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# DETENTION CALCULATIONS FOR STERLING CROSSING

Prepared For:  
Arbor Land Investment Corp.  
Bax Project No. 97-9472

July 27, 2004  
Revised August 24, 2004



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97-9472  
Detention Analysis  
8/24/2004

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OK F.S. 9/8/04

Sterling Crossing  
Bax Engineering Co., Inc.  
CAL

## Detention Basin Calculations

Prepared By: Bax Engineering CO., Inc.

STERLING CROSSING

Bax Project NO. 97-9472

July 27, 2004 Revised: August 24, 2004

## INTRODUCTION:

This presently undeveloped site is located in the City of O'Fallon, Missouri. It is proposed that the 9.80-Acre tract be developed into a residential subdivision. The site has been broken down into three watersheds. Watershed A drains to the southeast, watershed B drains to the northwest and watershed C drains to the northeast. One dry storm water detention basin shall be constructed in watershed A to detain for the entire site. The storage volume and outflow rates shall be proportioned to ensure that the peak rate of runoff leaving the tract under post-developed conditions is less than or equal to the peak rate of runoff under pre-developed conditions for the 2, 15, 25 and 100 year-20 minute design storms and also analyzed for safe passage of the 100-year, 20-minute design storm under low-flow slot blocked conditions.

## GENERAL SITE DATA AND RUNOFF CALCULATIONS:

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

2 year	0-5% impervious	1.15 cfs/ac
15 year	0-5% impervious	1.87 cfs/ac ✓
25 year	0-5% impervious	2.31 cfs/ac ✓
100 year	0-5% impervious	2.95 cfs/ac

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

2 year	0-5% impervious	1.15 cfs/ac
15 year	0-5% impervious	1.87 cfs/ac
25 year	0-5% impervious	2.31 cfs/ac
100 year	0-5% impervious	2.95 cfs/ac
2 year	40% impervious	1.61 cfs/ac
15 year	40% impervious	2.64 cfs/ac ✓
25 year	40% impervious	3.26 cfs/ac ✓
100 year	40% impervious	4.17 cfs/ac

## TIME OF CONCENTRATION:

### BASIN A

Of the inflows to the basin, the hydraulically most remote point lies near the west side of the site in the rear yard of lot two. The flow travels east via rear yard ditch to area inlet 12. From area inlet 12, flow travels via storm sewer to FE 7 and into basin A. Time of concentration is estimated as follows:

$$\begin{aligned} \text{T (overland): } L &= 436' \\ \text{Elevation difference} &= 603-593 = 10' \\ \text{T (overland)} &= 3.4 \text{ minutes: See Figure 1} \\ \\ \text{T (stormpipe): } L &= 398' \\ \text{Estimated velocity} &= 7 \text{ feet/second} \\ \text{T(stormpipe)} &= 398 \text{ feet} / 7 \text{ feet/sec.} \\ &= 0.95 \text{ minutes} \\ \\ \text{Total time} &= 4.35 \text{ minutes} \Rightarrow \text{use 4 minutes} \end{aligned}$$

## DIFFERENTIAL RUNOFF:

### Watershed A

$$\begin{aligned} \text{Existing Flows (15yr/20 minute)} \\ 6.43 \text{ acres @ } 1.87 \text{ cfs/ac} &= \mathbf{12.02 \text{ cfs}} \end{aligned}$$

$$\begin{aligned} \text{Proposed Flows} \\ 7.64 \text{ acres @ } 2.64 \text{ cfs/ac} &= 20.17 \text{ cfs} \end{aligned}$$

$$\begin{aligned} 0.24 \text{ ac} + 0.55 \text{ ac} &= 0.79 \text{ acres} \\ 0.79 \text{ acres @ } 1.87 \text{ cfs/ac} &= \frac{1.48 \text{ cfs}}{\mathbf{21.65 \text{ cfs}}} \end{aligned}$$

### Differential Runoff

$$\begin{aligned} \text{Proposed} - \text{Existing} \\ 21.65 \text{ cfs} - 12.02 \text{ cfs} &= 9.63 \text{ cfs (15yr/20 minute)} \quad \checkmark \end{aligned}$$

### Detention Required

2 year	5.82 cfs
15 year	9.63 cfs
25 year	11.88 cfs
100 year	15.22 cfs

**Watershed B**

Existing Flows (15yr/20 minute)

0.65 acres @ 1.87 cfs/ac = **1.22 cfs**

Proposed Flows

0.44 acres @ 2.64 cfs/ac = **1.16 cfs**

Differential Runoff

Proposed - Existing

1.16 cfs - 1.22 cfs = -0.06 cfs (15yr/20 minute)

(No Detention Required)

*257/2011.07 ✓ dc*

*65 X 2.31 = 1.5 cfs  
44 X 3.26 = 1.43 dc*

**Watershed C**

Existing Flows (15yr/20 minute)

2.72 acres @ 1.87 cfs/ac = **5.09 cfs**

Proposed Flows

1.17 acres @ 2.64 cfs/ac = **3.09 cfs**

Differential Runoff

Proposed - Existing

3.09 cfs - 5.09 cfs = -2.00 cfs (15yr/20 minute)

(No Detention Required)

*✓ OK*

**BASIN PEAK INFLOWS:**

Inflows to the basin have been estimated from the post-developed drainage area map included.

**Basin A**

On-site	7.64 acres @ 1.61 cfs/ Ac = 12.30 cfs	2 year
	7.64 acres @ 2.64 cfs/ Ac = 20.17 cfs	15 year
	7.64 acres @ 3.26 cfs/ Ac = 24.91 cfs	25 year
	7.64 acres @ 4.17 cfs/ Ac = 31.86 cfs	100 year
Off-site	0.24 acres @ 1.15 cfs/ Ac = 0.28 cfs	2 year
	0.24 acres @ 1.87 cfs/ Ac = 0.45 cfs	15 year
	0.24 acres @ 2.31 cfs/ Ac = 0.55 cfs	25 year
	0.24 acres @ 2.95 cfs/ Ac = 0.71 cfs	100 year
Total	12.30 cfs + 0.28 cfs = <b>12.58 cfs</b>	2 year
	20.17 cfs + 0.45 cfs = <b>20.62 cfs</b>	15 year
	24.91 cfs + 0.55 cfs = <b>25.46 cfs</b>	25 year
	31.86 cfs + 0.71 cfs = <b>32.57 cfs</b>	100 year

## PERMITTED RELEASE RATE:

The permitted release rate of the basin was found by subtracting the Differential Runoff from the peak inflow to the basin for each design storm

Basin A

	BASIN INFLOW (cfs)	-	DIFFERENTIAL RUNOFF (cfs)	=	ALLOWABLE RELEASE RATE (cfs)
2 year	12.58	-	7.39	=	5.19
15 year	20.62	-	12.02	=	8.60
25 year	25.46	-	14.85	=	10.61
100 year	32.57	-	18.97	=	13.60

## STORM ROUTING CALCULATIONS AND RESULTS:

The computer program PONDPACK version 9 was used in routing the design 2, 15, 25 and 100 year, 20 minute storms through the basin.

