

DETENTION REPORT

SSM HEALTHCARE

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10-24-06
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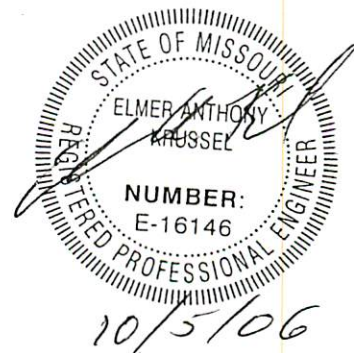
Prepared For:

Lillibridge

Prepared By:

Pickett, Ray and Silver, Inc.
333 Mid Rivers Mall Drive
St. Peters, MO 63376

October 2006



RECEIVED

OCT 19 2006

ENGINEERING DEPARTMENT

Detention Calculations:

This site is located in O'Fallon, Missouri on the West side of Highway K, in between Mexico Road and Veterans Memorial Parkway, South of Highway 70. This site is currently a healthcare facility, with an addition planned. The site is 3.10 acres. The detention will be handled with an on-site aboveground detention basin located to the southeast of the site.

The water shed was evaluated using the rational method for the post-developed conditions. Following are the criteria which were used to develop the models:

Pre-Developed:

2yr – 20 min

$$Q = (1.15)(2.04 \text{ AC}) + (2.39)(1.06 \text{ AC}) = \underline{4.88 \text{ cfs}}$$

15 yr – 20 min

$$Q = (1.87)(2.04 \text{ AC}) + (3.85)(1.06 \text{ AC}) = \underline{7.90 \text{ cfs}}$$

25 yr – 20 min

$$Q = (2.31)(2.04 \text{ AC}) + (4.75)(1.06 \text{ AC}) = \underline{9.75 \text{ cfs}}$$

100 yr – 20 min

$$Q = (2.95)(2.04 \text{ AC}) + (6.08)(1.06 \text{ AC}) = \underline{12.46 \text{ cfs}}$$

Post-developed:

* Flow Into Basin

2 yr – 20 min

$$(1.15)(0.64 \text{ AC}) + (2.39)(2.16 \text{ AC}) = \underline{5.90 \text{ cfs}}$$

15 yr – 20 min

$$(1.87)(0.64 \text{ AC}) + (3.85)(2.16 \text{ AC}) = \underline{9.51 \text{ cfs}}$$

25 yr – 20 min

$$(2.31)(0.64 \text{ AC}) + (4.75)(2.16 \text{ AC}) = \underline{11.74 \text{ cfs}}$$

100 yr – 20 min

$$(2.95)(0.64 \text{ AC}) + (6.08)(2.16 \text{ AC}) = \underline{15.02 \text{ cfs}}$$

* Bypass

$$\frac{2 \text{ yr} - 20 \text{ min}}{(1.15)(0.30 \text{ AC})} = \underline{0.35 \text{ cfs}}$$

$$\frac{15 \text{ yr} - 20 \text{ min}}{(1.87)(0.30 \text{ AC})} = \underline{0.56 \text{ cfs}}$$

$$\frac{25 \text{ yr} - 20 \text{ min}}{(2.31)(0.30 \text{ AC})} = \underline{0.69 \text{ cfs}}$$

$$\frac{100 \text{ yr} - 20 \text{ min}}{(2.95)(0.30 \text{ AC})} = \underline{0.89 \text{ cfs}}$$

Allowable Release Rate

$$\frac{2 \text{ yr} - 20 \text{ min}}{= 4.53 \text{ cfs}}$$

$$\frac{15 \text{ yr} - 20 \text{ min}}{= 7.34 \text{ cfs}}$$

$$\frac{25 \text{ yr} - 20 \text{ min}}{= 9.06 \text{ cfs}}$$

$$\frac{100 \text{ yr} - 20 \text{ min}}{= 11.57 \text{ cfs}}$$

Peak Outflow

$$\frac{2 \text{ yr} - 20 \text{ min}}{Q = 4.51 \text{ cfs}}$$

$$\frac{15 \text{ yr} - 20 \text{ min}}{Q = 7.13 \text{ cfs}}$$

$$\frac{25 \text{ yr} - 20 \text{ min}}{Q = 8.03 \text{ cfs}}$$

$$\frac{100 \text{ yr} - 20 \text{ min}}{Q = 11.21 \text{ cfs}}$$

PICKETT RAY & SILVER

PROJECT NAME SSM HEALTHCARE
PROJECT #/JOB ORDER # 91090.LILB.02C-12
DATE 10.05.06
DESIGNER KAL
PAGE 1

333 Mid Rivers Mall Dr.
St. Peters, MO 63376

Civil Engineers
Planners
Land Surveyors

897-1211

PREDEVELOPED

2YR-20MIN

$$(2.04\text{AC})(1.15) + (1.06\text{AC})(2.39) = 4.88\text{cfs}$$

15YR-20MIN

$$(2.04\text{AC})(1.87) + (1.06\text{AC})(3.85) = 7.90\text{cfs}$$

25YR-20MIN

$$(2.04\text{AC})(2.31) + (1.06\text{AC})(4.75) = 9.75\text{cfs}$$

100YR-20MIN

$$(2.04\text{AC})(2.95) + (1.06\text{AC})(6.05) = 12.46\text{cfs}$$

<u>ELEV</u>	<u>AREA (SF)</u>
553.63	16
554	131
556	708
558	1717
560	2981
562	4471

POSTDEVELOPED

* FLOW INTO BASIN

2YR-20MIN

$$(0.64\text{AC})(1.15) + (2.16\text{AC})(2.39) = 5.90\text{cfs}$$

15YR-20MIN

$$(0.64\text{AC})(1.87) + (2.16\text{AC})(3.85) = 9.51\text{cfs}$$

25YR-20MIN

$$(0.64\text{AC})(2.31) + (2.16\text{AC})(4.75) = 11.74\text{cfs}$$

100YR-20MIN

$$(0.64\text{AC})(2.95) + (2.16\text{AC})(6.05) = 15.02\text{cfs}$$

* BYPASS

2YR-20MIN

$$(0.30\text{AC})(1.15) = 0.35\text{cfs}$$

15YR-20MIN

$$(0.30\text{AC})(1.87) = 0.56\text{cfs}$$

25YR-20MIN

$$(0.30\text{AC})(2.31) = 0.69\text{cfs}$$

100YR-20MIN

$$(0.30\text{AC})(2.95) = 0.89\text{cfs}$$

ALLOWABLE RELEASE RATE

2YR-20MIN

$$4.88 - 0.35 = \underline{4.53\text{cfs}}$$

15YR-20MIN

$$7.90 - 0.56 = \underline{7.34\text{cfs}}$$

25YR-20MIN

$$9.75 - 0.69 = \underline{9.06\text{cfs}}$$

100YR-20MIN

$$12.46 - 0.89 = \underline{11.57\text{cfs}}$$

PICKETT RAY & SILVER

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St. Peters, MD 63376

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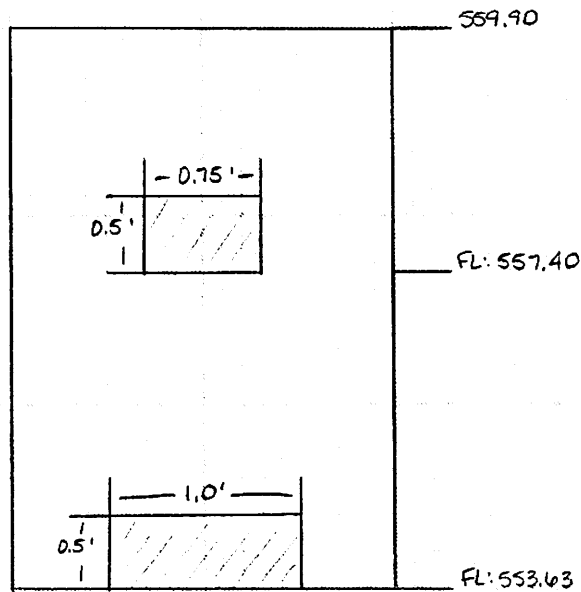
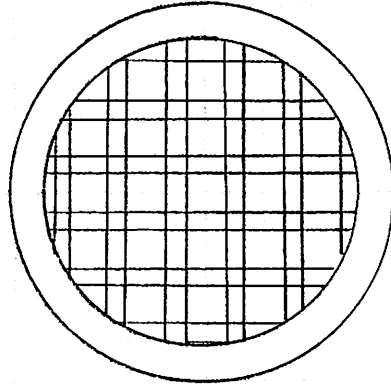
DESIGNER KAL

