HYDROLOGICAL STUDY

for

MASSILLON, OH
Commercial Development

for

THF Realty, Inc.
955 Executive Parkway, Ste. 210
St. Louis, MO 63141

W & A Project No. 98-228

September 1, 1999

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INTRODUCTION

THF Development, in conjunction with DeVille Developments, proposes to construct a commercial development in Massillon, Ohio. The site is located north of U. S. Highway 30 and west of State Highway 21. The approximate 65-acre site will consist of 442,889 SF of commercial space, associated parking, storm drainage, and underground utilities. A detention pond will be used to control storm water discharge from the site.

This report will compare the pre-developed storm water discharges to the post-developed storm water discharges for the 2-, 5-, 10-, 25-, 50-, and 100-year 24-hour rainfall events, and will show that the peak discharges will not increase for the developed site. Additionally, the discharge for the 2-year pre-developed site will be equal to or less than the 10-year post-developed discharge. Haestad Methods, Inc. PondPack computer program was used for the hydrology and detention analysis using a Type II SCS rainfall distribution.

PRE-DEVELOPED CONDITIONS

Currently the site is planted with corn. The topography slopes gently to the south to an existing drainage ditch along Highway 30. The storm drainage crosses underneath the highway at several locations and eventually discharges into the Tuscarawas River.

The hydrology for the pre-developed site was determined by using the disturbed area of 63 acres. The undisturbed area that is not affected by the project was not considered in the calculations, and no off-site areas are included.

The site is divided into 4 drainage areas, each of which discharges into a culvert that drains under the adjacent highway. The following chart summarizes the pre-developed drainage areas, curve numbers, times of concentration and peak flows for each studies storm event.

	Area 1	Area 2	Area 3	Area 4
Drainage Area (ac)	24.99	33.47	1.73	3.10
Time of Concentration (hours)	0.51	0.55	0.27	0.25
Curve Number	73	73	73	73
2-year Q (cfs)	7.15	7.72	0.73	1.35
5-year Q (cfs)	19.44	21.33	1.94	3.63
10-year Q (cfs)	25.97	28.59	2.57	4.81
25-year Q (cfs)	30.55	33.68	3.02	5.63
50-year Q (cfs)	38.48	42.51	3.79	7.05
100-year Q (cfs)	42.56	54.37	4.19	7.78

POST-DEVELOPED CONDITIONS

The post-developed site consists of two (2) drainage areas. The largest area of 75 acres (Area 1) includes a large portion of the developed area and discharges to a new detention basin which discharges into Outfall 1. Area 1 also includes approximately 15 acres of off-site area which is believed to flow onto the site. The other area, Area 2 (4.91 acres), bypasses the detention basin and discharges into Outfall 2. Areas 3 and 4 are not considered in the post-developed calculations, as these areas will be routed to the pond, discharging to Outfall 1.

The site's total post-developed peak discharge was determined by adding the sub-area hydrographs for each of the design storms. The following times of concentrations and curve numbers were used for the post-developed flow calculations (See Appendix B).

Post-Developed Conditions

Area	Size (Ac)	Time of Concentration (Hr)	Curve Number
Area 1	75	0.083	92
Area 2	4.91	0.48	83

DETENTION POND

The detention pond will be located in the center portion of the property. An outlet structure consisting of a square concrete box with circular openings will control the flow out of the pond. For outlet structure details, see Appendix E. The pipe discharging the pond drains into the existing swale that discharges into a 24" culvert under the adjacent highway.

Pond routing details, including peak inflows, peak outflows, and water surface elevations are shown in the table below.

Pond Routing

Storm Year	Peak Inflow (cfs)	Peak Outflow (cfs)	Water Surface Elevation
2	100.8	4.7	976.65
5	184.3	6.1	978.1
10	223.3	6.6	978.77
25	249.6	10.6	979.08
50	293.6	23.2	979.32
100	315.6	31.4	979.49

CONCLUSIONS

The pre-developed and post-developed peak flows are summarized in the table below. The post-developed peak discharges are less than the pre-developed peak discharges for each of the design storms, and the 10-year post-developed discharges are less than the 2-year pre-developed peak discharges, as required.