STORM	PERMITTED RELEASE RATE (cfs)	ACTUAL RELEASE RATE (cfs)	PEAK ELEVATION (cfs)
2 YEAR	7.39	4.72	581.68
15 YEAR	12.02	5.66	583.06
25 YEAR	14.85	6.08	583.78
100 YEAR	18.97	6.60	584.72
100 YEAR (BLOCKED)	N/A	9.85	585.45

## SEDIMENT VOLUME CALCULATIONS:

The basin shall be analyzed to accommodate 2 years of sediment storage.

- The drainage area to the basin = 7.88 acres
- Rational Method runoff coefficient 'c' = 0.6
- Annual sediment storage volume (from figure 2) = 150 cf/ac
- The sediment storage and volume required =  
 $2 \text{ yrs of sediment storage} = 7.88 \text{ acres} (150 \text{ cf/ac/year})(2 \text{ years}) = 2,364 \text{ cf}$



To provide for the additional sediment storage the top of the overflow sill will be set at 585.00. Volume between the 100-year high water of 584.72 and the overflow sill elevation of 585.00 is 2,653 cf.

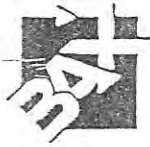
2,653 cf provided > 2,364 cf required ✓

## BASIN A

2 Year, 20 minute H.W.	581.68
15 Year, 20 minute H.W.	583.06
25 Year, 20 minute H.W.	583.78
100 Year, 20 minute H.W.	584.72

100 Year, 20 minute H.W.-Blocked	585.45
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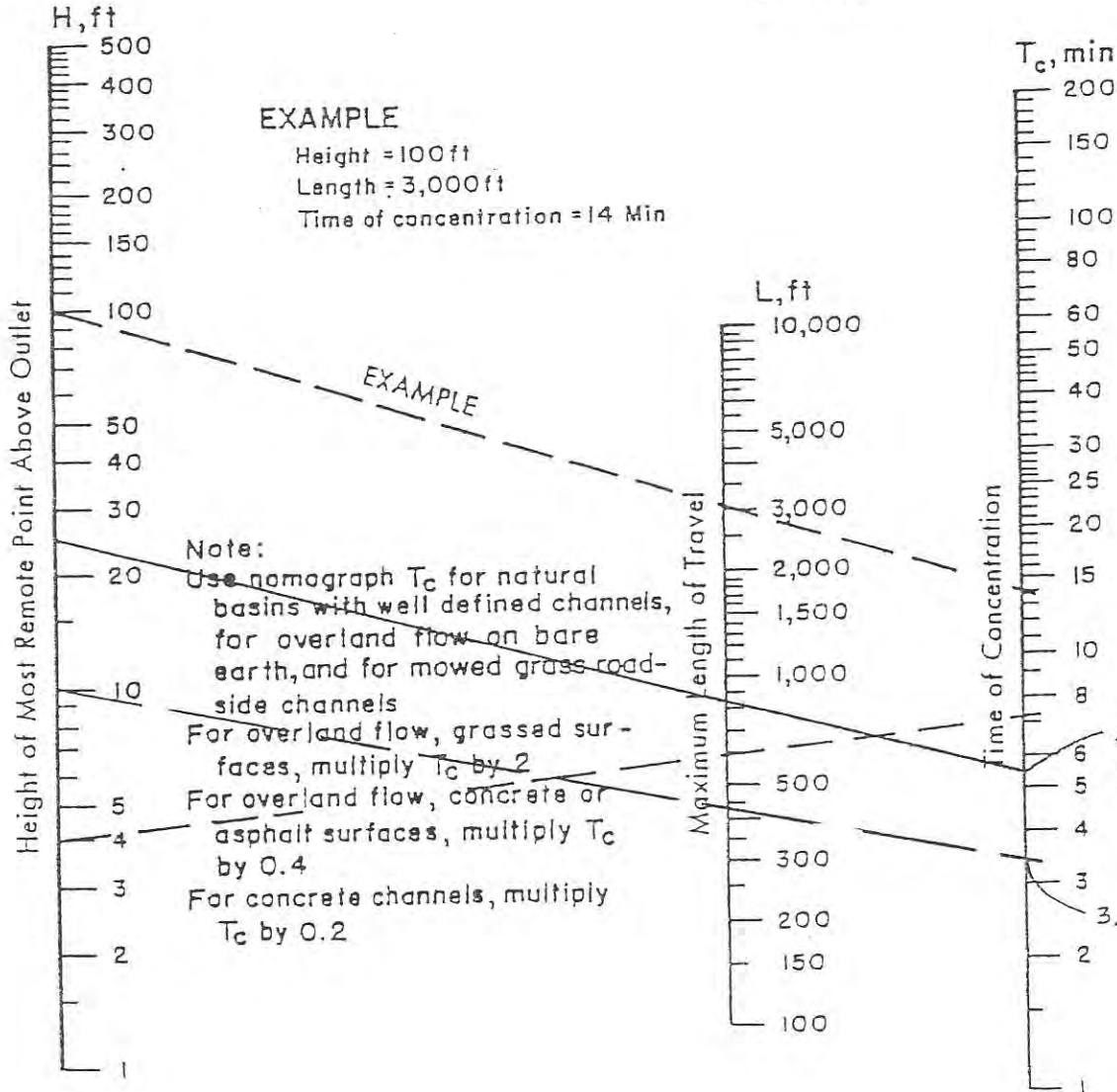
Low-Flow Slot	0.5' W x 1' H
Low-Flow Elevation	578.00
Sill Elevation - Double Untrapped Street Inlet	585.00
Top of Berm	587.50



Project: YULET TRACT.  
 Date: \_\_\_\_\_ Project No: 97-9472  
 Designed: \_\_\_\_\_ Checked: \_\_\_\_\_

$T_{c\ pre}$   
 $\Delta H = 607 - 581 = 26'$   
 $L = 825'$

$T_{c\ post}$   
 $t_c, \Delta H = 603 - 593 = 10'$   
 $L = 436'$



Based on study by P. Z. Kirpich,  
 Civil Engineering, Vol. 10, No. 6, June 1940, p. 362

$T_{c\ pre} = 11 \text{ MIN.}$

$T_{c\ post} = t_c + t_{c2}$

$t_c = 3.4 \text{ MIN}$

$t_{c2} = 398' @ 7' / sec = 56.86 / 60 = .95 \text{ MIN.} \Rightarrow 3.4 + .95 = 4.35 \text{ MIN} \Rightarrow \text{USE } 4'$