PAGE 2

TIME OF CONCENTRATION = $t_c = 5.0 \text{ min}$

2 YR $Q_p = 5.90 \text{ cfs}$
15 YR $Q_p = 9.51 \text{ cfs}$
25 YR $Q_p = 11.74 \text{ cfs}$
100 YR $Q_p = 15.02 \text{ cfs}$

2 YR $\theta = 49.72^\circ$
15 YR $\theta = 62.27^\circ$
25 YR $\theta = 66.93^\circ$
100 YR $\theta = 71.59^\circ$



$\theta_{2yr} = 49.72$

$\theta_{15yr} = 62.27$

$\theta_{25yr} = 66.93$

$\theta_{100yr} = 71.59$

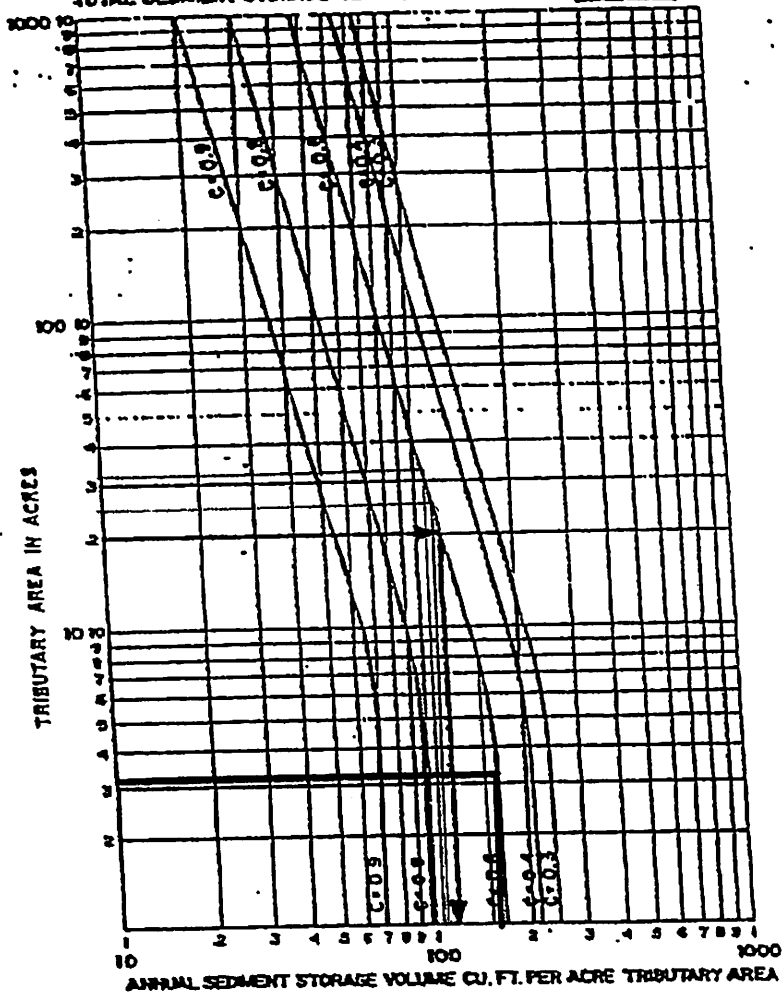
Revised: 10.05.06

TIME	2YR-20MIN	15YR-20MIN	25YR-20MIN	100YR-20MIN
0	0.00	0.00	0.00	0.00
1	1.18	1.90	2.35	3.00
2	2.36	3.80	4.70	6.01
3	3.54	5.71	7.04	9.01
4	4.72	7.61	9.39	12.02
5	5.90	9.51	11.74	15.02

ORIGINAL

2 YEAR SEDIMENT STORAGE REQUIRED

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.

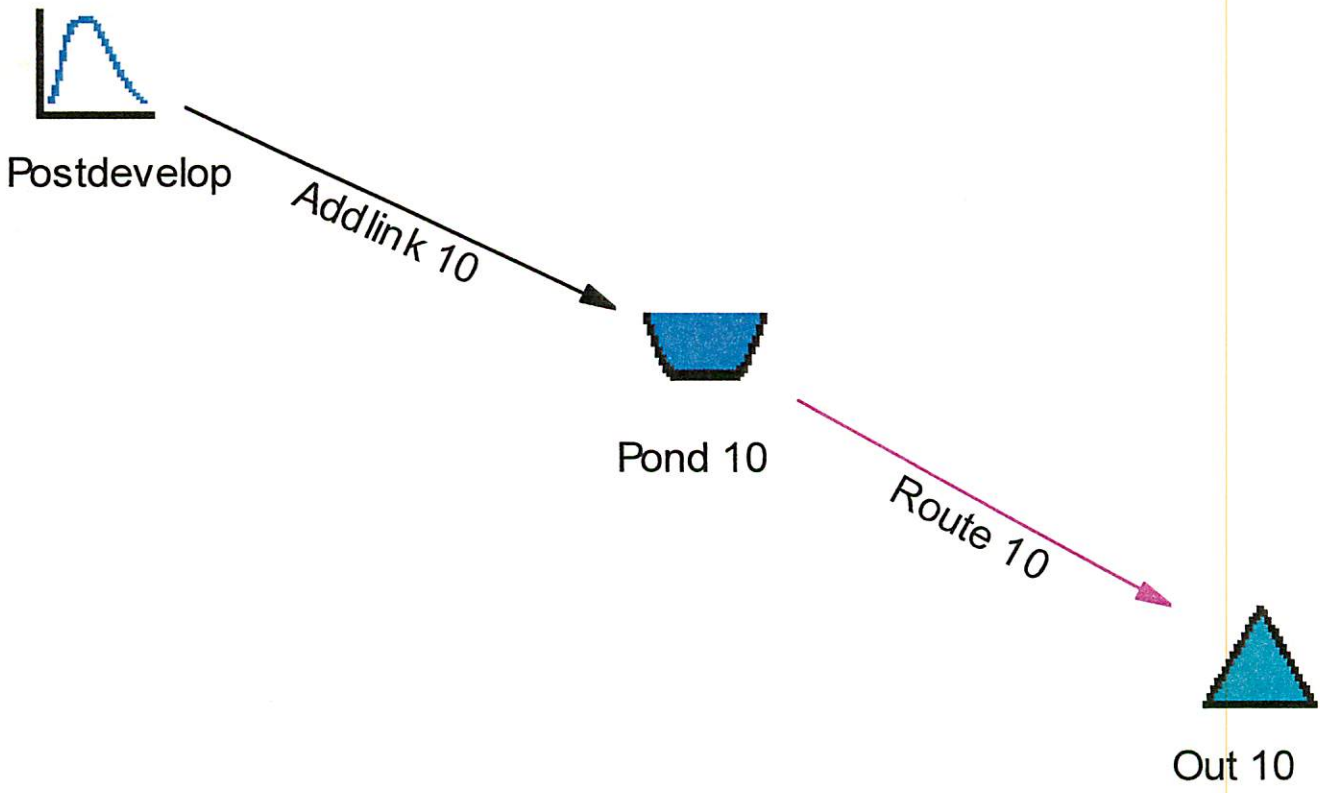


ANNUAL SEDIMENT STORAGE

FIG. 6

$C = 0.6$
 $A = 3.10 \text{ AC}$
 $\text{STORAGE} = 155 \text{ CF/AC/YR}$
 $\text{TOTAL STORAGE} = (155)(3.10 \text{ AC})(2 \text{ YR})$
 $= 961 \text{ CF}$

POSTDEVELOPED



Job File: \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\POSTDEVELOPED 10.05.06.PPW
Rain Dir: \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\

JOB TITLE

=====

Project Date: 10/5/2006
Project Engineer: Katie Lyons
Project Title: SSM Healthcare
Project Comments:

***** MASTER SUMMARY *****

Watershed..... Master Network Summary 1.01

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

POSTDEVELOP..... 2
Read HYG 2.01

POSTDEVELOP..... 15
Read HYG 2.02

POSTDEVELOP..... 25
Read HYG 2.03

POSTDEVELOP..... 100
Read HYG 2.04

***** TIME VS.ELEV *****

POND 10 OUT 2
Time-Elev 3.01

POND 10 OUT 15
Time-Elev 3.02

POND 10 OUT 25
Time-Elev 3.03

POND 10 OUT 100
Time-Elev 3.04

***** TIME VS.VOL *****

POND 10 OUT 2
Time vs. Volume 4.01

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POND 10 OUT 15
 Time vs. Volume 4.02

