Distance (ft)	Y Elev (ft)	Y+Constant (ft)
.00	606.30	606.30
5.56	606.00	606.00
15.07	603.90	603.90
17.41	603.98	603.98
20.74	604.00	604.00
28.55	606.00	606.00
29.55	606.20	606.20

THE INFORMATION BELOW WAS USED TO COMPUTE
FLOW RATE SEPARATELY FOR EACH SEGMENT.

Cross Section ID: Downstream creek

CROSS SECTION SUBDIVIDED INTO DIFFERENT SEGMENTS

Segment	X Left (ft)	X Right (ft)	Ground n	Descr.
1	.00	13.07	0.04500	Left Overbank
2	13.07	20.74	0.04000	Main Channel
3	20.74	29.55	0.04500	Right Overbank

File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
 Title... Basin 1 OS

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

CUMULATIVE HGL CONVERGENCE ERROR .010 (+/- ft)
 FLOW PATH: Elev= 608.9; Branch: LF-CV-TW

* Max. convergence errors shown may also occur for
 flow paths other than the ones listed above.

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
604.70	.00	603.90	.000	(no Q: AI,SL,LF,LW,CV)
605.00	.23	604.01	.009	LW,CV (no Q: AI,SL,LF)
605.30	.69	604.07	.009	LW,CV (no Q: AI,SL,LF)
605.60	1.33	604.12	.007	LW,CV (no Q: AI,SL,LF)
605.90	2.11	604.16	.006	LW,CV (no Q: AI,SL,LF)
606.20	3.39	604.22	.005	LF,CV (no Q: AI,SL,LW)
606.50	3.94	604.25	.008	LF,CV (no Q: AI,SL,LW)
606.80	4.46	604.27	.006	LF,CV (no Q: AI,SL,LW)
607.10	4.94	604.28	.004	LF,CV (no Q: AI,SL,LW)
607.40	5.38	604.30	.003	LF,CV (no Q: AI,SL,LW)
607.70	5.80	604.31	.002	LF,CV (no Q: AI,SL,LW)
608.00	6.20	604.32	.002	LF,CV (no Q: AI,SL,LW)
608.30	6.57	604.34	.001	LF,CV (no Q: AI,SL,LW)
608.60	6.93	604.35	.001	LF,CV (no Q: AI,SL,LW)
608.75	7.11	604.35	.001	LF,CV (no Q: AI,SL,LW)
608.90	7.29	604.36	.010	LF,CV (no Q: AI,SL,LW)
609.20	10.06	604.43	.001	SL,LF,CV (no Q: AI,LW)
609.50	13.26	604.50	.010	SL,LF,CV (no Q: AI,LW)
609.75	16.44	604.57	.010	SL,LF,CV (no Q: AI,LW)
609.80	17.71	604.59	.010	AI,SL,LF,CV (no Q: LW)
610.00	26.54	604.73	.001	AI,SL,LF,CV (no Q: LW)

Type.... Pond Routing Summary
Name.... BASIN 1 OUT Tag: A15YR
File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Storm... A15YR Tag: A15YR

Page 4.01
Event: A15YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\HAESTAD\PPKW\SAMPLE\
Inflow HYG file = NONE STORED - BASIN 1 IN A15YR
Outflow HYG file = NONE STORED - BASIN 1 OUT A15YR

Pond Node Data = BASIN 1
Pond Volume Data = Basin 1
Pond Outlet Data = BASIN 1 OS

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 604.70 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout = .00 cfs
Time Increment = 2.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====
Peak Inflow = 43.03 cfs at 6.00 min
Peak Outflow = 6.88 cfs at 24.00 min

Peak Elevation = 608.55 ft
Peak Storage = 44697 cu.ft
=====

MA55 BALANCE (cu.ft)

+ Initial Vol = 0
+ HYG Vol IN = 51634
- Infiltration = 0
- HYG Vol OUT = 51630
- Retained Vol = 0

Unrouted Vol = -4 cu.ft (.008% of Inflow Volume)

Type... Pond Routed HYG (total out)
 Name... BASIN 1 OUT Tag: A15YR
 File... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
 Storm... A15YR Tag: A15YR

Page 4.02
 Event: A15YR

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
 HYG ID = BASIN 1 OUT
 HYG Tag = A15YR

 Peak Discharge = 6.88 cfs
 Time to Peak = 24.00 min
 HYG Volume = 51630 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 2.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	.42	1.26	2.45	3.68
10.00	4.30	4.85	5.33	5.75	6.13
20.00	6.49	6.75	6.88	6.88	6.82
30.00	6.76	6.70	6.64	6.58	6.52
40.00	6.46	6.40	6.34	6.28	6.22
50.00	6.16	6.10	6.04	5.98	5.91
60.00	5.85	5.79	5.73	5.67	5.60
70.00	5.54	5.48	5.42	5.36	5.29
80.00	5.22	5.16	5.10	5.03	4.97
90.00	4.91	4.84	4.78	4.71	4.65
100.00	4.58	4.52	4.46	4.39	4.32
110.00	4.26	4.19	4.13	4.06	4.00
120.00	3.94	3.88	3.81	3.75	3.69
130.00	3.63	3.57	3.51	3.45	3.39
140.00	3.25	3.12	2.99	2.87	2.75
150.00	2.64	2.53	2.43	2.33	2.24
160.00	2.15	2.07	2.00	1.94	1.88
170.00	1.82	1.76	1.70	1.65	1.60
180.00	1.55	1.50	1.45	1.40	1.36
190.00	1.31	1.26	1.21	1.17	1.12
200.00	1.08	1.04	1.00	.96	.92
210.00	.89	.85	.82	.79	.76
220.00	.73	.70	.67	.64	.62
230.00	.59	.56	.54	.52	.49
240.00	.47	.45	.43	.41	.39
250.00	.38	.36	.35	.33	.32
260.00	.30	.29	.28	.26	.25
270.00	.24	.23	.21	.19	.18
280.00	.16	.15	.14	.13	.12
290.00	.11	.10	.09	.08	.08
300.00	.07	.06	.06	.05	.05
310.00	.05	.04	.04	.04	.03
320.00	.03	.03	.02	.02	.02

Type... Pond Routed HYG (total out)

Page 4.03

Name... BASIN 1 OUT Tag: A15YR

Event: A15YR

File... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW

Storm... A15YR Tag: A15YR

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 2.00 min
Time on left represents time for first value in each row.

Time min					
330.00	.02	.02	.02	.01	.01
340.00	.01	.01	.01	.01	.01
350.00	.01	.01	.01	.01	.01
360.00	.01	.00	.00	.00	.00
370.00	.00	.00	.00		

S/N: f21101d06a84 Bax Engineering

PondPack Ver: 7.0 (325)

Compute Time: 13:09:57

Date: 05-29-2002

Type.... Pond Routing Summary
Name.... BASIN 1 OUT Tag: B25YR
File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Storm... B25YR Tag: B25YR

Page 4.04
Event: B25YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\HAESTAD\PPKW\SAMPLE\
Inflow HYG file = NONE STORED - BASIN 1 IN B25YR
Outflow HYG file = NONE STORED - BASIN 1 OUT B25YR

Pond Node Data = BASIN 1
Pond Volume Data = Basin 1
Pond Outlet Data = BASIN 1 OS

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 604.70 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout = .00 cfs
Time Increment = 2.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====
Peak Inflow = 53.13 cfs at 6.00 min
Peak Outflow = 9.93 cfs at 24.00 min

Peak Elevation = 609.19 ft
Peak Storage = 55564 cu.ft
=====

MASS BALANCE (cu.ft)

+ Initial Vol = 0
+ HYG Vol IN = 63754
- Infiltration = 0
- HYG Vol OUT = 63750
- Retained Vol = 0

Unrouted Vol = -4 cu.ft (.006% of Inflow Volume)

Type... Pond Routed HYG (total out)
 Name... BASIN 1 OUT Tag: B25YR
 File... C:\HAE5TAD\PPKW\SAMPLE\AMBER MEADOW5 BASIN 1.PPW
 Storm... B25YR Tag: B25YR

Page 4.05
 Event: B25YR

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
 HYG ID = BASIN 1 OUT
 HYG Tag = B25YR