**FIGURE 1**

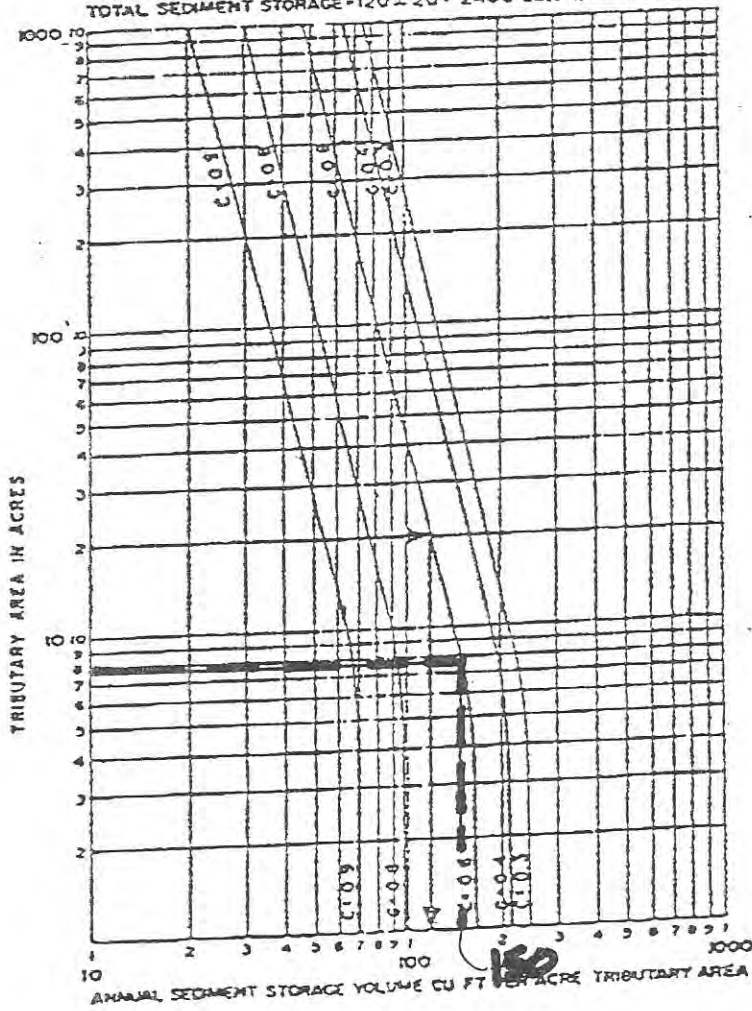
**EXAMPLE:**

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.



ANNUAL SEDIMENT STORAGE

FIG. 1

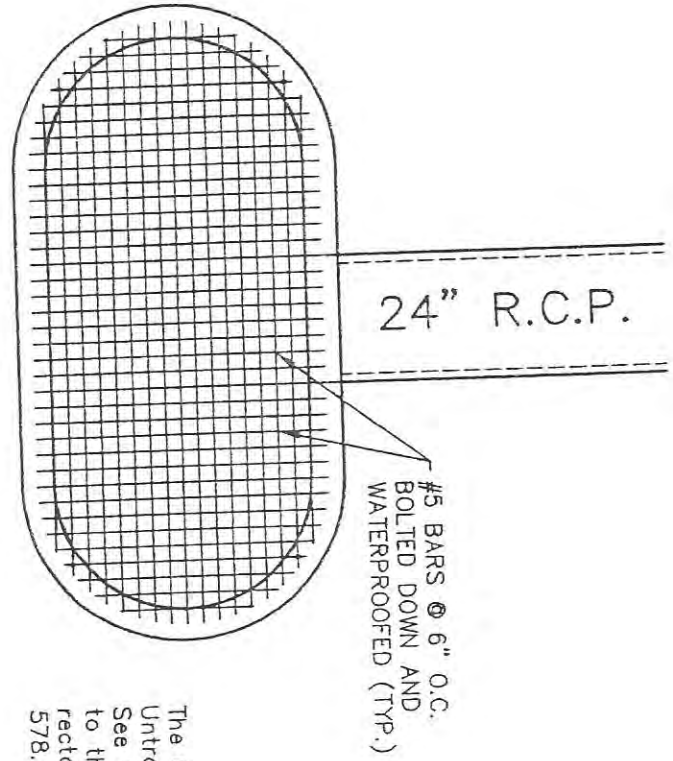
FIGURE 2



# STRUCTURE DETAIL

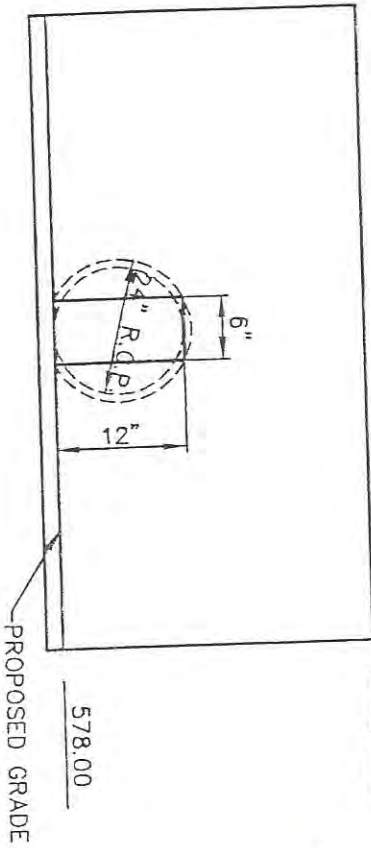
97-9472  
Detention Analysis  
July 28, 2004

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TOP VIEW  
N.T.S.

The Overflow Structure is to be a Standard Double Untrapped Street Inlet Precast Concrete (without top). See M.S.D. Detail 35. The bottom must be constructed to the correct height so that no brick will be used. A rectangular orifice 6" w. x 12" h, with a flowline of 578.00 will be used. (See Detention Calculations.)



OVERFLOW STRUCTURE 1  
N.T.S.

*TEADH Area on  
PLAN  
SHEET 7/19*



**POND 9**  
**Routing Calculations for**  
**2, 15, 25 & 100 Year, 20 Minute Design Storm**

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Type.... Executive Summary (Nodes)  
 Name.... Watershed  
 File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW  
 Storm... 2 Tag: 2

Page 1.01  
 Event: 2 yr

NETWORK SUMMARY -- NODES  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
BASIN A		.347		4.00	12.58	
BASIN A	IN	.347		4.00	12.58	
BASIN A	OUT	.347		22.00	4.72	581.68
Outfall OUT 10	JCT	.347		22.00	4.72	

Type.... Executive Summary (Nodes)  
 Name.... Watershed  
 File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW  
 Storm... 15 Tag: 15

Page 1.02  
 Event: 15 yr

NETWORK SUMMARY -- NODES  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
BASIN A		.568		4.00	20.62	
BASIN A	IN	POND		4.00	20.62	
BASIN A	OUT	POND		23.00	5.66	583.06
Outfall OUT 10	JCT	.568		23.00	5.66	

Type.... Executive Summary (Nodes)  
Name.... Watershed  
File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW  
Storm... 25 Tag: 25

Page 1.03  
Event: 25 yr

NETWORK SUMMARY -- NODES  
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Node ID	Type	HYG Vol ac-ft	Qpeak Trun. min	Qpeak cfs	Max WSEL ft
BASIN A		.701	4.00	25.46	
BASIN A	IN	.701	4.00	25.46	
BASIN A	OUT	.701	23.00	6.08	583.78
Outfall OUT 10	JCT	.701	23.00	6.08	

Type.... Executive Summary (Nodes)  
 Name.... Watershed  
 File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW  
 Storm... 100 Tag: 100