POND 10 OUT 25
 Time vs. Volume 4.03

POND 10 OUT 100
 Time vs. Volume 4.04

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

POND 10..... Vol: Elev-Area 5.01

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

OS 2..... Outlet Input Data 6.01

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

POND 10..... Pond E-V-Q Table 7.01

POND 10 OUT 2
 Pond Routing Summary 7.06
 Pond Routed HYG (total out) 7.07

POND 10 OUT 15
 Pond Routing Summary 7.08
 Pond Routed HYG (total out) 7.09

POND 10 OUT 25
 Pond Routing Summary 7.10
 Pond Routed HYG (total out) 7.11

POND 10 OUT 100
 Pond Routing Summary 7.12

Pond Routed HYG (total out) 7.13

MASTER DESIGN STORM SUMMARY

Hydrograph Queue Only Network

MASTER NETWORK SUMMARY
 SCS Unit Hydrograph Method
 Hydrograph File Import Option Used For 1 node(s)

(*Node=Outfall; +Node=Diversion;)
 (Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol cu.ft	Trun	Qpeak min	Qpeak cfs	Max WSEL ft	Max Pond Storage cu.ft
*OUT 10	JCT	2	7080		21.00	4.51		
*OUT 10	JCT	15	11412		21.00	7.13		
*OUT 10	JCT	25	14088		22.00	8.03		
*OUT 10	JCT	100	18024		21.00	11.21		
POND 10	IN POND	2	7080		5.00	5.90		
POND 10	IN POND	15	11412		5.00	9.51		
POND 10	IN POND	25	14088		5.00	11.74		
POND 10	IN POND	100	18024		5.00	15.02		
POND 10	OUT POND	2	7080		21.00	4.51	557.38	2194
POND 10	OUT POND	15	11412		21.00	7.13	558.70	4468
POND 10	OUT POND	25	14088		22.00	8.03	559.39	6091
POND 10	OUT POND	100	18024		21.00	11.21	560.23	8474
POSTDEVELOP	HYG	2	7080		5.00	5.90		
POSTDEVELOP	HYG	15	11412		5.00	9.51		
POSTDEVELOP	HYG	25	14088		5.00	11.74		
POSTDEVELOP	HYG	100	18024		5.00	15.02		

Type.... Read HYG

Name.... POSTDEVELOP

Tag: 2

Event: 2 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

Storm... Tag: 2

HYG file =
 HYG ID = 2YR-20MIN
 HYG Tag = 2YR

 Peak Discharge = 5.90 cfs
 Time to Peak = 5.00 min
 HYG Volume = 7080 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	1.18	2.36	3.54	4.72
5.00	5.90	5.90	5.90	5.90	5.90
10.00	5.90	5.90	5.90	5.90	5.90
15.00	5.90	5.90	5.90	5.90	5.90
20.00	5.90	4.72	3.54	2.36	1.18
25.00	.00				

Type.... Read HYG
Name.... POSTDEVELOP
File.... \\2serverpr\ PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw
Storm... Tag: 15

Page 2.02
Event: 15 yr

HYG file =
HYG ID = 15YR-20MIN
HYG Tag = 15YR

Peak Discharge = 9.51 cfs
Time to Peak = 5.00 min
HYG Volume = 11412 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	1.90	3.80	5.71	7.61
5.00	9.51	9.51	9.51	9.51	9.51
10.00	9.51	9.51	9.51	9.51	9.51
15.00	9.51	9.51	9.51	9.51	9.51
20.00	9.51	7.61	5.71	3.80	1.90
25.00	.00				

Type.... Read HYG

Name.... POSTDEVELOP

Event: 25 yr

File.... \\2serverprps\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

Storm... Tag: 25

HYG file =
 HYG ID = 25YR-20MIN
 HYG Tag = 25YR

 Peak Discharge = 11.74 cfs
 Time to Peak = 5.00 min
 HYG Volume = 14088 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	2.35	4.70	7.04	9.39
5.00	11.74	11.74	11.74	11.74	11.74
10.00	11.74	11.74	11.74	11.74	11.74
15.00	11.74	11.74	11.74	11.74	11.74
20.00	11.74	9.39	7.04	4.70	2.35
25.00	.00				

Type.... Read HYG
Name.... POSTDEVELOP
File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw
Storm... Tag: 100

Page 2.04
Event: 100 yr

HYG file =
HYG ID = 100YR-20MIN
HYG Tag = 100YR

Peak Discharge = 15.02 cfs
Time to Peak = 5.00 min
HYG Volume = 18024 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	3.00	6.01	9.01	12.02
5.00	15.02	15.02	15.02	15.02	15.02
10.00	15.02	15.02	15.02	15.02	15.02
15.00	15.02	15.02	15.02	15.02	15.02
20.00	15.02	12.02	9.01	6.01	3.00
25.00	.00				

Type.... Time-Elev

Name.... POND 10 OUT Tag: 2

Event: 2 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

Storm... 2 Tag: 2

TIME vs. ELEVATION (ft)

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

Time min					
.00	553.63	553.95	554.26	554.59	554.96
5.00	555.34	555.67	555.92	556.12	556.29
10.00	556.43	556.56	556.68	556.79	556.89
15.00	556.98	557.06	557.14	557.21	557.28
20.00	557.35	557.38	557.37	557.30	557.18
25.00	556.99	556.76	556.52	556.26	555.97
30.00	555.65	555.30	554.89	554.43	554.00
35.00	553.70	553.63			

Type.... Time-Elev

Name.... POND 10 OUT Tag: 15

Event: 15 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

Storm... 15 Tag: 15

TIME vs. ELEVATION (ft)

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

Time min					
.00	553.63	554.05	554.52	555.02	555.53
5.00	556.04	556.47	556.80	557.09	557.33
10.00	557.54	557.72	557.88	558.01	558.13
15.00	558.23	558.33	558.42	558.50	558.58
20.00	558.65	558.70	558.68	558.62	558.50
25.00	558.32	558.11	557.90	557.70	557.50
30.00	557.31	557.10	556.88	556.64	556.39
35.00	556.11	555.81	555.48	555.10	554.66
40.00	554.18	553.78	553.63		

Type.... Time-Elev

Name.... POND 10 OUT Tag: 25

Event: 25 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

Storm... 25 Tag: 25

TIME vs. ELEVATION (ft)

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

Time min	-----				
.00	553.63	554.10	554.66	555.24	555.82
5.00	556.38	556.86	557.24	557.55	557.81
10.00	558.03	558.22	558.38	558.53	558.67
15.00	558.80	558.92	559.03	559.13	559.23
20.00	559.33	559.39	559.39	559.34	559.23
25.00	559.07	558.87	558.67	558.47	558.26
30.00	558.06	557.85	557.65	557.45	557.25
35.00	557.04	556.82	556.58	556.32	556.04
40.00	555.73	555.38	554.99	554.54	554.08
45.00	553.73	553.63			

Type.... Time-Elev

Name.... POND 10 OUT Tag: 100

Event: 100 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

Storm... 100 Tag: 100

TIME vs. ELEVATION (ft)

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

Time min					
.00	553.63	554.18	554.85	555.53	556.19
5.00	556.81	557.35	557.77	558.10	558.38
10.00	558.63	558.85	559.04	559.23	559.40
15.00	559.56	559.70	559.84	559.97	560.08
20.00	560.18	560.23	560.22	560.15	560.05
25.00	559.89	559.71	559.53	559.34	559.15
30.00	558.96	558.76	558.56	558.35	558.14
35.00	557.93	557.73	557.53	557.33	557.13
40.00	556.91	556.67	556.42	556.15	555.86
45.00	555.53	555.16	554.73	554.25	553.85
50.00	553.63				

Type.... Time vs. Volume

Page 4.01

Name.... POND 10 OUT Tag: 2

Event: 2 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

Storm... 2 Tag: 2

TIME vs. VOLUME (cu.ft)

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

Time min					
.00	0	18	64	135	247
5.00	403	573	728	871	1005
10.00	1132	1252	1367	1477	1582
15.00	1684	1782	1877	1969	2058
20.00	2145	2194	2171	2080	1921
25.00	1698	1449	1209	980	765
30.00	564	382	224	98	24
35.00	1	0			

Type.... Time vs. Volume

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Name.... POND 10 OUT Tag: 15