 Peak Discharge = 9.93 cfs
 Time to Peak = 24.00 min
 HYG Volume = 63750 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 2.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	.49	1.49	3.05	4.07
10.00	4.78	5.39	5.91	6.38	6.80
20.00	7.19	8.84	9.93	9.86	9.26
30.00	8.69	8.15	7.65	7.27	7.21
40.00	7.15	7.09	7.03	6.98	6.92
50.00	6.86	6.80	6.74	6.68	6.62
60.00	6.56	6.50	6.44	6.38	6.32
70.00	6.26	6.20	6.14	6.08	6.02
80.00	5.96	5.89	5.83	5.77	5.71
90.00	5.64	5.58	5.52	5.46	5.40
100.00	5.33	5.27	5.20	5.14	5.08
110.00	5.01	4.95	4.89	4.82	4.75
120.00	4.69	4.62	4.56	4.50	4.44
130.00	4.37	4.30	4.24	4.17	4.11
140.00	4.04	3.98	3.92	3.85	3.79
150.00	3.73	3.67	3.61	3.55	3.49
160.00	3.43	3.34	3.21	3.08	2.95
170.00	2.83	2.72	2.61	2.50	2.40
180.00	2.30	2.21	2.12	2.05	1.98
190.00	1.92	1.86	1.80	1.74	1.69
200.00	1.63	1.58	1.53	1.48	1.43
210.00	1.39	1.34	1.29	1.24	1.20
220.00	1.15	1.11	1.07	1.02	.99
230.00	.95	.91	.88	.84	.81
240.00	.78	.75	.72	.69	.66
250.00	.63	.61	.58	.56	.53
260.00	.51	.49	.46	.44	.42
270.00	.41	.39	.37	.36	.34
280.00	.33	.31	.30	.28	.27
290.00	.26	.25	.24	.22	.21
300.00	.19	.17	.16	.15	.13
310.00	.12	.11	.10	.10	.09
320.00	.08	.07	.07	.06	.06

Type.... Pond Routed HYG (total out)
 Name.... BASIN 1 OUT Tag: B25YR
 File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
 Storm... B25YR Tag: B25YR

Page 4.06
 Event: B25YR

HYDROGRAPH ORDINATES (cfs)						
Time min	Output Time increment = 2.00 min					
	Time on left represents time for first value in each row.					
330.00	.05	.05	.04	.04	.04	.04
340.00	.03	.03	.03	.03	.03	.02
350.00	.02	.02	.02	.02	.02	.02
360.00	.01	.01	.01	.01	.01	.01
370.00	.01	.01	.01	.01	.01	.01
380.00	.01	.01	.01	.01	.00	.00
390.00	.00	.00	.00	.00	.00	.00

Type... Pond Routing Summary
Name... BASIN 1 OUT Tag: C100YR
File... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Storm... C100YR Tag: C100YR

Page 4.07
Event: C100YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\HAESTAD\PPKW\SAMPLE\
Inflow HYG file = NONE STORED - BASIN 1 IN C100YR
Outflow HYG file = NONE STORED - BASIN 1 OUT C100YR

Pond Node Data = BASIN 1
Pond Volume Data = Basin 1
Pond Outlet Data = BASIN 1 OS

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 604.70 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout = .00 cfs
Time Increment = 2.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====
Peak Inflow = 67.96 cfs at 6.00 min
Peak Outflow = 23.20 cfs at 24.00 min

Peak Elevation = 609.92 ft
Peak Storage = 69148 cu.ft
=====

MASS BALANCE (cu.ft)

+ Initial Vol = 0
+ HYG Vol IN = 81557
- Infiltration = 0
- HYG Vol OUT = 81553
- Retained Vol = 0

Unrouted Vol = -4 cu.ft (.005% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
 HYG ID = BASIN 1 OUT
 HYG Tag = C100YR

 Peak Discharge = 23.20 cfs
 Time to Peak = 24.00 min
 HYG Volume = 81553 cu.ft

HYDROGRAPH ORDINATES (cfs)
 Output Time increment = 2.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	.60	1.80	3.62	4.61
10.00	5.42	6.08	6.67	7.19	10.30
20.00	14.41	19.71	23.20	20.30	16.34
30.00	15.05	13.86	12.83	11.95	11.13
40.00	10.36	9.70	9.10	8.54	8.02
50.00	7.52	7.26	7.20	7.14	7.08
60.00	7.02	6.96	6.90	6.84	6.78
70.00	6.72	6.66	6.61	6.55	6.49
80.00	6.43	6.37	6.31	6.25	6.19
90.00	6.12	6.06	6.00	5.94	5.88
100.00	5.82	5.75	5.69	5.63	5.57
110.00	5.50	5.44	5.38	5.32	5.25
120.00	5.19	5.12	5.06	5.00	4.94
130.00	4.87	4.80	4.74	4.67	4.61
140.00	4.54	4.48	4.42	4.35	4.28
150.00	4.22	4.15	4.09	4.03	3.96
160.00	3.90	3.84	3.77	3.71	3.65
170.00	3.59	3.53	3.47	3.41	3.30
180.00	3.17	3.04	2.92	2.80	2.69
190.00	2.58	2.47	2.37	2.27	2.18
200.00	2.10	2.03	1.97	1.90	1.84
210.00	1.78	1.73	1.67	1.62	1.57
220.00	1.52	1.47	1.42	1.38	1.33
230.00	1.28	1.23	1.18	1.14	1.10
240.00	1.05	1.01	.97	.94	.90
250.00	.87	.83	.80	.77	.74
260.00	.71	.69	.66	.63	.60
270.00	.57	.55	.52	.50	.48
280.00	.46	.44	.42	.40	.38
290.00	.37	.35	.34	.32	.31
300.00	.29	.28	.27	.26	.25
310.00	.24	.22	.20	.19	.17
320.00	.16	.14	.13	.12	.11

Type.... Pond Routed HYG (total out) Page 4.09
 Name.... BASIN 1 OUT Tag: C100YR Event: C100YR
 File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
 Storm... C100YR Tag: C100YR

HYDROGRAPH ORDINATES (cfs)						
Time min	Output Time increment = 2.00 min					
	Time on left represents time for first value in each row.					
330.00	.10	.09	.09	.08	.07	
340.00	.07	.06	.06	.05	.05	
350.00	.04	.04	.04	.03	.03	
360.00	.03	.03	.02	.02	.02	
370.00	.02	.02	.02	.01	.01	
380.00	.01	.01	.01	.01	.01	
390.00	.01	.01	.01	.01	.01	
400.00	.01	.00	.00	.00	.00	
410.00	.00	.00	.00			

Index of Starting Page Numbers for ID Names

----- 2 -----
20 MIN STORMS A15YR... 1.01, 1.02,
1.03

----- B -----
BASIN 1... 2.01, 4.01, 4.02, 4.04,
4.05, 4.07, 4.08
BASIN 1 OS... 3.01, 3.07

POND 7
Routing Calculations for
100 Year 20 Minute Design Storm
With Low Flow 100% Blocked

Basin 1

Table of Contents

***** OUTLET STRUCTURES *****

OS LOW FLOW BLKD Outlet Input Data	1.01
Composite Rating Curve	1.06

***** POND ROUTING *****

BASIN 1	OUT C100YR	
	Pond Routing Summary	2.01
	Pond Routed HYG (total out)	2.02

Type... Outlet Input Data
Name... OS LOW FLOW BLKD

File... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Title... Basin 1 OS

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 604.70 ft
Increment = .30 ft
Max. Elev.= 611.50 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
Stand Pipe	AI	--->	CV	609.750	611.500
Weir-Rectangular	SL	--->	CV	609.083	611.500
Culvert-Circular	CV	--->	TW	604.700	611.500
TW SETUP, DS Channel					

Type.... Outlet Input Data
Name.... OS LOW FLOW BLKD

Page 1.02

File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Title... Basin 1 OS

OUTLET STRUCTURE INPUT DATA

Structure ID = AI
Structure Type = Stand Pipe

of Openings = 1
Invert Elev. = 609.75 ft
Diameter = 5.9715 ft
Orifice Area = 28.0064 sq.ft
Orifice Coeff. = .600
Weir Length = 18.76 ft
Weir Coeff. = 3.000
K, Submerged = .000
K, Reverse = 1.000
Kb,Barrel = .000000 (per ft of full flow)
Barrel Length = .00 ft
Mannings n = .0000

Structure ID = SL
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 608.75 ft
Weir Length = 3.00 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

Type.... Outlet Input Data
Name.... OS LOW FLOW BLKD

Page 1.03

File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Title... Basin 1 OS

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels = 1
Barrel Diameter = 3.0000 ft
Upstream Invert = 604.70 ft
Dnstream Invert = 604.14 ft
Horiz. Length = 55.76 ft
Barrel Length = 55.76 ft
Barrel Slope = .01004 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130
Ke = .5000 (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 = .0078
Inlet Control M = 2.0000
Inlet Control c = .02920
Inlet Control Y = .7400
T1 ratio (HW/D) = 1.131
T2 ratio (HW/D) = 1.202
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 = 608.09 ft ---> Flow = 42.85 cfs
At T2 Elev = 608.31 ft ---> Flow = 48.97 cfs

S/N: f21101d06a84 Bax Engineering

PondPack Ver: 7.0 (325)

Compute Time: 15:00:24

Date: 06-04-2002

Type... Outlet Input Data
Name... OS LOW FLOW BLKD

Page 1.04

File... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Title... Basin 1 OS

OUTLET STRUCTURE INPUT DATA

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

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

CONVERGENCE TOLERANCES...
Maximum Iterations= 25
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

Type.... Outlet Input Data
Name.... OS LOW FLOW BLKD

File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Title... Basin 1 OS

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

COMPOSITE CHANNEL SECTION

Elev.Constant= .00 ft

GROUND ELEVATION POINTS
Cross Section ID: Downstream creek
Lowest Elev. = 603.90 ft

X Distance (ft)	Y Elev (ft)	Y+Constant (ft)
.00	606.30	606.30
5.56	606.00	606.00
15.07	603.90	603.90
17.41	603.98	603.98
20.74	604.00	604.00
28.55	606.00	606.00
29.55	606.20	606.20

THE INFORMATION BELOW WAS USED TO COMPUTE
FLOW RATE SEPARATELY FOR EACH SEGMENT.