Page 1.04  
 Event: 100 yr

NETWORK SUMMARY -- NODES  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Node ID	Type	HYG Vol ac-ft	Qpeak Trun. min	Qpeak cfs	Max WSEL ft
BASIN A	HYG	.897	4.00	32.57	
BASIN A	IN POND	.897	4.00	32.57	
BASIN A	OUT POND	.897	23.00	6.60	584.72
Outfall OUT 10	JCT	.897	23.00	6.60	

File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW

POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (acres)	$A1+A2+\text{sqr}(A1*A2)$ (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
578.00	.000	.0000	.0000	.000	.000
580.00	3628.000	.0833	.0833	.056	.056
582.00	5884.000	.1351	.3244	.216	.272
584.00	8174.000	.1876	.4819	.321	.593
586.00	10842.000	.2489	.6527	.435	1.028
587.00	12388.000	.2844	.7993	.266	1.295

POND VOLUME EQUATIONS

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

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

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



File... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 578.00 ft  
Increment = .20 ft  
Max. Elev.= 587.00 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
Inlet Box	IB	--->	CV	585.000	588.000
Weir-Rectangular	RW	--->	CV	578.000	579.000
Orifice-Area	OA	--->	CV	579.000	588.000
Culvert-Circular	CV	--->	TW	576.000	588.000
TW SETUP, DS Channel					

OUTLET STRUCTURE INPUT DATA

Structure ID = IB  
Structure Type = Inlet Box  
-----  
# of Openings = 1  
Invert Elev. = 585.00 ft  
Orifice Area = 21.0700 sq.ft  
Orifice Coeff. = .660  
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 = RW  
Structure Type = Weir-Rectangular  
-----  
# of Openings = 1  
Crest Elev. = 578.00 ft  
Weir Length = .50 ft  
Weir Coeff. = 3.000000  
Weir TW effects (Use adjustment equation)

Type.... Outlet Input Data  
Name.... OUTFALL A

File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID	=	OA
Structure Type	=	Orifice-Area
-----		
# of Openings	=	1
Invert Elev.	=	578.00 ft
Area	=	.5000 sq.ft
Top of Orifice	=	579.00 ft
Datum Elev.	=	578.50 ft
Orifice Coeff.	=	.660

File... E:\PONDPACK\9000PLUS\9472\POSTDEVASINA V9.PFW

OUTLET STRUCTURE INPUT DATA

Structure ID = CV  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 2.0000 ft  
Upstream Invert = 576.00 ft  
Dnstream Invert = 574.67 ft  
Horiz. Length = 132.89 ft  
Barrel Length = 132.90 ft  
Barrel Slope = .01001 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130  
Ke = .0000 (forward entrance loss)  
Kb = .012411 (per ft of full flow)  
Kr = .5000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
Inlet Control K = .0098  
Inlet Control M = 2.0000  
Inlet Control c = .03980  
Inlet Control Y = .6700  
T1 ratio (HW/D) = 1.155  
T2 ratio (HW/D) = 1.302  
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 = 578.31 ft ---> Flow = 15.55 cfs  
At T2 Elev = 578.60 ft ---> Flow = 17.77 cfs

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 30  
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

File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
578.00	.00	Free	Outfall	(no Q: IB,RW,OA,CV)
578.20	.13	Free	Outfall	RW,CV (no Q: IB,OA)
578.40	.38	Free	Outfall	RW,CV (no Q: IB,OA)
578.60	.70	Free	Outfall	RW,CV (no Q: IB,OA)
578.80	1.07	Free	Outfall	RW,CV (no Q: IB,OA)
579.00	1.87	Free	Outfall	OA,CV (no Q: IB,RW)
579.20	2.21	Free	Outfall	OA,CV (no Q: IB,RW)
579.40	2.51	Free	Outfall	OA,CV (no Q: IB,RW)
579.60	2.78	Free	Outfall	OA,CV (no Q: IB,RW)
579.80	3.02	Free	Outfall	OA,CV (no Q: IB,RW)
580.00	3.24	Free	Outfall	OA,CV (no Q: IB,RW)
580.20	3.45	Free	Outfall	OA,CV (no Q: IB,RW)
580.40	3.65	Free	Outfall	OA,CV (no Q: IB,RW)
580.60	3.84	Free	Outfall	OA,CV (no Q: IB,RW)
580.80	4.01	Free	Outfall	OA,CV (no Q: IB,RW)
581.00	4.19	Free	Outfall	OA,CV (no Q: IB,RW)
581.20	4.35	Free	Outfall	OA,CV (no Q: IB,RW)
581.40	4.51	Free	Outfall	OA,CV (no Q: IB,RW)
581.60	4.66	Free	Outfall	OA,CV (no Q: IB,RW)
581.80	4.81	Free	Outfall	OA,CV (no Q: IB,RW)
582.00	4.95	Free	Outfall	OA,CV (no Q: IB,RW)
582.20	5.09	Free	Outfall	OA,CV (no Q: IB,RW)
582.40	5.23	Free	Outfall	OA,CV (no Q: IB,RW)
582.60	5.36	Free	Outfall	OA,CV (no Q: IB,RW)
582.80	5.49	Free	Outfall	OA,CV (no Q: IB,RW)
583.00	5.62	Free	Outfall	OA,CV (no Q: IB,RW)
583.20	5.74	Free	Outfall	OA,CV (no Q: IB,RW)
583.40	5.86	Free	Outfall	OA,CV (no Q: IB,RW)
583.60	5.98	Free	Outfall	OA,CV (no Q: IB,RW)
583.80	6.09	Free	Outfall	OA,CV (no Q: IB,RW)
584.00	6.21	Free	Outfall	OA,CV (no Q: IB,RW)
584.20	6.32	Free	Outfall	OA,CV (no Q: IB,RW)
584.40	6.43	Free	Outfall	OA,CV (no Q: IB,RW)
584.60	6.54	Free	Outfall	OA,CV (no Q: IB,RW)
584.80	6.64	Free	Outfall	OA,CV (no Q: IB,RW)
585.00	6.75	Free	Outfall	OA,CV (no Q: IB,RW)
585.20	11.89	Free	Outfall	IB,OA,CV (no Q: RW)
585.40	20.89	Free	Outfall	IB,OA,CV (no Q: RW)



File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
585.60	31.61	Free Outfall		IB,OA,CV (no Q: RW)
585.80	42.96	Free Outfall		IB,OA,CV (no Q: RW)
586.00	46.37	Free Outfall		IB,CV (no Q: RW,OA)
586.20	46.90	Free Outfall		IB,CV (no Q: RW,OA)
586.40	47.43	Free Outfall		IB,CV (no Q: RW,OA)
586.60	47.95	Free Outfall		IB,CV (no Q: RW,OA)
586.80	48.46	Free Outfall		IB,CV (no Q: RW,OA)
587.00	48.97	Free Outfall		IB,CV (no Q: RW,OA)

LEVEL POOL ROUTING DATA

HYG Dir = E:\PONDPACK\9000PLUS\9472\  
 Inflow HYG file = NONE STORED - BASIN A IN 15  
 Outflow HYG file = NONE STORED - BASIN A OUT 15