Event: 15 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

Storm... 15 Tag: 15

TIME vs. VOLUME (cu.ft)

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

Time min						
.00		0	31	118	269	498
5.00		813	1161	1492	1810	2118
10.00		2412	2687	2935	3159	3364
15.00		3556	3738	3910	4073	4230
20.00		4380	4468	4440	4302	4058
25.00		3714	3332	2976	2653	2360
30.00		2087	1824	1569	1325	1090
35.00		868	660	468	298	154
40.00		51	5	0		

TIME vs. VOLUME (cu.ft)

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

.00	0	38	153	358	666
5.00	1085	1550	1998	2428	2828
10.00	3191	3524	3837	4136	4420
15.00	4694	4957	5212	5457	5695
20.00	5926	6079	6091	5963	5701
25.00	5306	4856	4422	4006	3609
30.00	3233	2887	2573	2287	2017
35.00	1756	1504	1262	1031	812
40.00	608	421	257	123	35
45.00	2	0			

Type.... Time vs. Volume

Name.... POND 10 OUT Tag: 100

Event: 100 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

Storm... 100 Tag: 100

TIME vs. VOLUME (cu.ft)

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

Time min					
.00	0	50	210	497	925
5.00	1503	2146	2755	3314	3831
10.00	4323	4793	5246	5685	6109
15.00	6522	6925	7318	7694	8032
20.00	8319	8474	8436	8241	7915
25.00	7464	6953	6456	5970	5499
30.00	5042	4601	4177	3772	3387
35.00	3026	2698	2402	2126	1862
40.00	1606	1359	1124	900	689
45.00	495	321	173	62	9
50.00	0				

Name.... POND 10

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

Elevation (ft)	Planimeter (sq.in)	Area (sq.ft)	A1+A2+sq(A1*A2) (sq.ft)	Volume (cu.ft)	Volume Sum (cu.ft)
553.63	-----	16	0	0	0
554.00	-----	131	193	24	24
556.00	-----	708	1144	762	786
558.00	-----	1717	3528	2352	3138
560.00	-----	2981	6960	4640	7778
562.00	-----	4471	11103	7402	15180

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

Name.... OS 2

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 553.63 ft
 Increment = .10 ft
 Max. Elev.= 562.00 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
Weir-Rectangular	LW	--->	TW	553.630	554.130
Orifice-Area	LO	--->	TW	554.130	562.000
Weir-Rectangular	UW	--->	TW	557.400	557.900
Orifice-Area	UO	--->	TW	557.900	562.000
Weir-Rectangular	OF	--->	TW	559.900	562.000
TW SETUP, DS Channel					

Name.... OS 2

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = LW
 Structure Type = Weir-Rectangular

 # of Openings = 1
 Crest Elev. = 553.63 ft
 Weir Length = 1.00 ft
 Weir Coeff. = 3.000000

 Weir TW effects (Use adjustment equation)

Structure ID = LO
 Structure Type = Orifice-Area

 # of Openings = 1
 Invert Elev. = 553.63 ft
 Area = .5000 sq.ft
 Top of Orifice = 554.13 ft
 Datum Elev. = 553.88 ft
 Orifice Coeff. = .600

Structure ID = UW
 Structure Type = Weir-Rectangular

 # of Openings = 1
 Crest Elev. = 557.40 ft
 Weir Length = .75 ft
 Weir Coeff. = 3.000000

 Weir TW effects (Use adjustment equation)

OUTLET STRUCTURE INPUT DATA

Structure ID = UO
Structure Type = Orifice-Area

of Openings = 1
Invert Elev. = 557.40 ft
Area = .3750 sq.ft
Top of Orifice = 557.90 ft
Datum Elev. = 557.65 ft
Orifice Coeff. = .600

Structure ID = OF
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 559.90 ft
Weir Length = 4.00 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

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

FREE OUTFALL CONDITIONS SPECIFIED

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

Name.... POND 10

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

LEVEL POOL ROUTING DATA

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\

Inflow HYG file = NONE STORED - POND 10 IN 2

Outflow HYG file = NONE STORED - POND 10 OUT 2

Pond Node Data = POND 10

Pond Volume Data = POND 10

Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

```

-----
Starting WS Elev = 553.63 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min
    
```

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
553.63	.00	0	16	.00	.00	.00
553.73	.09	3	36	.00	.09	.18
553.83	.27	8	64	.00	.27	.52
553.93	.49	16	101	.00	.49	1.02
554.03	.76	28	136	.00	.76	1.69
554.13	1.20	42	155	.00	1.20	2.61
554.23	1.42	59	174	.00	1.42	3.38
554.33	1.61	77	195	.00	1.61	4.19
554.43	1.78	98	216	.00	1.78	5.04
554.53	1.94	120	239	.00	1.94	5.95
554.63	2.08	146	263	.00	2.08	6.94
554.73	2.22	173	288	.00	2.22	7.99
554.83	2.35	203	315	.00	2.35	9.12
554.93	2.47	236	342	.00	2.47	10.33
555.03	2.58	272	371	.00	2.58	11.64
555.13	2.69	310	401	.00	2.69	13.03
555.23	2.80	352	431	.00	2.80	14.52
555.33	2.90	397	463	.00	2.90	16.12
555.43	3.00	445	497	.00	3.00	17.82
555.53	3.09	496	531	.00	3.09	19.62

Name.... POND 10

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

LEVEL POOL ROUTING DATA

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 2
 Outflow HYG file = NONE STORED - POND 10 OUT 2

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 553.63 ft
 Starting Volume = 0 cu.ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
555.63	3.18	551	567	.00	3.18	21.54
555.73	3.27	609	603	.00	3.27	23.58
555.83	3.36	672	641	.00	3.36	25.74
555.93	3.45	738	680	.00	3.45	28.03
556.03	3.53	808	720	.00	3.53	30.45
556.13	3.61	882	760	.00	3.61	32.99
556.23	3.69	960	802	.00	3.69	35.68
556.33	3.77	1042	844	.00	3.77	38.50
556.43	3.84	1129	888	.00	3.84	41.46
556.53	3.92	1220	933	.00	3.92	44.57
556.63	3.99	1315	978	.00	3.99	47.83
556.73	4.06	1415	1025	.00	4.06	51.24
556.83	4.13	1520	1073	.00	4.13	54.81
556.93	4.20	1630	1122	.00	4.20	58.53
557.03	4.27	1745	1173	.00	4.27	62.43
557.13	4.34	1865	1224	.00	4.34	66.49
557.23	4.40	1990	1276	.00	4.40	70.72
557.33	4.47	2120	1330	.00	4.47	75.13
557.40	4.52	2214	1368	.00	4.52	78.33
557.43	4.55	2256	1385	.00	4.55	79.73

Name.... POND 10

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

LEVEL POOL ROUTING DATA

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 2
 Outflow HYG file = NONE STORED - POND 10 OUT 2

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 553.63 ft
 Starting Volume = 0 cu.ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
557.53	4.70	2397	1440	.00	4.70	84.60
557.63	4.91	2544	1497	.00	4.91	89.70
557.73	5.15	2696	1555	.00	5.15	95.02
557.83	5.42	2855	1614	.00	5.42	100.58
557.93	5.80	3019	1674	.00	5.80	106.44
558.03	6.02	3190	1733	.00	6.02	112.34
558.13	6.21	3366	1789	.00	6.21	118.40
558.23	6.39	3547	1845	.00	6.39	124.64
558.33	6.56	3735	1902	.00	6.56	131.05
558.43	6.73	3928	1960	.00	6.73	137.65
558.53	6.88	4127	2018	.00	6.88	144.44
558.63	7.03	4331	2078	.00	7.03	151.41
558.73	7.18	4542	2138	.00	7.18	158.58
558.83	7.31	4759	2200	.00	7.31	165.95
558.93	7.45	4982	2262	.00	7.45	173.52
559.03	7.58	5211	2325	.00	7.58	181.30
559.13	7.71	5447	2389	.00	7.71	189.28
559.23	7.83	5689	2453	.00	7.83	197.47
559.33	7.96	5938	2519	.00	7.96	205.88
559.43	8.08	6193	2585	.00	8.08	214.51

Name.... POND 10

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

LEVEL POOL ROUTING DATA

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 2
 Outflow HYG file = NONE STORED - POND 10 OUT 2