Cross Section ID: Downstream creek

CROSS SECTION SUBDIVIDED INTO DIFFERENT SEGMENTS

Segment	X Left (ft)	X Right (ft)	Ground n	Descr.
1	.00	13.07	0.04500	Left Overbank
2	13.07	20.74	0.04000	Main Channel
3	20.74	29.55	0.04500	Right Overbank

Type.... Composite Rating Curve
Name.... OS LOW FLOW BLKD

File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Title... Basin 1 OS

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

CUMULATIVE HGL CONVERGENCE ERROR .000 (+/- ft)

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
604.70	.00	603.90	.000	(no Q: AI,SL,CV)
605.00	.00	603.90	.000	(no Q: AI,SL,CV)
605.30	.00	603.90	.000	(no Q: AI,SL,CV)
605.60	.00	603.90	.000	(no Q: AI,SL,CV)
605.90	.00	603.90	.000	(no Q: AI,SL,CV)
606.20	.00	603.90	.000	(no Q: AI,SL,CV)
606.50	.00	603.90	.000	(no Q: AI,SL,CV)
606.80	.00	603.90	.000	(no Q: AI,SL,CV)
607.10	.00	603.90	.000	(no Q: AI,SL,CV)
607.40	.00	603.90	.000	(no Q: AI,SL,CV)
607.70	.00	603.90	.000	(no Q: AI,SL,CV)
608.00	.00	603.90	.000	(no Q: AI,SL,CV)
608.30	.00	603.90	.000	(no Q: AI,SL,CV)
608.60	.00	603.90	.000	(no Q: AI,SL,CV)
608.75	.00	603.90	.000	(no Q: AI,SL,CV)
608.90	.00	603.90	.000	(no Q: AI,SL,CV)
609.20	2.72	604.19	.000	SL,CV (no Q: AI)
609.50	5.85	604.31	.000	SL,CV (no Q: AI)
609.75	9.00	604.40	.000	SL,CV (no Q: AI)
609.80	10.31	604.43	.000	AI,SL,CV
610.10	25.77	604.72	.000	AI,SL,CV
610.40	48.57	605.01	.000	AI,SL,CV
610.70	70.58	605.23	.000	AI,CV (no Q: SL)
611.00	81.85	605.33	.000	AI,CV (no Q: SL)
611.30	84.72	605.35	.000	AI,CV (no Q: SL)
611.50	86.59	605.36	.000	AI,CV (no Q: SL)

Type.... Pond Routing Summary
Name.... BASIN 1 OUT Tag: C100YR
File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
Storm... C100YR Tag: C100YR

Page 2.01
Event: C100YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\HAESTAD\PPKW\SAMPLE\
Inflow HYG file = NONE STORED - BASIN 1 IN C100YR
Outflow HYG file = NONE STORED - BASIN 1 OUT C100YR

Pond Node Data = BASIN 1
Pond Volume Data = Basin 1
Pond Outlet Data = OS LOW FLOW BLKD

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 604.70 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout = .00 cfs
Time Increment = 2.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====
Peak Inflow = 67.96 cfs at 6.00 min
Peak Outflow = 28.17 cfs at 24.00 min

Peak Elevation = 610.13 ft
Peak Storage = 73138 cu.ft
=====

MASS BALANCE (cu.ft)

+ Initial Vol = 0
+ HYG Vol IN = 81557
- Infiltration = 0
- HYG Vol OUT = 30983
- Retained Vol = 50574

Unrouted Vol = - cu.ft (.000% of Inflow Volume)

Type.... Pond Routed HYG (total out) Page 2.02
 Name.... BASIN 1 OUT Tag: C100YR Event: C100YR
 File.... C:\HAESTAD\PPKW\SAMPLE\AMBER MEADOWS BASIN 1.PPW
 Storm... C100YR Tag: C100YR

POND ROUTED TOTAL OUTFLOW HYG...
 HYG file =
 HYG ID = BASIN 1 OUT
 HYG Tag = C100YR

 Peak Discharge = 28.17 cfs
 Time to Peak = 24.00 min
 HYG Volume = 30983 cu.ft

HYDROGRAPH ORDINATES (cfs)
 Output Time increment = 2.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	.00	.00	.00	.00
10.00	.00	.00	.00	1.23	5.53
20.00	12.86	25.06	28.17	22.86	16.49
30.00	11.89	9.35	8.44	7.78	7.17
40.00	6.61	6.09	5.64	5.26	4.91
50.00	4.58	4.27	3.99	3.72	3.47
60.00	3.24	3.02	2.82	2.64	2.48
70.00	2.33	2.19	2.06	1.93	1.82
80.00	1.71	1.60	1.51	1.42	1.33
90.00	1.25	1.18	1.11	1.04	.98
100.00	.92	.86	.81	.76	.72
110.00	.67	.63	.59	.56	.52
120.00	.49	.46	.44	.41	.38
130.00	.36	.34	.32	.30	.28
140.00	.26	.25	.23	.22	.21
150.00	.19	.18	.17	.16	.15
160.00	.14	.13	.13	.12	.11
170.00	.10	.10	.09	.09	.08
180.00	.08	.07	.07	.06	.06
190.00	.06	.05	.05	.05	.04
200.00	.04	.04	.04	.03	.03
210.00	.03	.03	.03	.02	.02
220.00	.02	.02	.02	.02	.02
230.00	.02	.02	.01	.01	.01
240.00	.01	.01	.01	.01	.01
250.00	.01	.01	.01	.01	.01
260.00	.01	.01	.01	.01	.00
270.00	.00	.00	.00	.00	.00
280.00	.00	.00	.00	.00	.00

Index of Starting Page Numbers for ID Names

----- 0 -----
OS LOW FLOW BLKD... 1.01, 1.06

POND 7
Routing Calculations for
2, 15 and 100 Year 20 Minute Design Storms

Basin 2

Table of Contents

***** RUNOFF HYDROGRAPHS *****

20 MIN STORMS... A15YR
 Read HYG 1.01

20 MIN STORMS... B25YR
 Read HYG 1.02

20 MIN STORMS... C100YR
 Read HYG 1.03

***** POND VOLUMES *****

BASIN 2..... Vol: Planimeter 2.01

***** OUTLET STRUCTURES *****

05..... Outlet Input Data 3.01
 Composite Rating Curve 3.07

***** POND ROUTING *****

BASIN 2 OUT A15YR
 Pond Routing Summary 4.01
 Pond Routed HYG (total out) 4.02

BASIN 2 OUT B25YR
 Pond Routing Summary 4.03
 Pond Routed HYG (total out) 4.04

BASIN 2 OUT C100YR
 Pond Routing Summary 4.05
 Pond Routed HYG (total out) 4.06

Type.... Read HYG Page 1.01
 Name.... 20 MIN STORMS Tag: A15YR Event: A15YR
 File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
 Title... 15, 25 and 100 Year, 20 Minute Design Storms
 Storm... Tag: A15YR

HYG file = E:\PONDPACK\11289\POND 7 FILES\AM2-15.HYG
 HYG ID = 15Yr inflow
 HYG Tag = 15YR

 Peak Discharge = 44.20 cfs
 Time to Peak = 5.00 min
 HYG Volume = 53040 cu.ft

HYDROGRAPH ORDINATES (cfs)
 Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	8.84	17.68	26.52	35.36
5.00	44.20	44.20	44.20	44.20	44.20
10.00	44.20	44.20	44.20	44.20	44.20
15.00	44.20	44.20	44.20	44.20	44.20
20.00	44.20	35.36	26.52	17.68	8.84
25.00	.00	.00	.00	.00	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00				