Pond Node Data = BASIN A  
 Pond Volume Data = BASIN A  
 Pond Outlet Data = OUTFALL A

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 578.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
578.00	.00	.000	.0000	.00	.00	.00
578.20	.13	.000	.0008	.00	.13	.21
578.40	.38	.000	.0033	.00	.38	1.02
578.60	.70	.001	.0075	.00	.70	2.87
578.80	1.07	.004	.0133	.00	1.07	6.23
579.00	1.87	.007	.0208	.00	1.87	11.95
579.20	2.21	.012	.0300	.00	2.21	19.63
579.40	2.51	.019	.0408	.00	2.51	30.17
579.60	2.78	.028	.0533	.00	2.78	44.05
579.80	3.02	.040	.0675	.00	3.02	61.79
580.00	3.24	.056	.0833	.00	3.24	83.86
580.20	3.45	.073	.0879	.00	3.45	108.93
580.40	3.65	.091	.0926	.00	3.65	135.34
580.60	3.84	.110	.0975	.00	3.84	163.13
580.80	4.01	.130	.1025	.00	4.01	192.35
581.00	4.19	.151	.1076	.00	4.19	223.03
581.20	4.35	.173	.1129	.00	4.35	255.21
581.40	4.51	.196	.1182	.00	4.51	288.92
581.60	4.66	.220	.1237	.00	4.66	324.20
581.80	4.81	.245	.1293	.00	4.81	361.09

Name.... BASIN A

File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW

LEVEL POOL ROUTING DATA

HYG Dir = E:\PONDPACK\9000PLUS\9472\  
 Inflow HYG file = NONE STORED - BASIN A IN 15  
 Outflow HYG file = NONE STORED - BASIN A OUT 15

Pond Node Data = BASIN A  
 Pond Volume Data = BASIN A  
 Pond Outlet Data = OUTFALL A

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 578.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
582.00	4.95	.272	.1351	.00	4.95	399.62
582.20	5.09	.299	.1399	.00	5.09	439.70
582.40	5.23	.328	.1449	.00	5.23	481.19
582.60	5.36	.357	.1499	.00	5.36	524.13
582.80	5.49	.388	.1551	.00	5.49	568.54
583.00	5.62	.419	.1603	.00	5.62	614.46
583.20	5.74	.452	.1656	.00	5.74	661.90
583.40	5.86	.486	.1710	.00	5.86	710.89
583.60	5.98	.520	.1764	.00	5.98	761.44
583.80	6.09	.556	.1820	.00	6.09	813.60
584.00	6.21	.593	.1876	.00	6.21	867.39
584.20	6.32	.631	.1934	.00	6.32	922.83
584.40	6.43	.670	.1992	.00	6.43	979.95
584.60	6.54	.711	.2051	.00	6.54	1038.75
584.80	6.64	.753	.2111	.00	6.64	1099.29
585.00	6.75	.795	.2172	.00	6.75	1161.59
585.20	11.89	.839	.2234	.00	11.89	1230.70
585.40	20.89	.885	.2296	.00	20.89	1305.48
585.60	31.61	.931	.2360	.00	31.61	1383.78
585.80	42.96	.979	.2424	.00	42.96	1464.59

Name.... BASIN A

File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW

LEVEL POOL ROUTING DATA

HYG Dir = E:\PONDPACK\9000PLUS\9472\  
 Inflow HYG file = NONE STORED - BASIN A IN 15  
 Outflow HYG file = NONE STORED - BASIN A OUT 15

Pond Node Data = BASIN A  
 Pond Volume Data = BASIN A  
 Pond Outlet Data = OUTFALL A

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 578.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
586.00	46.37	1.028	.2489	.00	46.37	1539.33
586.20	46.90	1.079	.2558	.00	46.90	1613.15
586.40	47.43	1.131	.2628	.00	47.43	1688.98
586.60	47.95	1.184	.2699	.00	47.95	1766.83
586.80	48.46	1.239	.2771	.00	48.46	1846.77
587.00	48.97	1.295	.2844	.00	48.97	1928.81

Type.... Pond Routing Summary  
Name.... BASIN A       OUT   Tag: 2  
File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW  
Storm... 2    Tag: 2

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Event: 2 yr

LEVEL POOL ROUTING SUMMARY

HYG Dir            = E:\PONDPACK\9000PLUS\9472\  
Inflow HYG file = NONE STORED - BASIN A       IN 2  
Outflow HYG file = NONE STORED - BASIN A       OUT 2

Pond Node    Data = BASIN A  
Pond Volume Data = BASIN A  
Pond Outlet Data = OUTFALL A

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev   =   578.00 ft  
Starting Volume    =       .000 ac-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        =    12.58 cfs    at    4.00 min  
Peak Outflow       =     4.72 cfs    at   22.00 min  
-----  
Peak Elevation     =   581.68 ft  
Peak Storage       =     .230 ac-ft  
=====

MASS BALANCE (ac-ft)

-----  
+ Initial Vol     =       .000  
+ HYG Vol IN     =       .347  
- Infiltration   =       .000  
- HYG Vol OUT    =       .347  
- Retained Vol   =       .000  
-----  
Unrouted Vol    =       .000 ac-ft   (.000% of Outflow Volume)



Type.... Pond Routing Summary  
Name.... BASIN A        OUT    Tag: 15  
File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW  
Storm... 15    Tag: 15

LEVEL POOL ROUTING SUMMARY

HYG Dir                = E:\PONDPACK\9000PLUS\9472\  
Inflow HYG file = NONE STORED - BASIN A        IN 15  
Outflow HYG file = NONE STORED - BASIN A        OUT 15

Pond Node    Data = BASIN A  
Pond Volume Data = BASIN A  
Pond Outlet Data = OUTFALL A

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev    =    578.00 ft  
Starting Volume    =        .000 ac-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        =        20.62 cfs    at        4.00 min  
Peak Outflow      =        5.66 cfs    at        23.00 min  
-----  
Peak Elevation    =        583.06 ft  
Peak Storage      =        .430 ac-ft  
=====

MASS BALANCE (ac-ft)

-----  
+ Initial Vol      =        .000  
+ HYG Vol IN      =        .568  
- Infiltration    =        .000  
- HYG Vol OUT     =        .568  
- Retained Vol    =        .000  
-----  
Unrouted Vol =        -.000 ac-ft    (.000% of Inflow Volume)

Type.... Pond Routing Summary  
Name.... BASIN A        OUT    Tag: 25  
File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW  
Storm... 25    Tag: 25

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Event: 25 yr

LEVEL POOL ROUTING SUMMARY

HYG Dir            = E:\PONDPACK\9000PLUS\9472\  
Inflow HYG file = NONE STORED - BASIN A        IN 25  
Outflow HYG file = NONE STORED - BASIN A        OUT 25

Pond Node    Data = BASIN A  
Pond Volume Data = BASIN A  
Pond Outlet Data = OUTFALL A