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 553.63 ft
 Starting Volume = 0 cu.ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
559.53	8.19	6455	2653	.00	8.19	223.36
559.63	8.31	6724	2721	.00	8.31	232.43
559.73	8.42	6999	2790	.00	8.42	241.73
559.83	8.54	7282	2860	.00	8.54	251.26
559.90	8.61	7484	2910	.00	8.61	258.07
559.93	8.71	7571	2931	.00	8.71	261.08
560.03	9.31	7868	3001	.00	9.31	271.58
560.13	10.18	8171	3069	.00	10.18	282.56
560.23	11.24	8482	3137	.00	11.24	293.96
560.33	12.45	8799	3206	.00	12.45	305.74
560.43	13.80	9123	3276	.00	13.80	317.89
560.53	15.27	9454	3347	.00	15.27	330.40
560.63	16.85	9792	3418	.00	16.85	343.26
560.73	18.54	10138	3490	.00	18.54	356.46
560.83	20.33	10490	3563	.00	20.33	370.00
560.93	22.20	10850	3636	.00	22.20	383.87
561.03	24.17	11218	3711	.00	24.17	398.09
561.13	26.22	11592	3786	.00	26.22	412.63
561.23	28.34	11975	3862	.00	28.34	427.50
561.33	30.55	12365	3938	.00	30.55	442.71

Name.... POND 10

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

LEVEL POOL ROUTING DATA

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 2
 Outflow HYG file = NONE STORED - POND 10 OUT 2

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 553.63 ft
 Starting Volume = 0 cu.ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
561.43	32.83	12762	4016	.00	32.83	458.24
561.53	35.18	13168	4094	.00	35.18	474.12
561.63	37.61	13581	4173	.00	37.61	490.31
561.73	40.09	14002	4252	.00	40.09	506.84
561.83	42.65	14432	4333	.00	42.65	523.71
561.93	45.27	14869	4414	.00	45.27	540.90
562.00	47.14	15180	4471	.00	47.14	553.14

LEVEL POOL ROUTING SUMMARY

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 2
 Outflow HYG file = NONE STORED - POND 10 OUT 2

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 553.63 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 = 5.90 cfs at 5.00 min
 Peak Outflow = 4.51 cfs at 21.00 min

 Peak Elevation = 557.38 ft
 Peak Storage = 2194 cu.ft
 =====

MASS BALANCE (cu.ft)

 + Initial Vol = 0
 + HYG Vol IN = 7080
 - Infiltration = 0
 - HYG Vol OUT = 7080
 - Retained Vol = 0

 Unrouted Vol = 0 cu.ft (.000% of Outflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 15
 Outflow HYG file = NONE STORED - POND 10 OUT 15

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 553.63 ft
 Starting Volume = 0 cu.ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout = .00 cfs
 Time Increment = 1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====
 Peak Inflow = 9.51 cfs at 5.00 min
 Peak Outflow = 7.13 cfs at 21.00 min

 Peak Elevation = 558.70 ft
 Peak Storage = 4468 cu.ft
 =====

MASS BALANCE (cu.ft)

 + Initial Vol = 0
 + HYG Vol IN = 11412
 - Infiltration = 0
 - HYG Vol OUT = 11412
 - Retained Vol = 0

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

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

Name.... POND 10 OUT Tag: 15

Event: 15 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped 10.05.06.ppw

Storm... 15 Tag: 15

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =

HYG ID = POND 10 OUT

HYG Tag = 15

Peak Discharge = 7.13 cfs

Time to Peak = 21.00 min

HYG Volume = 11412 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min

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

Time min					
.00	.00	.86	1.93	2.57	3.10
5.00	3.53	3.87	4.11	4.31	4.47
10.00	4.73	5.13	5.61	5.98	6.21
15.00	6.40	6.57	6.71	6.84	6.96
20.00	7.07	7.13	7.11	7.01	6.83
25.00	6.55	6.17	5.70	5.08	4.66
30.00	4.45	4.32	4.16	4.00	3.81
35.00	3.60	3.34	3.04	2.66	2.13
40.00	1.32	.19	.00		

LEVEL POOL ROUTING SUMMARY

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 25
 Outflow HYG file = NONE STORED - POND 10 OUT 25

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 553.63 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 = 11.74 cfs at 5.00 min
 Peak Outflow = 8.03 cfs at 22.00 min

 Peak Elevation = 559.39 ft
 Peak Storage = 6091 cu.ft
 =====

MASS BALANCE (cu.ft)

 + Initial Vol = 0
 + HYG Vol IN = 14088
 - Infiltration = 0
 - HYG Vol OUT = 14088
 - Retained Vol = 0

 Unrouted Vol = 0 cu.ft (.000% of Outflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 100
 Outflow HYG file = NONE STORED - POND 10 OUT 100

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 553.63 ft
 Starting Volume = 0 cu.ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout = .00 cfs
 Time Increment = 1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====
 Peak Inflow = 15.02 cfs at 5.00 min
 Peak Outflow = 11.21 cfs at 21.00 min

 Peak Elevation = 560.23 ft
 Peak Storage = 8474 cu.ft
 =====

MASS BALANCE (cu.ft)

 + Initial Vol = 0
 + HYG Vol IN = 18024
 - Infiltration = 0
 - HYG Vol OUT = 18024
 - Retained Vol = 0

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

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =
HYG ID = POND 10 OUT
HYG Tag = 100

Peak Discharge = 11.21 cfs
Time to Peak = 21.00 min
HYG Volume = 18024 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	1.31	2.37	3.09	3.65
5.00	4.12	4.48	5.25	6.15	6.65
10.00	7.03	7.34	7.60	7.83	8.04
15.00	8.22	8.39	8.55	8.96	9.79
20.00	10.69	11.21	11.08	10.42	9.45
25.00	8.60	8.41	8.20	7.97	7.74
30.00	7.48	7.21	6.92	6.60	6.23
35.00	5.81	5.15	4.71	4.47	4.34
40.00	4.19	4.02	3.84	3.63	3.38
45.00	3.09	2.72	2.22	1.46	.31
50.00	.00				

Index of Starting Page Numbers for ID Names

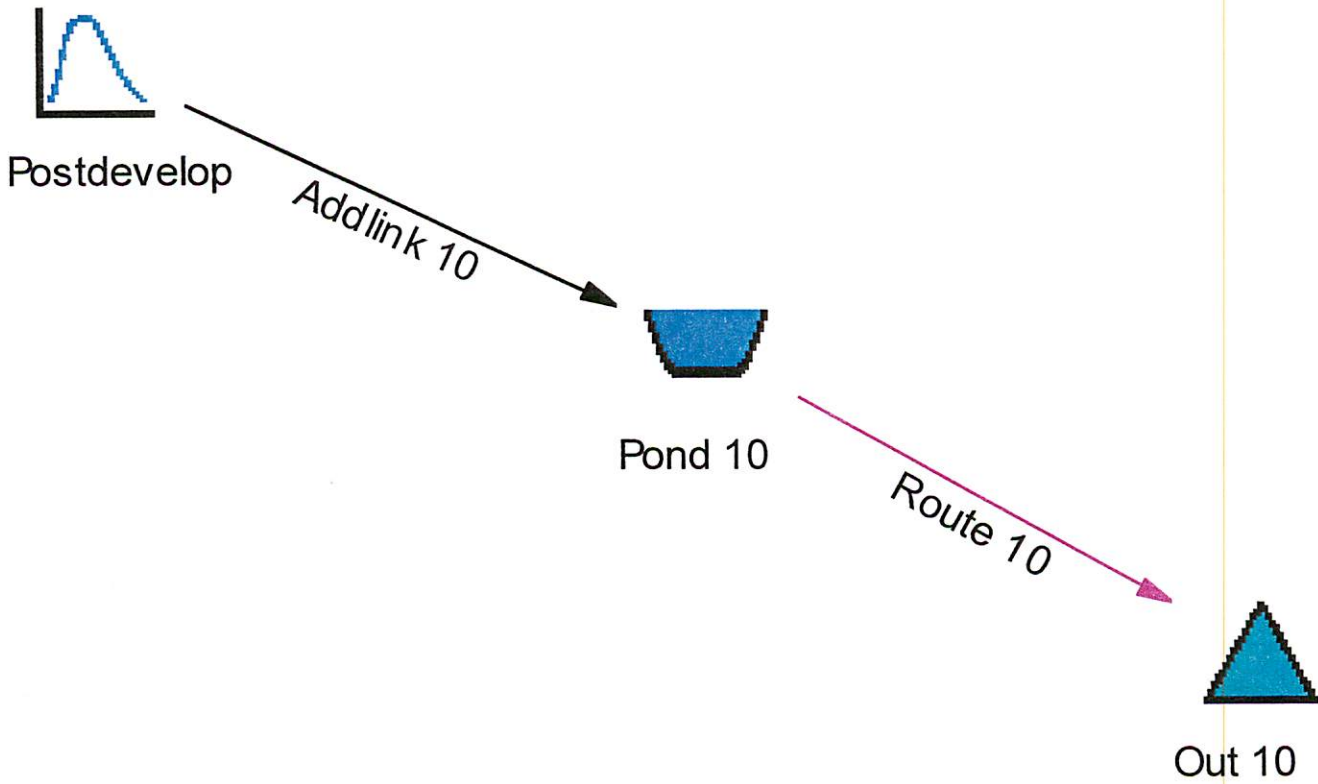
----- O -----
OS 2... 6.01

----- P -----
POND 10... 5.01, 7.01
POND 10 OUT 2... 3.01, 4.01,
 7.06, 7.07, 3.02, 4.02, 7.08,
 7.09, 3.03, 4.03, 7.10, 7.11,
 3.04, 4.04, 7.12, 7.13
POSTDEVELOP 2... 2.01, 2.02, 2.03,
 2.04