Type... Read HYG

Name... 20 MIN STORMS

File... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW

Storm... Tag: B25YR

HYG file = E:\PONDPACK\11289\POND 7 FILES\AM25-2.HYG

HYG ID = 25 YR Inflow

HYG Tag = 25YR

Peak Discharge = 54.58 cfs

Time to Peak = 5.00 min

HYG Volume = 65497 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min

Time min	Time on left represents time for first value in each row.				
.00	.00	10.92	21.83	32.75	43.67
5.00	54.58	54.58	54.58	54.58	54.58
10.00	54.58	54.58	54.58	54.58	54.58
15.00	54.58	54.58	54.58	54.58	54.58
20.00	54.58	43.67	32.75	21.83	10.92
25.00	.00	.00	.00	.00	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00	.00	.00	.00	.00

Type... Read HYG
 Name... 20 MIN STORMS
 File... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
 Storm... Tag: C100YR

HYG file = E:\PONDPACK\11289\POND 7 FILES\AM2-100.HYG
 HYG ID = 100 YR Inflow
 HYG Tag = 100YR

 Peak Discharge = 69.82 cfs
 Time to Peak = 5.00 min
 HYG Volume = 83783 cu.ft

HYDROGRAPH ORDINATES (cfs)
 Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	13.96	27.93	41.89	55.85
5.00	69.82	69.82	69.82	69.82	69.82
10.00	69.82	69.82	69.82	69.82	69.82
15.00	69.82	69.82	69.82	69.82	69.82
20.00	69.82	55.85	41.89	27.93	13.96
25.00	.00	.00	.00	.00	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00				

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)
592.30	5.000	.0001	.0000	0	0
593.00	2512.000	.0577	.0604	613	613
594.00	11801.000	.2709	.4536	6586	7199
596.00	14786.000	.3394	.9136	26531	33730
597.00	16390.000	.3763	1.0731	15581	49311
598.00	18070.000	.4148	1.1862	17223	66535

POND VOLUME EQUATIONS

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

$$\text{Volume} = (1/3) * (\text{EL2}-\text{EL1}) * (\text{Area1} + \text{Area2} + \text{sq.rt.}(\text{Area1}*\text{Area2}))$$

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

Type.... Outlet Input Data
Name.... OS

File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
Title... Overflow Structure for Basin 2

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 592.30 ft
Increment = .30 ft
Max. Elev.= 598.00 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
Stand Pipe	AI	--->	CV	596.760	598.000
Weir-Rectangular	SL	--->	CV	595.260	598.000
Orifice-Area	LF	--->	CV	593.970	598.000
Weir-Rectangular	LW	--->	CV	592.300	593.970
Culvert-Circular	CV	--->	TW	592.280	598.000
TW SETUP, DS Channel					

Type.... Outlet Input Data
Name.... OS

File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
Title... Overflow Structure for Basin 2

OUTLET STRUCTURE INPUT DATA

Structure ID = AI
Structure Type = Stand Pipe

of Openings = 1
Invert Elev. = 596.76 ft
Diameter = 8.9572 ft
Orifice Area = 63.0136 sq.ft
Orifice Coeff. = .600
Weir Length = 28.14 ft
Weir Coeff. = 3.000
K, Submerged = .000
K, Reverse = 1.000
Kb, Barrel = .000000 (per ft of full flow)
Barrel Length = .00 ft
Mannings n = .0000

Structure ID = SL
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 595.26 ft
Weir Length = 3.00 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

Structure ID = LF
Structure Type = Orifice-Area

of Openings = 1
Invert Elev. = 592.30 ft
Area = 2.5000 sq.ft
Top of Orifice = 593.97 ft
Datum Elev. = 593.13 ft
Orifice Coeff. = .600

Type.... Outlet Input Data
Name.... OS

File.... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
Title... Overflow Structure for Basin 2

OUTLET STRUCTURE INPUT DATA

Structure ID = LW
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 592.30 ft
Weir Length = 1.50 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

File... E:\PONDPACK\11289\POND 7 FILES\AMBER MEADOWS BASIN 2.PPW
Title... Overflow Structure for Basin 2

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels = 1
Barrel Diameter = 3.0000 ft
Upstream Invert = 592.28 ft
Dnstream Invert = 592.08 ft
Horiz. Length = 41.22 ft
Barrel Length = 41.22 ft
Barrel Slope = .00485 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130
Ke = .5000 (forward entrance loss)
Kb = .007228 (per ft of full flow)
Kr = .5000 (reverse entrance loss)
HW Convergence = .200 +/- ft

INLET CONTROL DATA...

Equation form = 1
Inlet Control K = .0078
Inlet Control M = 2.0000
Inlet Control c = .02920
Inlet Control Y = .7400
T1 ratio (HW/D) = 1.133
T2 ratio (HW/D) = 1.205
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 = 595.68 ft ---> Flow = 42.85 cfs
At T2 Elev = 595.89 ft ---> Flow = 48.97 cfs

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Title... Overflow Structure for Basin 3 of Brook Hollow

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

CUMULATIVE HGL CONVERGENCE ERROR .100 (+/- ft)
 FLOW PATH: Elev= 600.9; Branch: LF-CV-TW

* Max. convergence errors shown may also occur for
 flow paths other than the ones listed above.

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
599.10	54.34	592.87	.034	SL,LF,CV (no Q: AI,LW)
599.20	56.04	592.89	.034	SL,LF,CV (no Q: AI,LW)
599.30	57.80	592.92	.034	SL,LF,CV (no Q: AI,LW)
599.40	59.60	592.95	.035	SL,LF,CV (no Q: AI,LW)
599.50	61.45	592.97	.035	SL,LF,CV (no Q: AI,LW)
599.60	63.33	593.00	.036	SL,LF,CV (no Q: AI,LW)
599.70	65.26	593.03	.037	SL,LF,CV (no Q: AI,LW)
599.80	67.23	593.05	.037	SL,LF,CV (no Q: AI,LW)
599.90	69.24	593.08	.038	SL,LF,CV (no Q: AI,LW)
600.00	71.29	593.11	.039	SL,LF,CV (no Q: AI,LW)
600.10	73.38	593.14	.040	SL,LF,CV (no Q: AI,LW)
600.20	75.51	593.16	.039	SL,LF,CV (no Q: AI,LW)
600.30	77.68	593.19	.037	SL,LF,CV (no Q: AI,LW)
600.40	79.88	593.22	.035	SL,LF,CV (no Q: AI,LW)
600.41	80.11	593.22	.034	SL,LF,CV (no Q: AI,LW)
600.50	83.35	593.26	.032	AI,SL,LF,CV (no Q: LW)
600.60	88.22	593.32	.018	AI,SL,LF,CV (no Q: LW)
600.70	94.33	593.40	.015	AI,SL,LF,CV (no Q: LW)
600.80	100.96	593.47	.041	AI,SL,LF,CV (no Q: LW)
600.90	107.46	593.55	.100	AI,SL,LF,CV (no Q: LW)
601.00	115.54	593.64	.066	AI,SL,LF,CV (no Q: LW)
601.10	121.56	593.70	.083	AI,SL,LF,CV (no Q: LW)
601.20	128.40	593.78	.078	AI,SL,LF,CV (no Q: LW)
601.30	166.75	594.16	.002	AI,CV (no Q: SL,LF,LW)
601.40	141.51	593.91	.096	AI,SL,LF,CV (no Q: LW)
601.50	170.24	594.20	.006	AI,CV (no Q: SL,LF,LW)

Type.... Pond Routing Summary Page 4.01
Name.... BASIN 3 OUT Tag: A15YR Event: A15YR
File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Storm... A15YR Tag: A15YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = E:\PONDPACK\11289\POND 7 FILES\
Inflow HYG file = NONE STORED - BASIN 3 IN A15YR
Outflow HYG file = NONE STORED - BASIN 3 OUT A15YR

Pond Node Data = BASIN 3
Pond Volume Data = Basin 3
Pond Outlet Data = 05

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 592.60 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 = 91.54 cfs at 9.00 min
Peak Outflow = 58.99 cfs at 23.00 min

Peak Elevation = 599.37 ft
Peak Storage = 56620 cu.ft
=====

MA55 BALANCE (cu.ft)

+ Initial Vol = 0
+ HYG Vol IN = 109843
- Infiltration = 0
- HYG Vol OUT = 109767
- Retained Vol = 76

Unrouted Vol = - cu.ft (.000% of Inflow Volume)