Comparison of Pre-Developed And Post-Developed Peak Flows

Storm Year	Area 1		Area 2	
	Pre-Developed Peak Flow (cfs)	Post-Developed Peak Flow (cfs)	Pre-Developed Peak Flow (cfs)	Post-Developed Peak Flow (cfs)
2	7.2	4.7	9.1	2.6
5	19.4	6.1	24.8	5.7
10	26.1	6.6	33.0	7.2
25	30.6	10.6	38.9	8.2
50	38.5	23.2	49.1	10.0
100	42.6	31.4	54.4	10.8

APPENDIX A

USGS QUAD SHEET "MASSILLON"

APPENDIX B

TIME OF CONCENTRATION AND CURVE NUMBER COMPUTATIONS

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Tc Equations used...

==== SCS TR-55 Sheet Flow ==========

Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))

Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
P = 2yr, 24hr Rain depth, inches
Sf = Slope, ft/ft

==== SCS TR-55 Shallow Concentrated Flow ==========

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved surface:
V = 20.3282 * (Sf**0.5)

Tc = (Lf / V) / (3600sec/hr)

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

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TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n	.0600	
Hydraulic Length	300.00	ft
2yr, 24hr P	2.3000	in
Slope	.077000	ft/ft

Avg.Velocity .64 ft/sec

Segment #1 Time: .1300 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	2040.00	ft
Slope	.008500	ft/ft

Unpaved

Avg.Velocity 1.49 ft/sec

Segment #2 Time: .3809 hrs

Total Tc: .5109 hrs

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TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n	.0600
Hydraulic Length	300.00 ft
2yr, 24hr P	2.3000 in
Slope	.020000 ft/ft
Avg.Velocity	.37 ft/sec

Segment #1 Time: .2229 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	2700.00 ft
Slope	.020000 ft/ft
Unpaved	
Avg.Velocity	2.28 ft/sec

Segment #2 Time: .3287 hrs

Total Tc: .5516 hrs

Type.... Tc Calcs
Name.... AREA 2

File.... J:\POND 7\98228\POSTDEVELOPEDALT.PPW

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n	.0110
Hydraulic Length	300.00 ft
2yr, 24hr P	2.3000 in
Slope	.045000 ft/ft
Avg.Velocity	2.01 ft/sec

Segment #1 Time: .0415 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	3000.00 ft
Slope	.012500 ft/ft
Unpaved	
Avg.Velocity	1.80 ft/sec

Segment #2 Time: .4620 hrs

Total Tc: .5034 hrs

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TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n	.0600
Hydraulic Length	300.00 ft
2yr, 24hr P	2.3000 in
Slope	.032000 ft/ft
Avg.Velocity	.45 ft/sec

Segment #1 Time: .1847 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	500.00 ft
Slope	.010000 ft/ft
Unpaved	
Avg.Velocity	1.61 ft/sec

Segment #2 Time: .0861 hrs

Total Tc: .2708 hrs

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TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n	.0600
Hydraulic Length	250.00 ft
2yr, 24hr P	2.3000 in
Slope	.030000 ft/ft
Avg.Velocity	.42 ft/sec

Segment #1 Time: .1638 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	500.00 ft
Slope	.010000 ft/ft
Unpaved	
Avg.Velocity	1.61 ft/sec

Segment #2 Time: .0861 hrs

Total Tc: .2499 hrs

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RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Row Crops Group B	73	24.990			73.00
COMPOSITE AREA & WEIGHTED CN --->		24.990			73.00 (73)

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RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Row Crops , Group B	73	33.470			73.00
COMPOSITE AREA & WEIGHTED CN --->		33.470			73.00 (73)