----- W -----
Watershed... 1.01

POSTDEVELOPED

LOW FLOW BLOCKED



Job File: \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\POSTDEVELOPED LFB 10.05.06.PPW
Rain Dir: \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\

JOB TITLE

=====

Project Date: 10/5/2006
Project Engineer: Katie Lyons
Project Title: SSM Healthcare
Project Comments:

***** MASTER SUMMARY *****

Watershed..... Master Network Summary 1.01

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

POSTDEVELOP..... 100
 Read HYG 2.01

***** TIME VS.ELEV *****

POND 10 OUT 100
 Time-Elev 3.01

***** TIME VS.VOL *****

POND 10 OUT 100
 Time vs. Volume 4.01

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

POND 10..... Vol: Elev-Area 5.01

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

OS 2..... Outlet Input Data 6.01

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

POND 10..... Pond E-V-Q Table 7.01

POND 10 OUT 100

 Pond Routing Summary 7.06

 Pond Routed HYG (total out) 7.07

MASTER DESIGN STORM SUMMARY

Hydrograph Queue Only Network

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method
Hydrograph File Import Option Used For 1 node(s)

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol cu.ft	Trun	Qpeak min	Qpeak cfs	Max WSEL ft	Max Pond Storage cu.ft
*OUT 10	JCT	100	18014		20.00	14.30		
POND 10	IN POND	100	18024		5.00	15.02		
POND 10	OUT POND	100	18014		20.00	14.30	560.85	10553
POSTDEVELOP	HYG	100	18024		5.00	15.02		

Type.... Read HYG

Name.... POSTDEVELOP

Tag: 100

Event: 100 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped LFB 10.05.06.ppw

Storm... Tag: 100

HYG file =
 HYG ID = 100YR-20MIN
 HYG Tag = 100YR

 Peak Discharge = 15.02 cfs
 Time to Peak = 5.00 min
 HYG Volume = 18024 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min

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

Time min					
.00	.00	3.00	6.01	9.01	12.02
5.00	15.02	15.02	15.02	15.02	15.02
10.00	15.02	15.02	15.02	15.02	15.02
15.00	15.02	15.02	15.02	15.02	15.02
20.00	15.02	12.02	9.01	6.01	3.00
25.00	.00				

TIME vs. ELEVATION (ft)

Time min	Output Time increment = 1.00 min				
	Time on left represents time for first value in each row.				
.00	557.40	557.46	557.64	557.91	558.23
5.00	558.60	558.96	559.28	559.57	559.84
10.00	560.08	560.28	560.44	560.55	560.64
15.00	560.70	560.75	560.79	560.81	560.83
20.00	560.85	560.84	560.78	560.70	560.59
25.00	560.45	560.32	560.22	560.13	560.05
30.00	559.98	559.93	559.87	559.81	559.76
35.00	559.70	559.65	559.59	559.53	559.48
40.00	559.42	559.37	559.31	559.25	559.20
45.00	559.14	559.09	559.03	558.98	558.92
50.00	558.87	558.82	558.76	558.71	558.66
55.00	558.61	558.56	558.51	558.46	558.41
60.00	558.36	558.31	558.27	558.22	558.18
65.00	558.14	558.09	558.05	558.01	557.98
70.00	557.94	557.91	557.88	557.85	557.83
75.00	557.80	557.78	557.76	557.75	557.73
80.00	557.71	557.70	557.68	557.67	557.66
85.00	557.65	557.64	557.63	557.62	557.61
90.00	557.60	557.59	557.58	557.58	557.57
95.00	557.56	557.56	557.55	557.55	557.54
100.00	557.54	557.53	557.53	557.52	557.52
105.00	557.51	557.51	557.51	557.50	557.50
110.00	557.50	557.49	557.49	557.49	557.49
115.00	557.48	557.48	557.48	557.48	557.47
120.00	557.47	557.47	557.47	557.46	557.46
125.00	557.46	557.46	557.46	557.46	557.45
130.00	557.45	557.45	557.45	557.45	557.45
135.00	557.45	557.45	557.44	557.44	557.44
140.00	557.44	557.44	557.44	557.44	557.44
145.00	557.44	557.44	557.44	557.44	557.43
150.00	557.43	557.43	557.43	557.43	557.43
155.00	557.43	557.43	557.43	557.43	557.43
160.00	557.43	557.43	557.43	557.43	557.43
165.00	557.43	557.43	557.43	557.42	557.42
170.00	557.42	557.42	557.42	557.42	557.42
175.00	557.42	557.42	557.42	557.42	557.42
180.00	557.42	557.42	557.42	557.42	557.42
185.00	557.42	557.42	557.42	557.42	557.42
190.00	557.42	557.42	557.42	557.42	557.42
195.00	557.42	557.42	557.42	557.41	557.41
200.00	557.41	557.41	557.41	557.41	557.41
205.00	557.41	557.41	557.41	557.41	557.41
210.00	557.41	557.41	557.41	557.41	557.41

Type.... Time-Elev

Name.... POND 10 OUT Tag: 100

Event: 100 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped LFB 10.05.06.ppw

Storm... 100 Tag: 100

TIME vs. ELEVATION (ft)

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

Time min					
215.00	557.41	557.41	557.41	557.41	557.41
220.00	557.41	557.41	557.41	557.41	557.41
225.00	557.41	557.41	557.41	557.41	557.41
230.00	557.41	557.41	557.41	557.41	557.41
235.00	557.41	557.41	557.41		

TIME vs. VOLUME (cu.ft)

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

Time min					
.00	2214	2302	2564	2979	3543
5.00	4260	5047	5817	6574	7320
10.00	8027	8642	9140	9527	9824
15.00	10048	10216	10340	10433	10503
20.00	10553	10512	10325	10029	9648
25.00	9201	8775	8436	8161	7931
30.00	7733	7557	7393	7233	7074
35.00	6918	6764	6612	6463	6315
40.00	6170	6027	5886	5748	5612
45.00	5479	5347	5219	5093	4970
50.00	4848	4730	4614	4502	4391
55.00	4284	4180	4078	3979	3884
60.00	3791	3701	3615	3532	3451
65.00	3375	3300	3230	3163	3099
70.00	3040	2984	2933	2889	2849
75.00	2813	2779	2748	2720	2694
80.00	2669	2646	2624	2604	2586
85.00	2569	2553	2538	2524	2510
90.00	2497	2485	2474	2464	2454
95.00	2444	2435	2427	2419	2412
100.00	2405	2399	2392	2386	2380
105.00	2375	2369	2364	2359	2354
110.00	2350	2345	2341	2337	2333
115.00	2329	2326	2322	2319	2316
120.00	2313	2310	2307	2304	2302
125.00	2299	2297	2294	2292	2290
130.00	2288	2286	2284	2282	2281
135.00	2279	2277	2276	2274	2273
140.00	2272	2270	2269	2268	2267
145.00	2266	2265	2264	2263	2262
150.00	2261	2260	2259	2258	2257
155.00	2257	2256	2255	2255	2254
160.00	2253	2253	2252	2251	2251
165.00	2250	2249	2249	2248	2248
170.00	2247	2247	2246	2245	2245
175.00	2244	2244	2243	2243	2242
180.00	2242	2241	2241	2241	2240
185.00	2240	2239	2239	2238	2238
190.00	2238	2237	2237	2236	2236
195.00	2236	2235	2235	2235	2234
200.00	2234	2234	2233	2233	2233
205.00	2232	2232	2232	2231	2231
210.00	2231	2231	2230	2230	2230