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev    =    578.00 ft  
Starting Volume    =        .000 ac-ft  
Starting Outflow    =        .00 cfs  
Starting Infiltr.    =        .00 cfs  
Starting Total Qout =        .00 cfs  
Time Increment     =        1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
Peak Inflow        =    25.46 cfs    at    4.00 min  
Peak Outflow       =    6.08 cfs    at    23.00 min  
-----  
Peak Elevation     =    583.78 ft  
Peak Storage       =        .553 ac-ft  
=====

MASS BALANCE (ac-ft)

-----  
+ Initial Vol    =        .000  
+ HYG Vol IN    =        .701  
- Infiltration   =        .000  
- HYG Vol OUT    =        .701  
- Retained Vol   =        .000  
-----  
Unrouted Vol =        -.000 ac-ft    (.000% of Inflow Volume)

Type.... Pond Routing Summary  
Name.... BASIN A        OUT    Tag: 100  
File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW  
Storm... 100    Tag: 100

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Event: 100 yr

LEVEL POOL ROUTING SUMMARY

HYG Dir            = E:\PONDPACK\9000PLUS\9472\  
Inflow HYG file = NONE STORED - BASIN A        IN 100  
Outflow HYG file = NONE STORED - BASIN A        OUT 100

Pond Node    Data = BASIN A  
Pond Volume Data = BASIN A  
Pond Outlet Data = OUTFALL A

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev    =    578.00 ft  
Starting Volume    =        .000 ac-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        =        32.57 cfs    at        4.00 min  
Peak Outflow       =        6.60 cfs    at        23.00 min  
-----  
Peak Elevation     =        584.72 ft  
Peak Storage       =        .735 ac-ft  
=====

MASS BALANCE (ac-ft)

-----  
+ Initial Vol       =        .000  
+ HYG Vol IN        =        .897  
- Infiltration       =        .000  
- HYG Vol OUT       =        .897  
- Retained Vol      =        .000  
-----  
Unrouted Vol =        .000 ac-ft    (.000% of Outflow Volume)

Index of Starting Page Numbers for ID Names

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BASIN A... 2.01, 4.01, 4.04, 4.05,  
4.06, 4.07

----- O -----  
OUTFALL A... 3.01, 3.05, 1.01, 1.02,  
1.03, 1.04

**POND 9**  
**Routing Calculations for**  
**100 Year, 20 Minute Design Storm**  
**Low Flow Slot Blocked**



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\*\*\*\*\* POND ROUTING \*\*\*\*\*

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Type.... Executive Summary (Nodes)  
 Name.... Watershed  
 File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW  
 Storm... 100 Tag: 100

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 Event: 100 yr

NETWORK SUMMARY -- NODES  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Node ID	Type	HYG Vol ac-ft	Qpeak Trun. min	Qpeak cfs	Max WSEL ft
BASIN A	HYG	.897	4.00	32.57	
BASIN A	IN POND	.897	4.00	32.57	
BASIN A	OUT POND	.102	23.00	9.85	585.30
Outfall OUT 10	JCT	.102	23.00	9.85	

POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (acres)	$A1+A2+\text{sqr}(A1*A2)$ (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
578.00	.000	.0000	.0000	.000	.000
580.00	3628.000	.0833	.0833	.056	.056
582.00	5884.000	.1351	.3244	.216	.272
584.00	8174.000	.1876	.4819	.321	.593
586.00	10842.000	.2489	.6527	.435	1.028
587.00	12388.000	.2844	.7993	.266	1.295

POND VOLUME EQUATIONS

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

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

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



File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 578.00 ft  
Increment = .20 ft  
Max. Elev.= 587.00 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
Inlet Box	IB	---> CV	585.000	588.000
Culvert-Circular	CV	---> TW	576.000	588.000
TW SETUP, DS Channel				

OUTLET STRUCTURE INPUT DATA

Structure ID	=	IB
Structure Type	=	Inlet Box
-----		
# of Openings	=	1
Invert Elev.	=	585.00 ft
Orifice Area	=	21.0700 sq.ft
Orifice Coeff.	=	.660
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

File.... E:\PONDPACK\9000PLUS\9472\POSTDEVASINA V9.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = CV  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 2.0000 ft  
Upstream Invert = 576.00 ft  
Dnstream Invert = 574.67 ft  
Horiz. Length = 132.89 ft  
Barrel Length = 132.90 ft  
Barrel Slope = .01001 ft/ft

OUTLET CONTROL DATA...  
Mannings n = .0130  
Ke = .0000 (forward entrance loss)  
Kb = .012411 (per ft of full flow)  
Kr = .5000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...  
Equation form = 1  
Inlet Control K = .0098  
Inlet Control M = 2.0000  
Inlet Control c = .03980  
Inlet Control Y = .6700  
T1 ratio (HW/D) = 1.155  
T2 ratio (HW/D) = 1.302  
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 = 578.31 ft ---> Flow = 15.55 cfs  
At T2 Elev = 578.60 ft ---> Flow = 17.77 cfs

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...  
Maximum Iterations= 30  
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

File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
578.00	.00	Free	Outfall	(no Q: IB,CV)
578.20	.00	Free	Outfall	(no Q: IB,CV)
578.40	.00	Free	Outfall	(no Q: IB,CV)
578.60	.00	Free	Outfall	(no Q: IB,CV)
578.80	.00	Free	Outfall	(no Q: IB,CV)
579.00	.00	Free	Outfall	(no Q: IB,CV)
579.20	.00	Free	Outfall	(no Q: IB,CV)
579.40	.00	Free	Outfall	(no Q: IB,CV)
579.60	.00	Free	Outfall	(no Q: IB,CV)
579.80	.00	Free	Outfall	(no Q: IB,CV)
580.00	.00	Free	Outfall	(no Q: IB,CV)
580.20	.00	Free	Outfall	(no Q: IB,CV)
580.40	.00	Free	Outfall	(no Q: IB,CV)
580.60	.00	Free	Outfall	(no Q: IB,CV)
580.80	.00	Free	Outfall	(no Q: IB,CV)
581.00	.00	Free	Outfall	(no Q: IB,CV)
581.20	.00	Free	Outfall	(no Q: IB,CV)
581.40	.00	Free	Outfall	(no Q: IB,CV)
581.60	.00	Free	Outfall	(no Q: IB,CV)
581.80	.00	Free	Outfall	(no Q: IB,CV)
582.00	.00	Free	Outfall	(no Q: IB,CV)
582.20	.00	Free	Outfall	(no Q: IB,CV)
582.40	.00	Free	Outfall	(no Q: IB,CV)
582.60	.00	Free	Outfall	(no Q: IB,CV)
582.80	.00	Free	Outfall	(no Q: IB,CV)
583.00	.00	Free	Outfall	(no Q: IB,CV)
583.20	.00	Free	Outfall	(no Q: IB,CV)
583.40	.00	Free	Outfall	(no Q: IB,CV)
583.60	.00	Free	Outfall	(no Q: IB,CV)
583.80	.00	Free	Outfall	(no Q: IB,CV)
584.00	.00	Free	Outfall	(no Q: IB,CV)
584.20	.00	Free	Outfall	(no Q: IB,CV)
584.40	.00	Free	Outfall	(no Q: IB,CV)
584.60	.00	Free	Outfall	(no Q: IB,CV)
584.80	.00	Free	Outfall	(no Q: IB,CV)
585.00	.00	Free	Outfall	(no Q: IB,CV)
585.20	5.03	Free	Outfall	IB,CV
585.40	14.24	Free	Outfall	IB,CV