File.... J:\POND 7\98228\PREDEVELOPEDALT.PPW

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Row Crops, Group B	73	1.730			73.00
COMPOSITE AREA & WEIGHTED CN --->		1.730			73.00 (73)

Type.... Runoff CN-Area
Name.... AREA 4

File.... J:\POND 7\98228\PREDEVELOPEDALT.PPW

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Row Crops, Group B	73	3.100			73.00
COMPOSITE AREA & WEIGHTED CN --->		3.100			73.00 (73)

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RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Impervious	98	49.400			98.00
Landscaped, Group B good	61	25.600			61.00
COMPOSITE AREA & WEIGHTED CN --->		75.000			85.37 (85)

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RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Impervious	98	2.450			98.00
Open space good Group B	61	2.460			61.00
COMPOSITE AREA & WEIGHTED CN --->		4.910			79.46 (79)

APPENDIX C

PRE-DEVELOPED SITE COMPUTATIONS

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = ..2

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 2.2500 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
AREA 1	AREA	.912		12.2500	7.15	
AREA 2	AREA	1.221		12.3000	8.98	
AREA 3	AREA	.063		12.1000	.73	
AREA 4	AREA	.113		12.1000	1.35	
Outfall OUTFALL 1	JCT	.912		12.2500	7.15	
Outfall OUTFALL 2	JCT	1.221		12.3000	8.98	
Outfall OUTFALL 3	JCT	.063		12.1000	.73	
Outfall OUTFALL 4	JCT	.113		12.1000	1.35	

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = ..5

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 3.2500 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
AREA 1	AREA	2.113		12.2000	19.44	
AREA 2	AREA	2.831		12.2500	24.75	
AREA 3	AREA	.146		12.0500	1.94	
AREA 4	AREA	.262		12.0500	3.63	
Outfall OUTFALL 1	JCT	2.113		12.2000	19.44	
Outfall OUTFALL 2	JCT	2.831		12.2500	24.75	
Outfall OUTFALL 3	JCT	.146		12.0500	1.94	
Outfall OUTFALL 4	JCT	.262		12.0500	3.63	

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = .10

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 3.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
AREA 1	AREA	2.741		12.2000	25.97	
AREA 2	AREA	3.670		12.2000	33.00	
AREA 3	AREA	.190		12.0500	2.57	
AREA 4	AREA	.340		12.0500	4.81	
Outfall OUTFALL 1	JCT	2.741		12.2000	25.97	
Outfall OUTFALL 2	JCT	3.670		12.2000	33.00	
Outfall OUTFALL 3	JCT	.190		12.0500	2.57	
Outfall OUTFALL 4	JCT	.340		12.0500	4.81	

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = .25

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 25 yr
Total Rainfall Depth= 4.0000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
AREA 1	AREA	3.181		12.2000	30.55	
AREA 2	AREA	4.260		12.2000	38.88	
AREA 3	AREA	.220		12.0500	3.02	
AREA 4	AREA	.395		12.0500	5.63	
Outfall OUTFALL 1	JCT	3.181		12.2000	30.55	
Outfall OUTFALL 2	JCT	4.260		12.2000	38.88	
Outfall OUTFALL 3	JCT	.220		12.0500	3.02	
Outfall OUTFALL 4	JCT	.395		12.0500	5.63	

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = .50

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
AREA 1	AREA	3.948		12.2000	38.48	
AREA 2	AREA	5.287		12.2000	49.10	
AREA 3	AREA	.273		12.0500	3.79	
AREA 4	AREA	.490		12.0500	7.05	
Outfall OUTFALL 1	JCT	3.948		12.2000	38.48	
Outfall OUTFALL 2	JCT	5.287		12.2000	49.10	
Outfall OUTFALL 3	JCT	.273		12.0500	3.79	
Outfall OUTFALL 4	JCT	.490		12.0500	7.05	