Type... Pond Routed HYG (total out) Page 4.02
 Name... BASIN 3 OUT Tag: A15YR Event: A15YR
 File... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Storm... A15YR Tag: A15YR

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
 HYG ID = BASIN 3 OUT
 HYG Tag = A15YR

 Peak Discharge = 58.99 cfs
 Time to Peak = 23.00 min
 HYG Volume = 109767 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	1.35	3.19	5.01	6.93
5.00	9.40	12.51	16.21	24.74	26.60
10.00	29.63	32.19	34.41	36.38	38.14
15.00	39.90	42.52	45.49	48.54	51.56
20.00	54.49	56.90	58.39	58.99	58.75
25.00	57.75	56.05	53.76	50.96	47.78
30.00	44.68	42.05	39.95	38.59	37.39
35.00	36.17	34.93	33.67	32.40	31.10
40.00	29.79	28.46	27.12	26.74	25.60
45.00	22.70	18.34	17.04	15.84	14.74
50.00	13.72	12.78	11.91	11.11	10.37
55.00	9.68	9.05	8.47	7.93	7.43
60.00	6.97	6.54	6.14	5.76	5.40
65.00	5.04	4.68	4.32	3.98	3.62
70.00	3.29	2.95	2.62	2.30	1.98
75.00	1.67	1.37	1.32	.89	.24
80.00	.07	.02	.01	.00	

Type.... Pond Routing Summary Page 4.03
 Name.... BASIN 3 OUT Tag: B25YR Event: B25YR
 File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Storm... B25YR Tag: B25YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = E:\PONDPACK\11289\POND 7 FILES\
 Inflow HYG file = NONE STORED - BASIN 3 IN B25YR
 Outflow HYG file = NONE STORED - BASIN 3 OUT B25YR

Pond Node Data = BASIN 3
 Pond Volume Data = Basin 3
 Pond Outlet Data = 05

No Infiltration

INITIAL CONDITIONS

```

-----
Starting WS Elev = 592.60 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 = 113.04 cfs at 9.00 min
Peak Outflow = 76.82 cfs at 23.00 min
-----
Peak Elevation = 600.26 ft
Peak Storage = 69183 cu.ft
=====
  
```

MASS BALANCE (cu.ft)

```

-----
+ Initial Vol = 0
+ HYG Vol IN = 135648
- Infiltration = 0
- HYG Vol OUT = 135572
- Retained Vol = 76
-----
Unrouted Vol = 0 cu.ft (.000% of Inflow Volume)
  
```

Type... Pond Routed HYG (total out) Page 4.04
 Name... BASIN 3 OUT Tag: B25YR Event: B25YR
 File... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Storm... B25YR Tag: B25YR

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
 HYG ID = BASIN 3 OUT
 HYG Tag = B25YR

 Peak Discharge = 76.82 cfs
 Time to Peak = 23.00 min
 HYG Volume = 135572 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	1.57	3.62	5.67	8.05
5.00	11.22	15.18	22.33	26.69	30.35
10.00	33.62	36.40	38.82	42.04	46.34
15.00	50.90	55.47	59.89	64.11	68.08
20.00	71.79	74.72	76.37	76.82	76.16
25.00	74.50	71.94	68.59	64.54	59.91
30.00	55.31	51.24	47.68	44.59	41.98
35.00	39.90	38.55	37.35	36.13	34.90
40.00	33.64	32.36	31.07	29.75	28.42
45.00	27.08	26.76	25.57	22.46	18.30
50.00	17.01	15.81	14.71	13.69	12.75
55.00	11.89	11.09	10.35	9.67	9.04
60.00	8.46	7.92	7.42	6.96	6.53
65.00	6.13	5.75	5.39	5.03	4.67
70.00	4.31	3.97	3.62	3.28	2.94
75.00	2.61	2.30	1.97	1.66	1.36
80.00	1.32	.86	.24	.06	.02
85.00	.00	.00			

Type... Pond Routing Summary Page 4.05
 Name... BASIN 3 OUT Tag: C100YR Event: C100YR
 File... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Storm... C100YR Tag: C100YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = E:\PONDPACK\11289\POND 7 FILES\
 Inflow HYG file = NONE STORED - BASIN 3 IN C100YR
 Outflow HYG file = NONE STORED - BASIN 3 OUT C100YR

Pond Node Data = BASIN 3
 Pond Volume Data = Basin 3
 Pond Outlet Data = OS

No Infiltration

INITIAL CONDITIONS

```
-----
Starting WS Elev = 592.60 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 = 144.60 cfs at 9.00 min
Peak Outflow = 120.84 cfs at 21.00 min
-----
Peak Elevation = 601.09 ft
Peak Storage = 81836 cu.ft
=====
```

MASS BALANCE (cu.ft)

```
-----
+ Initial Vol = 0
+ HYG Vol IN = 173531
- Infiltration = 0
- HYG Vol OUT = 173455
- Retained Vol = 76
-----
Unrouted Vol = 0 cu.ft (.000% of Inflow Volume)
```

Type... Pond Routed HYG (total out) Page 4.06
 Name... BASIN 3 OUT Tag: C100YR Event: C100YR
 File... E:\PONDPACK\11289\POND 7 FILE5\BROOK HOLLOW BASIN 3.PPW
 Storm... C100YR Tag: C100YR

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
 HYG ID = BASIN 3 OUT
 HYG Tag = C100YR

 Peak Discharge = 120.84 cfs
 Time to Peak = 21.00 min
 HYG Volume = 173455 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	1.86	4.19	6.59	9.74
5.00	13.97	19.24	26.87	31.08	35.07
10.00	38.63	43.50	50.12	57.08	63.95
15.00	70.53	76.74	84.12	96.34	107.22
20.00	116.79	120.84	120.77	117.43	110.24
25.00	101.32	91.22	82.07	76.41	70.67
30.00	64.89	59.73	55.15	51.10	47.56
35.00	44.49	41.89	39.83	38.51	37.31
40.00	36.09	34.85	33.59	32.31	31.02
45.00	29.70	28.37	27.03	26.75	25.52
50.00	22.16	18.26	16.97	15.77	14.67
55.00	13.66	12.72	11.86	11.06	10.33
60.00	9.65	9.02	8.44	7.90	7.40
65.00	6.94	6.52	6.12	5.74	5.38
70.00	5.01	4.66	4.30	3.96	3.60
75.00	3.27	2.93	2.60	2.29	1.96
80.00	1.65	1.35	1.32	.83	.23
85.00	.06	.02	.00	.00	

Index of Starting Page Numbers for ID Names

----- 2 -----
20 MIN STORMS A15YR... 1.01, 1.02,
1.03

----- B -----
BASIN 3... 2.01, 4.01, 4.02, 4.03,
4.04, 4.05, 4.06

----- 0 -----
05... 3.01, 3.07

POND 7
Routing Calculations for
100 Year 20 Minute Design Storm
With Low Flow 100% Blocked

Basin 3

Table of Contents

```
***** OUTLET STRUCTURES *****  
  
OS LOW FLOW BLKD Outlet Input Data ..... 1.01  
                   Composite Rating Curve ..... 1.06  
  
***** POND ROUTING *****  
  
BASIN 3      OUT C100YR  
              Pond Routing Summary ..... 2.01  
              Pond Routed HYG (total out) ..... 2.02
```

Type... Outlet Input Data
Name... OS LOW FLOW BLKD

File... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Overflow Structure for Basin 3 of Brook Hollow

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 592.60 ft
Increment = .10 ft
Max. Elev.= 602.00 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
Stand Pipe	AI	--->	CV	600.410	602.000
Weir-Rectangular	SL	--->	CV	597.950	602.000
Culvert-Circular	CV	--->	TW	592.600	602.000
TW SETUP, DS Channel					

Type.... Outlet Input Data
Name.... OS LOW FLOW BLKD

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Overflow Structure for Basin 3 of Brook Hollow

OUTLET STRUCTURE INPUT DATA

Structure ID = AI
Structure Type = Stand Pipe

of Openings = 1
Invert Elev. = 600.41 ft
Diameter = 5.9715 ft
Orifice Area = 28.0064 sq.ft
Orifice Coeff. = .600
Weir Length = 18.76 ft
Weir Coeff. = 3.000
K, Submerged = .000
K, Reverse = 1.000
Kb, Barrel = .000000 (per ft of full flow)
Barrel Length = .00 ft
Mannings n = .0000

Structure ID = SL
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 597.95 ft
Weir Length = 3.00 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

Type... Outlet Input Data
Name... OS LOW FLOW BLKD

File... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Overflow Structure for Basin 3 of Brook Hollow

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels = 1
Barrel Diameter = 4.0000 ft
Upstream Invert = 592.60 ft
Dnstream Invert = 592.00 ft
Horiz. Length = 54.52 ft
Barrel Length = 54.52 ft
Barrel Slope = .01100 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130
Ke = .5000 (forward entrance loss)
Kb = .004925 (per ft of full flow)
Kr = .5000 (reverse entrance loss)
HW Convergence = 1.000 +/- ft

INLET CONTROL DATA...