File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
585.60	26.15	Free	Outfall	IB,CV
585.80	40.27	Free	Outfall	IB,CV
586.00	46.37	Free	Outfall	IB,CV
586.20	46.90	Free	Outfall	IB,CV
586.40	47.43	Free	Outfall	IB,CV
586.60	47.95	Free	Outfall	IB,CV
586.80	48.46	Free	Outfall	IB,CV
587.00	48.97	Free	Outfall	IB,CV

Name.... BASIN A

File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW

LEVEL POOL ROUTING DATA

HYG Dir = E:\PONDPACK\9000PLUS\9472\  
 Inflow HYG file = NONE STORED - BASIN A IN 15  
 Outflow HYG file = NONE STORED - BASIN A OUT 15

Pond Node Data = BASIN A  
 Pond Volume Data = BASIN A  
 Pond Outlet Data = BLOCKED

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 578.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
578.00	.00	.000	.0000	.00	.00	.00
578.20	.00	.000	.0008	.00	.00	.08
578.40	.00	.000	.0033	.00	.00	.65
578.60	.00	.001	.0075	.00	.00	2.18
578.80	.00	.004	.0133	.00	.00	5.16
579.00	.00	.007	.0208	.00	.00	10.08
579.20	.00	.012	.0300	.00	.00	17.41
579.40	.00	.019	.0408	.00	.00	27.65
579.60	.00	.028	.0533	.00	.00	41.28
579.80	.00	.040	.0675	.00	.00	58.77
580.00	.00	.056	.0833	.00	.00	80.62
580.20	.00	.073	.0879	.00	.00	105.48
580.40	.00	.091	.0926	.00	.00	131.69
580.60	.00	.110	.0975	.00	.00	159.30
580.80	.00	.130	.1025	.00	.00	188.34
581.00	.00	.151	.1076	.00	.00	218.85
581.20	.00	.173	.1129	.00	.00	250.86
581.40	.00	.196	.1182	.00	.00	284.42
581.60	.00	.220	.1237	.00	.00	319.54
581.80	.00	.245	.1293	.00	.00	356.28

LEVEL POOL ROUTING DATA

HYG Dir = E:\PONDPACK\9000PLUS\9472\  
 Inflow HYG file = NONE STORED - BASIN A IN 15  
 Outflow HYG file = NONE STORED - BASIN A OUT 15

Pond Node Data = BASIN A  
 Pond Volume Data = BASIN A  
 Pond Outlet Data = BLOCKED

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 578.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
582.00	.00	.272	.1351	.00	.00	394.67
582.20	.00	.299	.1399	.00	.00	434.61
582.40	.00	.328	.1449	.00	.00	475.97
582.60	.00	.357	.1499	.00	.00	518.77
582.80	.00	.388	.1551	.00	.00	563.06
583.00	.00	.419	.1603	.00	.00	608.85
583.20	.00	.452	.1656	.00	.00	656.16
583.40	.00	.486	.1710	.00	.00	705.03
583.60	.00	.520	.1764	.00	.00	755.46
583.80	.00	.556	.1820	.00	.00	807.51
584.00	.00	.593	.1876	.00	.00	861.19
584.20	.00	.631	.1934	.00	.00	916.51
584.40	.00	.670	.1992	.00	.00	973.52
584.60	.00	.711	.2051	.00	.00	1032.21
584.80	.00	.753	.2111	.00	.00	1092.65
585.00	.00	.795	.2172	.00	.00	1154.84
585.20	5.03	.839	.2234	.00	5.03	1223.85
585.40	14.24	.885	.2296	.00	14.24	1298.82
585.60	26.15	.931	.2360	.00	26.15	1378.32
585.80	40.27	.979	.2424	.00	40.27	1461.89

LEVEL POOL ROUTING DATA

HYG Dir = E:\PONDPACK\9000PLUS\9472\  
 Inflow HYG file = NONE STORED - BASIN A IN 15  
 Outflow HYG file = NONE STORED - BASIN A OUT 15

Pond Node Data = BASIN A  
 Pond Volume Data = BASIN A  
 Pond Outlet Data = BLOCKED

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 578.00 ft  
 Starting Volume = .000 ac-ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
586.00	46.37	1.028	.2489	.00	46.37	1539.33
586.20	46.90	1.079	.2558	.00	46.90	1613.15
586.40	47.43	1.131	.2628	.00	47.43	1688.98
586.60	47.95	1.184	.2699	.00	47.95	1766.83
586.80	48.46	1.239	.2771	.00	48.46	1846.77
587.00	48.97	1.295	.2844	.00	48.97	1928.81



Type.... Pond Routing Summary  
Name.... BASIN A           OUT    Tag: 100  
File.... E:\PONDPACK\9000PLUS\9472\POSTDEVBASINA V9.PPW  
Storm... 100    Tag: 100

Page 4.04  
Event: 100 yr

LEVEL POOL ROUTING SUMMARY

HYG Dir            = E:\PONDPACK\9000PLUS\9472\  
Inflow HYG file = NONE STORED - BASIN A        IN 100  
Outflow HYG file = NONE STORED - BASIN A        OUT 100

Pond Node    Data = BASIN A  
Pond Volume Data = BASIN A  
Pond Outlet Data = BLOCKED

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev    =   578.00 ft  
Starting Volume     =       .000 ac-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        =    32.57 cfs    at    4.00 min  
Peak Outflow       =     9.85 cfs    at   23.00 min  
-----  
Peak Elevation     =   585.30 ft  
Peak Storage       =     .863 ac-ft  
=====

MASS BALANCE (ac-ft)

-----  
+ Initial Vol     =       .000  
+ HYG Vol IN      =       .897  
- Infiltration    =       .000  
- HYG Vol OUT     =       .102  
- Retained Vol    =       .795  
-----  
Unrouted Vol =       .000 ac-ft   (.000% of Inflow Volume)