TIME vs. VOLUME (cu.ft)

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

Time min					
215.00		2230	2229	2229	2229
220.00		2228	2228	2228	2227
225.00		2227	2227	2227	2226
230.00		2226	2226	2226	2225
235.00		2225	2225	2225	

Elevation (ft)	Planimeter (sq.in)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	Volume (cu.ft)	Volume Sum (cu.ft)
553.63	-----	16	0	0	0
554.00	-----	131	193	24	24
556.00	-----	708	1144	762	786
558.00	-----	1717	3528	2352	3138
560.00	-----	2981	6960	4640	7778
562.00	-----	4471	11103	7402	15180

POND VOLUME EQUATIONS

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

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

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 553.63 ft
Increment = .10 ft
Max. Elev.= 562.00 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
Weir-Rectangular	UW	--->	TW	557.400	557.900
Orifice-Area	UO	--->	TW	557.900	562.000
Weir-Rectangular	OF	--->	TW	559.900	562.000
TW SETUP, DS Channel					

Name.... OS 2

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped LFB 10.05.06.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = UW
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 557.40 ft
Weir Length = .75 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

Structure ID = UO
Structure Type = Orifice-Area

of Openings = 1
Invert Elev. = 557.40 ft
Area = .3750 sq.ft
Top of Orifice = 557.90 ft
Datum Elev. = 557.65 ft
Orifice Coeff. = .600

Structure ID = OF
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 559.90 ft
Weir Length = 4.00 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

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

Name.... POND 10

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped LFB 10.05.06.ppw

LEVEL POOL ROUTING DATA

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 100
 Outflow HYG file = NONE STORED - POND 10 OUT 100

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 557.40 ft
 Starting Volume = 2214 cu.ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
553.63	.00	0	16	.00	.00	.00
553.73	.00	3	36	.00	.00	.08
553.83	.00	8	64	.00	.00	.25
553.93	.00	16	101	.00	.00	.52
554.03	.00	28	136	.00	.00	.93
554.13	.00	42	155	.00	.00	1.41
554.23	.00	59	174	.00	.00	1.96
554.33	.00	77	195	.00	.00	2.57
554.43	.00	98	216	.00	.00	3.26
554.53	.00	120	239	.00	.00	4.01
554.63	.00	146	263	.00	.00	4.85
554.73	.00	173	288	.00	.00	5.77
554.83	.00	203	315	.00	.00	6.77
554.93	.00	236	342	.00	.00	7.87
555.03	.00	272	371	.00	.00	9.06
555.13	.00	310	401	.00	.00	10.34
555.23	.00	352	431	.00	.00	11.73
555.33	.00	397	463	.00	.00	13.22
555.43	.00	445	497	.00	.00	14.82
555.53	.00	496	531	.00	.00	16.53

Name.... POND 10

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped LFB 10.05.06.ppw

LEVEL POOL ROUTING DATA

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
Inflow HYG file = NONE STORED - POND 10 IN 100
Outflow HYG file = NONE STORED - POND 10 OUT 100

Pond Node Data = POND 10
Pond Volume Data = POND 10
Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 557.40 ft
Starting Volume = 2214 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Table with 7 columns: Elevation ft, Outflow cfs, Storage cu.ft, Area sq.ft, Infiltr. cfs, Q Total cfs, 2S/t + O cfs. It contains 16 rows of data showing the relationship between elevation and various flow/storage parameters.

Name.... POND 10

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped LFB 10.05.06.ppw

LEVEL POOL ROUTING DATA

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 100
 Outflow HYG file = NONE STORED - POND 10 OUT 100

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 557.40 ft
 Starting Volume = 2214 cu.ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
557.53	.11	2397	1440	.00	.11	80.00
557.63	.25	2544	1497	.00	.25	85.04
557.73	.43	2696	1555	.00	.43	90.30
557.83	.63	2855	1614	.00	.63	95.79
557.93	.96	3019	1674	.00	.96	101.59
558.03	1.11	3190	1733	.00	1.11	107.43
558.13	1.25	3366	1789	.00	1.25	113.44
558.23	1.37	3547	1845	.00	1.37	119.62
558.33	1.49	3735	1902	.00	1.49	125.98
558.43	1.59	3928	1960	.00	1.59	132.52
558.53	1.69	4127	2018	.00	1.69	139.25
558.63	1.79	4331	2078	.00	1.79	146.17
558.73	1.88	4542	2138	.00	1.88	153.28
558.83	1.96	4759	2200	.00	1.96	160.60
558.93	2.04	4982	2262	.00	2.04	168.11
559.03	2.12	5211	2325	.00	2.12	175.84
559.13	2.20	5447	2389	.00	2.20	183.77
559.23	2.27	5689	2453	.00	2.27	191.91
559.33	2.34	5938	2519	.00	2.34	200.27
559.43	2.41	6193	2585	.00	2.41	208.84

Name.... POND 10

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped LFB 10.05.06.ppw

LEVEL POOL ROUTING DATA

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 100
 Outflow HYG file = NONE STORED - POND 10 OUT 100

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 557.40 ft
 Starting Volume = 2214 cu.ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
559.53	2.47	6455	2653	.00	2.47	217.64
559.63	2.54	6724	2721	.00	2.54	226.66
559.73	2.60	6999	2790	.00	2.60	235.91
559.83	2.66	7282	2860	.00	2.66	245.39
559.90	2.71	7484	2910	.00	2.71	252.16
559.93	2.79	7571	2931	.00	2.79	255.16
560.03	3.35	7868	3001	.00	3.35	265.61
560.13	4.17	8171	3069	.00	4.17	276.54
560.23	5.17	8482	3137	.00	5.17	287.89
560.33	6.34	8799	3206	.00	6.34	299.63
560.43	7.64	9123	3276	.00	7.64	311.73
560.53	9.06	9454	3347	.00	9.06	324.20
560.63	10.60	9792	3418	.00	10.60	337.01
560.73	12.24	10138	3490	.00	12.24	350.16
560.83	13.98	10490	3563	.00	13.98	363.66
560.93	15.81	10850	3636	.00	15.81	377.48
561.03	17.73	11218	3711	.00	17.73	391.65
561.13	19.74	11592	3786	.00	19.74	406.15
561.23	21.82	11975	3862	.00	21.82	420.97
561.33	23.98	12365	3938	.00	23.98	436.14

Name.... POND 10

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped LFB 10.05.06.ppw

LEVEL POOL ROUTING DATA

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
Inflow HYG file = NONE STORED - POND 10 IN 100
Outflow HYG file = NONE STORED - POND 10 OUT 100

Pond Node Data = POND 10
Pond Volume Data = POND 10
Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 557.40 ft
Starting Volume = 2214 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
561.43	26.22	12762	4016	.00	26.22	451.63
561.53	28.53	13168	4094	.00	28.53	467.46
561.63	30.91	13581	4173	.00	30.91	483.61
561.73	33.35	14002	4252	.00	33.35	500.10
561.83	35.86	14432	4333	.00	35.86	516.92
561.93	38.44	14869	4414	.00	38.44	534.07
562.00	40.28	15180	4471	.00	40.28	546.28

LEVEL POOL ROUTING SUMMARY

HYG Dir = \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\
 Inflow HYG file = NONE STORED - POND 10 IN 100
 Outflow HYG file = NONE STORED - POND 10 OUT 100

Pond Node Data = POND 10
 Pond Volume Data = POND 10
 Pond Outlet Data = OS 2

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 557.40 ft
 Starting Volume = 2214 cu.ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = 1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====
 Peak Inflow = 15.02 cfs at 5.00 min
 Peak Outflow = 14.30 cfs at 20.00 min

 Peak Elevation = 560.85 ft
 Peak Storage = 10553 cu.ft
 =====

MASS BALANCE (cu.ft)

 + Initial Vol = 2214
 + HYG Vol IN = 18024
 - Infiltration = 0
 - HYG Vol OUT = 18014
 - Retained Vol = 2225

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

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

Name.... POND 10 OUT Tag: 100

Event: 100 yr

File.... \\2serverprs\PondPack\Katie-jobs\SSM Healthcare\Postdeveloped LFB 10.05.06.ppw