Equation form = 1
Inlet Control K = .0078
Inlet Control M = 2.0000
Inlet Control c = .02920
Inlet Control Y = .7400
T1 ratio (HW/D) = 1.130
T2 ratio (HW/D) = 1.202
Slope Factor = -.500
Calc inlet only = Yes

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 = 597.12 ft ---> Flow = 87.96 cfs
At T2 Elev = 597.41 ft ---> Flow = 100.53 cfs

Type.... Outlet Input Data
Name.... OS LOW FLOW BLKD

Page 1.04

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Overflow Structure for Basin 3 of Brook Hollow

OUTLET STRUCTURE INPUT DATA

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

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

CONVERGENCE TOLERANCES...
Maximum Iterations= 50
Min. TW tolerance = .10 ft
Max. TW tolerance = .10 ft
Min. HW tolerance = .10 ft
Max. HW tolerance = .10 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

S/N: f21101d06a84 Bax Engineering

PondPack Ver: 7.0 (325)

Compute Time: 09:01:38

Date: 09-20-2002

Type.... Outlet Input Data
Name.... OS LOW FLOW BLKD

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
Title... Overflow Structure for Basin 3 of Brook Hollow

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Irreg.
Channel ID: Creek

COMPOSITE CHANNEL SECTION

Elev.Constant= .00 ft

GROUND ELEVATION POINTS
Cross Section ID: CREEK
Lowest Elev. = 591.53 ft

X Distance (ft)	Y Elev (ft)	Y+Constant (ft)
.00	598.00	598.00
6.00	596.00	596.00
14.91	594.22	594.22
16.81	591.53	591.53
23.30	591.53	591.53
26.53	599.69	599.69

THE INFORMATION BELOW WAS USED TO COMPUTE
FLOW RATE SEPARATELY FOR EACH SEGMENT.

Cross Section ID: CREEK

CROSS SECTION SUBDIVIDED INTO DIFFERENT SEGMENTS

Segment	X Left (ft)	X Right (ft)	Ground n	Descr.
1	.00	14.91	0.04500	Left Overbank
2	14.91	23.30	0.04000	Main Channel
3	23.30	26.53	0.04500	Right Overbank

File... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Title... Overflow Structure for Basin 3 of Brook Hollow

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

CUMULATIVE HGL CONVERGENCE ERROR .083 (+/- ft)
 FLOW PATH: Elev= 601.9; Branch: SL-CV-TW

* Max. convergence errors shown may also occur for
 flow paths other than the ones listed above.

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
592.60	.00	591.53	.000	(no Q: AI,SL,CV)
592.70	.00	591.53	.000	(no Q: AI,SL,CV)
592.80	.00	591.53	.000	(no Q: AI,SL,CV)
592.90	.00	591.53	.000	(no Q: AI,SL,CV)
593.00	.00	591.53	.000	(no Q: AI,SL,CV)
593.10	.00	591.53	.000	(no Q: AI,SL,CV)
593.20	.00	591.53	.000	(no Q: AI,SL,CV)
593.30	.00	591.53	.000	(no Q: AI,SL,CV)
593.40	.00	591.53	.000	(no Q: AI,SL,CV)
593.50	.00	591.53	.000	(no Q: AI,SL,CV)
593.60	.00	591.53	.000	(no Q: AI,SL,CV)
593.70	.00	591.53	.000	(no Q: AI,SL,CV)
593.80	.00	591.53	.000	(no Q: AI,SL,CV)
593.90	.00	591.53	.000	(no Q: AI,SL,CV)
594.00	.00	591.53	.000	(no Q: AI,SL,CV)
594.10	.00	591.53	.000	(no Q: AI,SL,CV)
594.20	.00	591.53	.000	(no Q: AI,SL,CV)
594.30	.00	591.53	.000	(no Q: AI,SL,CV)
594.40	.00	591.53	.000	(no Q: AI,SL,CV)
594.50	.00	591.53	.000	(no Q: AI,SL,CV)
594.60	.00	591.53	.000	(no Q: AI,SL,CV)
594.70	.00	591.53	.000	(no Q: AI,SL,CV)
594.80	.00	591.53	.000	(no Q: AI,SL,CV)
594.90	.00	591.53	.000	(no Q: AI,SL,CV)
595.00	.00	591.53	.000	(no Q: AI,SL,CV)
595.10	.00	591.53	.000	(no Q: AI,SL,CV)
595.20	.00	591.53	.000	(no Q: AI,SL,CV)
595.30	.00	591.53	.000	(no Q: AI,SL,CV)
595.40	.00	591.53	.000	(no Q: AI,SL,CV)
595.50	.00	591.53	.000	(no Q: AI,SL,CV)
595.60	.00	591.53	.000	(no Q: AI,SL,CV)
595.70	.00	591.53	.000	(no Q: AI,SL,CV)
595.80	.00	591.53	.000	(no Q: AI,SL,CV)

File... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Title... Overflow Structure for Basin 3 of Brook Hollow

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

CUMULATIVE HGL CONVERGENCE ERROR .083 (+/- ft)
 FLOW PATH: Elev= 601.9; Branch: SL-CV-TW

* Max. convergence errors shown may also occur for
 flow paths other than the ones listed above.

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
595.90	.00	591.53	.000	(no Q: AI,SL,CV)
596.00	.00	591.53	.000	(no Q: AI,SL,CV)
596.10	.00	591.53	.000	(no Q: AI,SL,CV)
596.20	.00	591.53	.000	(no Q: AI,SL,CV)
596.30	.00	591.53	.000	(no Q: AI,SL,CV)
596.40	.00	591.53	.000	(no Q: AI,SL,CV)
596.50	.00	591.53	.000	(no Q: AI,SL,CV)
596.60	.00	591.53	.000	(no Q: AI,SL,CV)
596.70	.00	591.53	.000	(no Q: AI,SL,CV)
596.80	.00	591.53	.000	(no Q: AI,SL,CV)
596.90	.00	591.53	.000	(no Q: AI,SL,CV)
597.00	.00	591.53	.000	(no Q: AI,SL,CV)
597.10	.00	591.53	.000	(no Q: AI,SL,CV)
597.20	.00	591.53	.000	(no Q: AI,SL,CV)
597.30	.00	591.53	.000	(no Q: AI,SL,CV)
597.40	.00	591.53	.000	(no Q: AI,SL,CV)
597.50	.00	591.53	.000	(no Q: AI,SL,CV)
597.60	.00	591.53	.000	(no Q: AI,SL,CV)
597.70	.00	591.53	.000	(no Q: AI,SL,CV)
597.80	.00	591.53	.000	(no Q: AI,SL,CV)
597.90	.00	591.53	.000	(no Q: AI,SL,CV)
597.95	.00	591.53	.000	(no Q: AI,SL,CV)
598.00	.10	591.56	.000	SL,CV (no Q: AI)
598.10	.52	591.61	.000	SL,CV (no Q: AI)
598.20	1.12	591.66	.000	SL,CV (no Q: AI)
598.30	1.86	591.71	.000	SL,CV (no Q: AI)
598.40	2.72	591.75	.000	SL,CV (no Q: AI)
598.50	3.67	591.79	.000	SL,CV (no Q: AI)
598.60	4.72	591.83	.000	SL,CV (no Q: AI)
598.70	5.84	591.88	.000	SL,CV (no Q: AI)
598.80	7.05	591.92	.000	SL,CV (no Q: AI)
598.90	8.33	591.96	.000	SL,CV (no Q: AI)
599.00	9.68	592.00	.000	SL,CV (no Q: AI)

File... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Title... Overflow Structure for Basin 3 of Brook Hollow

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

CUMULATIVE HGL CONVERGENCE ERROR .083 (+/- ft)
 FLOW PATH: Elev= 601.9; Branch: SL-CV-TW

* Max. convergence errors shown may also occur for
 flow paths other than the ones listed above.