Index of Starting Page Numbers for ID Names

----- B -----

BASIN A... 2.01, 4.01, 4.04  
BLOCKED... 3.01, 3.04, 1.01



SLOAN BOUNDARY ADJUSTMENT OF LOTS 32 AND 33 OF STONEY BROOK P.B. 37 PG. 285

STONEY BROOK P.B. 20 PG. 181

LOT 36 PROPERTY N/F GARY E. & LINDA S. KOSEDNAR 1629/829

ADJUSTED LOT 33 PROPERTY N/F DENNIS & CHRISTINA SLOAN NO DEED GIVEN

ADJUSTED LOT 32 PROPERTY N/F GARY E. & LINDA S. KOSEDNAR 1629/829

LOT 23 PROPERTY N/F JAMES F. & DOLORES M. CALDWELL 916/955

LOT 22 PROPERTY N/F JAMES F. & DOLORES M. CALDWELL 941/440

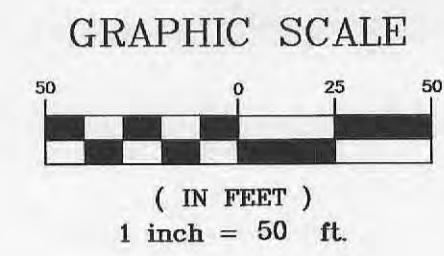
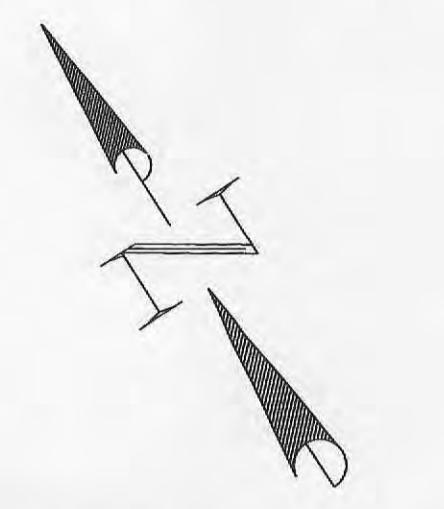
STONEY BROOK P.B. 20 PG. 181

LOT 21 PROPERTY N/F HERBERT C. & MARTHA C. CHAMBERS 1363/990

LOT 20 PROPERTY N/F LOUIS J. CAPPS AND MARILYN R. CAPPS 968/148

LOT 19 PROPERTY N/F WALTER O. JOHNESSEE 1078/513

STONEY BROOK P.B. 20 PG. 181



RELOCATED FEISE ROAD

STONEY BROOK DRIVE

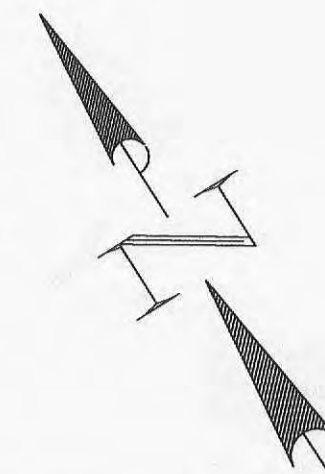
STONEY BROOK DRIVE

THIS SHEET FOR DRAINAGE PURPOSES ONLY, NOT FOR CONSTRUCTION.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED PRIOR TO ANY GRADING OR CONSTRUCTION OF THE IMPROVEMENTS.

E:\DWG\9000PLUS\9472-Rimmler Tract\CONSTRUCTION\9472condam.dwg, DAM - REPORT, 8/24/2004 4:46:18 PM, Station 68 CAL



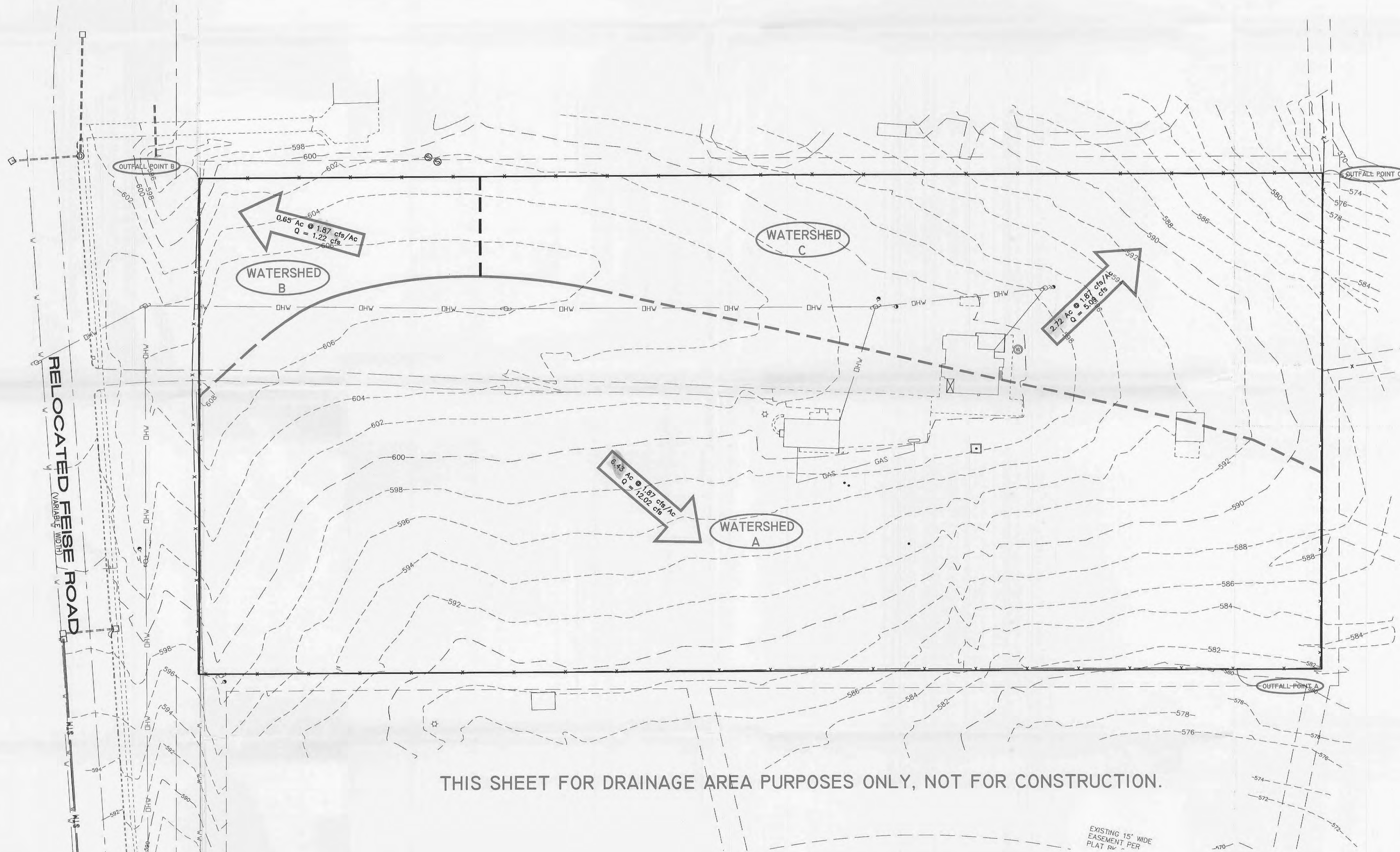


GRAPHIC SCALE



( IN FEET )

1 inch = 50 ft.



THIS SHEET FOR DRAINAGE AREA PURPOSES ONLY, NOT FOR CONSTRUCTION.

EXISTING 15' WIDE EASEMENT PER PLAT RV

DEV.  
 PR  
 15-2.64  
 25-3.26

15-1.87  
 25-2.31

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED PRIOR TO ANY GRADING OR CONSTRUCTION OF THE IMPROVEMENTS.

E:\DWG\9000PLUS\9472-Kimber Tract\CONSTRUCTION\9472condam.dwg, PRE-DEV DAM - REPORT, 8/24/2004 4:26:03 PM, Station 68 CAL