Storm... 100 Tag: 100

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =

HYG ID = POND 10 OUT

HYG Tag = 100

Peak Discharge = 14.30 cfs

Time to Peak = 20.00 min

HYG Volume = 18014 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min

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

.00	.00	.04	.27	.88	1.37
5.00	1.75	2.06	2.31	2.50	2.67
10.00	3.78	5.77	7.71	9.40	10.75
15.00	11.82	12.63	13.25	13.70	14.04
20.00	14.30	14.10	13.17	11.73	9.95
25.00	7.98	6.25	5.03	4.14	3.52
30.00	3.09	2.77	2.69	2.65	2.62
35.00	2.58	2.55	2.51	2.48	2.44
40.00	2.40	2.36	2.32	2.29	2.25
45.00	2.21	2.16	2.12	2.08	2.04
50.00	1.99	1.95	1.90	1.86	1.81
55.00	1.77	1.72	1.67	1.62	1.57
60.00	1.52	1.47	1.42	1.36	1.31
65.00	1.26	1.20	1.14	1.09	1.03
70.00	.97	.89	.79	.70	.63
75.00	.58	.54	.50	.46	.42
80.00	.39	.37	.34	.32	.30
85.00	.28	.26	.24	.23	.22
90.00	.20	.19	.18	.17	.16
95.00	.15	.14	.14	.13	.12
100.00	.11	.11	.10	.10	.09
105.00	.09	.09	.08	.08	.08
110.00	.07	.07	.07	.07	.06
115.00	.06	.06	.06	.05	.05
120.00	.05	.05	.05	.04	.04
125.00	.04	.04	.04	.04	.03
130.00	.03	.03	.03	.03	.03
135.00	.03	.03	.03	.02	.02
140.00	.02	.02	.02	.02	.02
145.00	.02	.02	.02	.02	.02
150.00	.02	.01	.01	.01	.01

HYDROGRAPH ORDINATES (cfs)

Output Time increment = 1.00 min

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

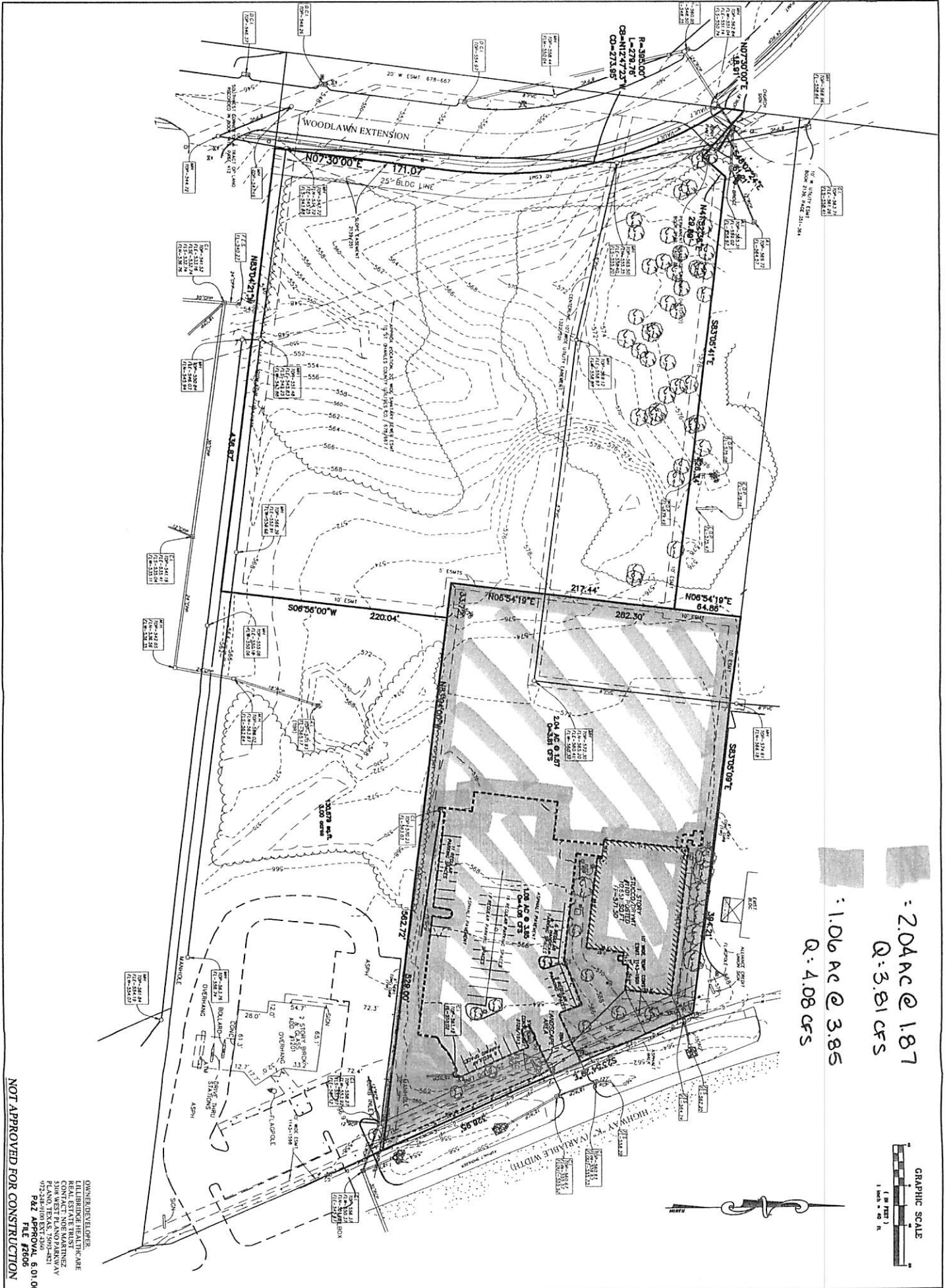
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160.00	.01	.01	.01	.01	.01
165.00	.01	.01	.01	.01	.01
170.00	.01	.01	.01	.01	.01
175.00	.01	.01	.01	.01	.01
180.00	.01	.01	.01	.01	.01
185.00	.01	.01	.01	.01	.01
190.00	.01	.01	.01	.01	.01
195.00	.01	.01	.01	.01	.01
200.00	.01	.01	.01	.01	.01
205.00	.01	.01	.00	.00	.00
210.00	.00	.00	.00	.00	.00
215.00	.00	.00	.00	.00	.00
220.00	.00	.00	.00	.00	.00
225.00	.00	.00	.00	.00	.00
230.00	.00	.00	.00	.00	.00
235.00	.00	.00	.00	.00	.00

Index of Starting Page Numbers for ID Names

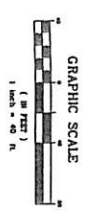
----- O -----
OS 2... 6.01

----- P -----
POND 10... 5.01, 7.01
POND 10 OUT 100... 3.01, 4.01,
 7.06, 7.07
POSTDEVELOP 100... 2.01

----- W -----
Watershed... 1.01



2.04 AC @ 187
 Q: 3.81 CFS
 1.06 AC @ 3.85
 Q: 4.08 CFS



NOT APPROVED FOR CONSTRUCTION

OWNER/DESIGNER:
 REAL ESTATE TRUST
 CONTACT: NOE MARTINEZ
 PLANO, TEXAS 75053-5201
 P&Z APPROVAL: 6.01.06
 FILE #8686

DATE	BY	REVISIONS
8/22/06	SM	1.00
8/22/06	SM	1.01
8/22/06	SM	1.02
8/22/06	SM	1.03
8/22/06	SM	1.04
8/22/06	SM	1.05
8/22/06	SM	1.06
8/22/06	SM	1.07
8/22/06	SM	1.08
8/22/06	SM	1.09
8/22/06	SM	1.10

NO.	DATE	REVISIONS

SSM HEALTHCARE
 IMPROVEMENT PLANS
 O'FALLON, MO

Prepared For:
 LILLIBRIDGE

LILLIBRIDGE
 CONTACT: NERI MARTINEZ
 584 WEST PLANO PARKWAY
 PLANO, TEXAS 75053-5201
 972.244.9109 EXT. 4360

PICKETT RAY & SILVER
 CIVIL ENGINEERS
 PLANNERS
 LAND SURVEYORS

333 Mid Rivers Mall Drive
 St. Peters, MO 63378
 Phone (636) 397-1211
 Fax (636) 397-1104

PREDEVELOPED TOTAL SITE AREA: 3.10 AC