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
599.10	11.10	592.04	.000	SL,CV (no Q: AI)
599.20	12.58	592.08	.000	SL,CV (no Q: AI)
599.30	14.12	592.12	.000	SL,CV (no Q: AI)
599.40	15.71	592.16	.000	SL,CV (no Q: AI)
599.50	17.37	592.20	.000	SL,CV (no Q: AI)
599.60	19.07	592.24	.000	SL,CV (no Q: AI)
599.70	20.83	592.28	.000	SL,CV (no Q: AI)
599.80	22.65	592.32	.000	SL,CV (no Q: AI)
599.90	24.51	592.36	.000	SL,CV (no Q: AI)
600.00	26.42	592.39	.000	SL,CV (no Q: AI)
600.10	28.37	592.43	.000	SL,CV (no Q: AI)
600.20	30.37	592.47	.000	SL,CV (no Q: AI)
600.30	32.42	592.51	.000	SL,CV (no Q: AI)
600.40	34.51	592.55	.000	SL,CV (no Q: AI)
600.41	34.72	592.55	.000	SL,CV (no Q: AI)
600.50	38.17	592.61	.000	AI,SL,CV
600.60	43.49	592.70	.000	AI,SL,CV
600.70	49.83	592.80	.000	AI,SL,CV
600.80	57.01	592.91	.000	AI,SL,CV
600.90	64.90	593.02	.000	AI,SL,CV
601.00	73.45	593.14	.000	AI,SL,CV
601.10	82.57	593.25	.000	AI,SL,CV
601.20	92.25	593.37	.000	AI,SL,CV
601.30	102.44	593.49	.000	AI,SL,CV
601.40	113.11	593.61	.000	AI,SL,CV
601.50	123.21	593.72	.047	AI,SL,CV
601.60	133.16	593.83	.047	AI,SL,CV
601.70	141.85	593.91	.057	AI,SL,CV
601.80	150.57	594.00	.051	AI,SL,CV
601.90	159.63	594.09	.083	AI,SL,CV
602.00	167.34	594.16	.000	AI,CV (no Q: SL)

Type... Pond Routing Summary Page 2.01
 Name... BASIN 3 OUT Tag: C100YR Event: C100YR
 File... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW
 Storm... C100YR Tag: C100YR

LEVEL POOL ROUTING SUMMARY

HYG Dir = E:\PONDPACK\11289\POND 7 FILES\
 Inflow HYG file = NONE STORED - BASIN 3 IN C100YR
 Outflow HYG file = NONE STORED - BASIN 3 OUT C100YR

Pond Node Data = BASIN 3
 Pond Volume Data = Basin 3
 Pond Outlet Data = OS LOW FLOW BLKD

No Infiltration

INITIAL CONDITIONS

```

-----
Starting WS Elev = 592.60 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 = 144.60 cfs at 9.00 min
Peak Outflow = 134.70 cfs at 21.00 min
-----
Peak Elevation = 601.62 ft
Peak Storage = 90467 cu.ft
=====
  
```

MASS BALANCE (cu.ft)

```

-----
+ Initial Vol = 0
+ HYG Vol IN = 173531
- Infiltration = 0
- HYG Vol OUT = 134533
- Retained Vol = 38998
-----
Unrouted Vol = - cu.ft (.000% of Inflow Volume)
  
```

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
 HYG ID = BASIN 3 OUT
 HYG Tag = C100YR

 Peak Discharge = 134.70 cfs
 Time to Peak = 21.00 min
 HYG Volume = 134533 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
.00	.00	.00	.00	.00	.00
5.00	.00	.00	.00	.00	.01
10.00	5.46	14.02	23.48	33.01	52.26
15.00	77.19	97.88	113.08	122.89	129.52
20.00	134.01	134.70	130.58	122.60	111.88
25.00	98.99	85.62	72.16	59.03	46.70
30.00	37.54	33.28	30.60	28.17	25.97
35.00	23.97	22.15	20.50	18.99	17.62
40.00	16.37	15.22	14.17	13.22	12.33
45.00	11.53	10.78	10.10	9.47	8.89
50.00	8.35	7.85	7.39	6.96	6.57
55.00	6.21	5.86	5.55	5.25	4.97
60.00	4.71	4.48	4.25	4.04	3.84
65.00	3.65	3.48	3.32	3.17	3.03
70.00	2.89	2.75	2.64	2.53	2.42
75.00	2.32	2.22	2.13	2.04	1.96
80.00	1.88	1.81	1.74	1.68	1.61
85.00	1.56	1.50	1.44	1.39	1.34
90.00	1.29	1.24	1.20	1.16	1.11
95.00	1.08	1.05	1.02	.99	.96
100.00	.93	.90	.87	.85	.82
105.00	.80	.77	.75	.73	.70
110.00	.68	.66	.64	.62	.60
115.00	.59	.57	.55	.53	.52
120.00	.51	.50	.49	.48	.47
125.00	.46	.45	.44	.43	.42
130.00	.41	.40	.39	.38	.37
135.00	.37	.36	.35	.34	.34
140.00	.33	.32	.31	.31	.30
145.00	.29	.29	.28	.28	.27
150.00	.26	.26	.25	.25	.24
155.00	.24	.23	.23	.22	.22
160.00	.21	.21	.20	.20	.20

HYDROGRAPH ORIGINATES (cfs)
 Output Time increment = 1.00 min
 Time on left represents time for first value in each row.

Time min					
165.00	.19	.19	.18	.18	.17
170.00	.17	.17	.16	.16	.16
175.00	.15	.15	.15	.14	.14
180.00	.14	.13	.13	.13	.13
185.00	.12	.12	.12	.12	.11
190.00	.11	.11	.11	.10	.10
195.00	.10	.10	.10	.10	.10
200.00	.09	.09	.09	.09	.09
205.00	.09	.09	.09	.09	.09
210.00	.09	.08	.08	.08	.08
215.00	.08	.08	.08	.08	.08
220.00	.08	.08	.08	.07	.07
225.00	.07	.07	.07	.07	.07
230.00	.07	.07	.07	.07	.07
235.00	.07	.07	.06	.06	.06
240.00	.06	.06	.06	.06	.06
245.00	.06	.06	.06	.06	.06
250.00	.06	.06	.06	.05	.05
255.00	.05	.05	.05	.05	.05
260.00	.05	.05	.05	.05	.05
265.00	.05	.05	.05	.05	.05
270.00	.05	.05	.04	.04	.04
275.00	.04	.04	.04	.04	.04
280.00	.04	.04	.04	.04	.04
285.00	.04	.04	.04	.04	.04
290.00	.04	.04	.04	.04	.04
295.00	.04	.03	.03	.03	.03
300.00	.03	.03	.03	.03	.03
305.00	.03	.03	.03	.03	.03
310.00	.03	.03	.03	.03	.03
315.00	.03	.03	.03	.03	.03
320.00	.03	.03	.03	.03	.03
325.00	.03	.03	.03	.02	.02
330.00	.02	.02	.02	.02	.02
335.00	.02	.02	.02	.02	.02
340.00	.02	.02	.02	.02	.02
345.00	.02	.02	.02	.02	.02
350.00	.02	.02	.02	.02	.02
355.00	.02	.02	.02	.02	.02
360.00	.02	.02	.02	.02	.02
365.00	.02	.02	.02	.02	.02
370.00	.02	.02	.02	.02	.02
375.00	.02	.02	.01	.01	.01
380.00	.01	.01	.01	.01	.01
385.00	.01	.01	.01	.01	.01
390.00	.01	.01	.01	.01	.01
395.00	.01	.01	.01	.01	.01

Type.... Pond Routed HYG (total out)

Page 2.04

Name.... BASIN 3 OUT Tag: C100YR

Event: C100YR

File.... E:\PONDPACK\11289\POND 7 FILES\BROOK HOLLOW BASIN 3.PPW

Storm... C100YR Tag: C100YR

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min

Time on left represents time for first value in each row.

Time min					
400.00	.01	.01	.01	.01	.01
405.00	.01	.01	.01	.01	.01
410.00	.01	.01	.01	.01	.01
415.00	.01	.01	.01	.01	.01
420.00	.01	.01	.01	.01	.01
425.00	.01	.01	.01	.01	.01
430.00	.01	.01	.01	.01	.01
435.00	.01	.01	.01	.01	.01
440.00	.01	.01	.01	.01	.01
445.00	.01	.01	.01	.01	.01
450.00	.01	.01	.01	.01	.01
455.00	.01	.01	.01	.01	.01
460.00	.01	.01	.01	.01	.01
465.00	.01	.01	.01	.01	.01
470.00	.01	.01	.01	.01	.01
475.00	.01	.01	.01	.01	.01
480.00	.01	.01	.00	.00	.00
485.00	.00	.00	.00	.00	.00
490.00	.00	.00	.00	.00	.00
495.00	.00	.00	.00	.00	.00
500.00	.00	.00	.00	.00	.00
505.00	.00	.00	.00	.00	.00
510.00	.00	.00	.00	.00	.00
515.00	.00	.00	.00	.00	.00
520.00	.00	.00	.00	.00	.00
525.00	.00	.00	.00	.00	.00
530.00	.00	.00			

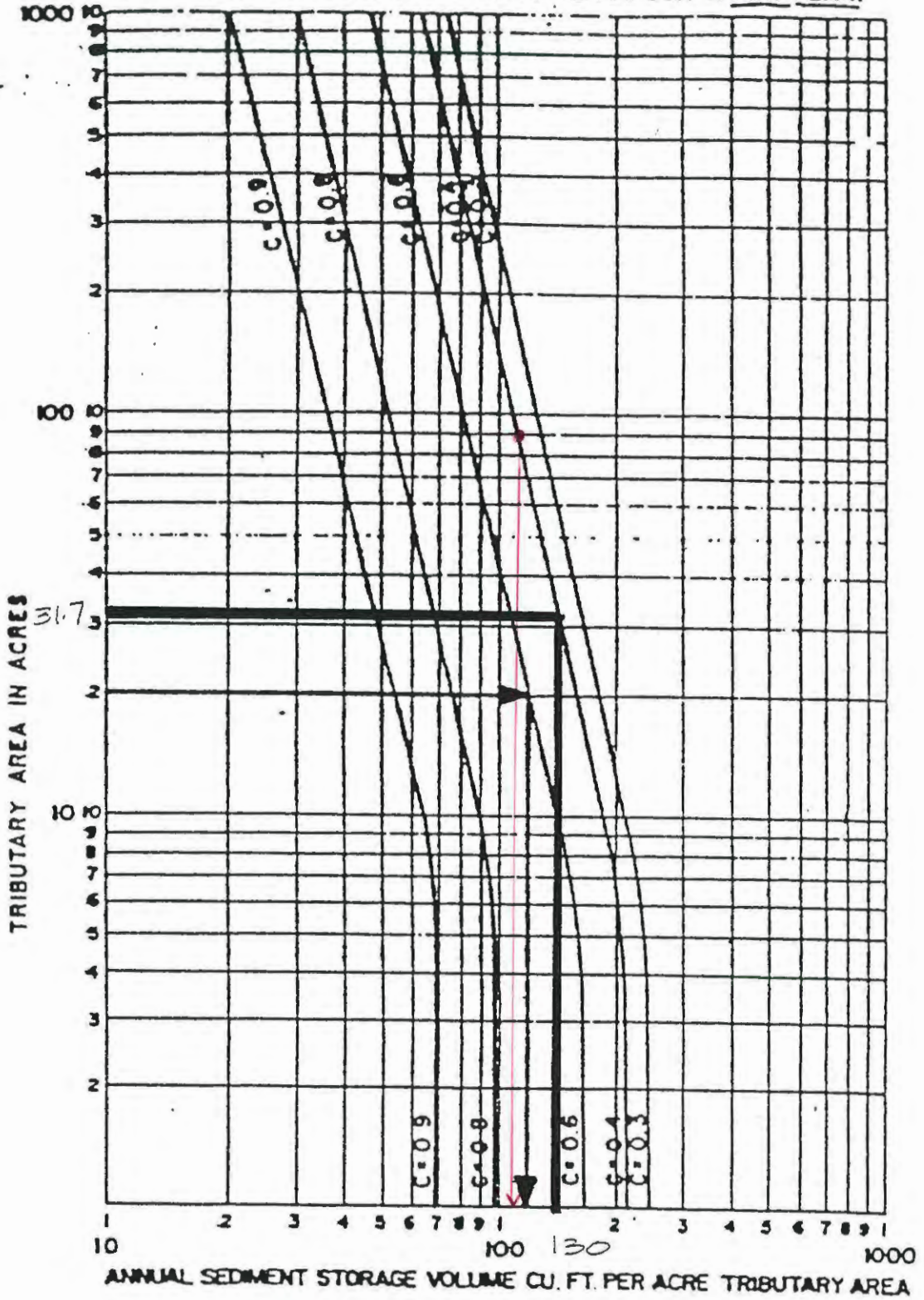
EXAMPLE:

TRIBUTARY AREA = 20 ACRES

RATIONAL METHOD RUNOFF COEFFICIENT "C" = 0.6

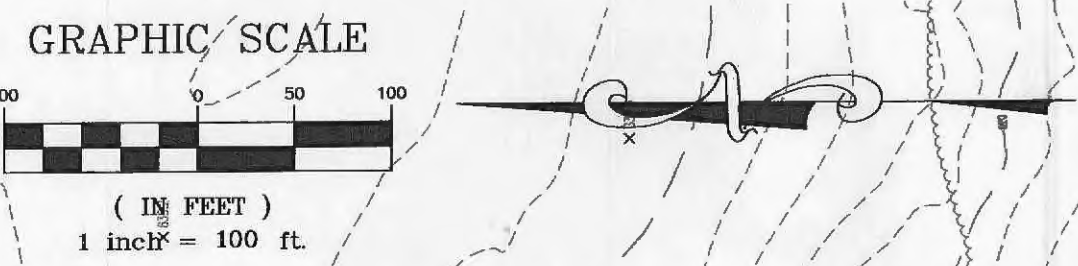
SEDIMENT STORAGE = 120 CU. FT. PER ACRE PER YEAR

TOTAL SEDIMENT STORAGE = 120 X 20 = 2400 CU. FT. PER YEAR.



92 x 110 = 10,120
~~92~~
 OK
 $30 \times 2 = 60$
 ANNUAL SEDIMENT STORAGE

FIG. 6



Total developed flow from Amber Meadows Basins and Areas to Annabrook Box Culvert
 Q15 = 146.37 cfs - 28.49 cfs (offsite into Basin 3) = 117.88 cfs
 Q25 = 188.63 cfs - 35.15 cfs (offsite to Basin 3) = 153.48 cfs

NOTE:
 WEIGHTED PI FACTORS USED IN THIS AREA BASED UPON FUTURE USE, INCLUDING PAVEMENT, SIDEWALKS, ROADS AND DRIVEWAYS.
 WEIGHTED PI'S:
 100% IMPERVIOUS AREAS: STREET PAVEMENT: 2.95, 57 of SIDEWALKS: 2.95, 100' PER LOT: 35,000 of LOT 29 INCLUDES HALF A HOME: 1,000' of DRIVEWAYS: 40' PER LOT: 14,400 of TOTAL AREA OF 100% IMPERVIOUSNESS: 78,555.61 of (OR 1,803 ac)
 TOTAL AREA DRAINING TO GLEN MARO: 6,886 ac. REMAINING ACREAGE AT 8% IMPERVIOUSNESS: 5,063 ac.
 15-YEAR WEIGHTED PI: $1.003 \times (2.95) + 5.063 \times (1.87) = 2.39$
 25-YEAR CALCULATED IN THE SAME FORMAT.
 WEIGHTED PI'S:
 15 Year: 2.39
 25 Year: 2.95
 SEE DETENTION REPORT FOR WEIGHTED PI CALCULATIONS
 SEE DETENTION REPORT ALSO FOR WEIGHTED PI CALCULATIONS

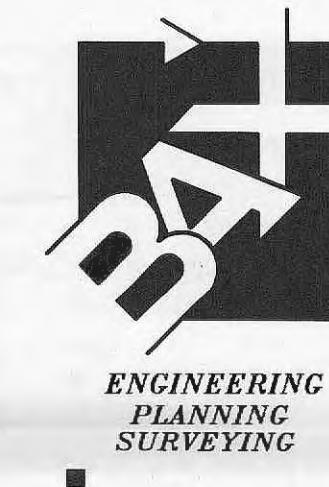


AMBER MEADOWS DETENTION ANALYSIS EXHIBIT
 PREPARED FOR:
 FIRST LAND COMPANY OF ST. CHARLES COUNTY, INC.
 P.O. BOX 176
 ST. PETERS, MISSOURI 63376
 (636) 928-4988

DISCLAIMER OF RESPONSIBILITY
 I hereby specify that the documents herein to be authorized by my seal are true and correct, and I hereby disclaim any responsibility for all other drawings, Specifications, Estimates, Reports or other documents or statements relating to or intended to be used for any part or parts of the architectural engineering project or survey.

Copyright 2000
 Best Engineering Company, Inc.
 All Rights Reserved

REVISIONS



ENGINEERING PLANNING SURVEYING
 1052 South Cloverleaf L
 St. Peters, MO. 63376-6
 314-928-5552
 FAX 928-1718

June 3, 2002
 DATE
 00-11289
 PROJECT NUMBER
 2 of 2
 SHEET OF
 11289con.dwg
 FILE NAME
 JDH MGG
 DRAWN CHECKED