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = 100

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 4.7500 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
AREA 1	AREA	4.344		12.2000	42.56	
AREA 2	AREA	5.819		12.2000	54.37	
AREA 3	AREA	.301		12.0500	4.19	
AREA 4	AREA	.539		12.0500	7.78	
Outfall OUTFALL 1	JCT	4.344		12.2000	42.56	
Outfall OUTFALL 2	JCT	5.819		12.2000	54.37	
Outfall OUTFALL 3	JCT	.301		12.0500	4.19	
Outfall OUTFALL 4	JCT	.539		12.0500	7.78	

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TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n	.0600
Hydraulic Length	300.00 ft
2yr, 24hr P	2.3000 in
Slope	.010000 ft/ft
Avg.Velocity	.28 ft/sec

Segment #1 Time: .2941 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1680.00 ft
Slope	.017900 ft/ft
Unpaved	
Avg.Velocity	2.16 ft/sec

Segment #2 Time: .2162 hrs

Total Tc: .5103 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 ..2
Tc = .5103 hrs
Drainage Area = 24.990 acres Runoff CN= 73

==========

Computational Time Increment	=	.06803 hrs
Computed Peak Time	=	12.2461 hrs
Computed Peak Flow	=	7.17 cfs

Time Increment for HYG File	=	.0500 hrs
Peak Time, Interpolated Output	=	12.2500 hrs
Peak Flow, Interpolated Output	=	7.15 cfs

==========

DRAINAGE AREA

ID:AREA 1
CN = 73
Area = 24.990 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

.4379 in
.912 ac-ft

HYG Volume... .912 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .51026 hrs (ID: AREA 1)
Computational Incr, Tm = .06803 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak,	qp =	55.49 cfs
Unit peak time	Tp =	.34017 hrs
Unit receding limb,	Tr =	1.36068 hrs
Total unit time,	Tb =	1.70085 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 ..5
Tc = .5103 hrs
Drainage Area = 24.990 acres Runoff CN= 73

==========
Computational Time Increment = .06803 hrs
Computed Peak Time = 12.2461 hrs
Computed Peak Flow = 19.47 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 19.44 cfs
==========

DRAINAGE AREA

ID:AREA 1
CN = 73
Area = 24.990 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.0149 in
2.114 ac-ft

HYG Volume... 2.113 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .51026 hrs (ID: AREA 1)
Computational Incr, Tm = .06803 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 55.49 cfs
Unit peak time Tp = .34017 hrs
Unit receding limb, Tr = 1.36068 hrs
Total unit time, Tb = 1.70085 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 3.7000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 .10
Tc = .5103 hrs
Drainage Area = 24.990 acres Runoff CN= 73

==========
Computational Time Increment = .06803 hrs
Computed Peak Time = 12.1781 hrs
Computed Peak Flow = 26.04 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 25.97 cfs
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DRAINAGE AREA

ID:AREA 1
CN = 73
Area = 24.990 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.3160 in
2.741 ac-ft

HYG Volume... 2.741 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .51026 hrs (ID: AREA 1)
Computational Incr, Tm = .06803 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 55.49 cfs
Unit peak time Tp = .34017 hrs
Unit receding limb, Tr = 1.36068 hrs
Total unit time, Tb = 1.70085 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.0000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 .25
Tc = .5103 hrs
Drainage Area = 24.990 acres Runoff CN= 73

==========
Computational Time Increment = .06803 hrs
Computed Peak Time = 12.1781 hrs
Computed Peak Flow = 30.67 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 30.55 cfs
==========

DRAINAGE AREA

ID:AREA 1
CN = 73
Area = 24.990 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.5275 in
3.181 ac-ft

HYG Volume... 3.181 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .51026 hrs (ID: AREA 1)
Computational Incr, Tm = .06803 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 55.49 cfs
Unit peak time Tp = .34017 hrs
Unit receding limb, Tr = 1.36068 hrs
Total unit time, Tb = 1.70085 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 4.5000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 .50
Tc = .5103 hrs
Drainage Area = 24.990 acres Runoff CN= 73

==========

Computational Time Increment	=	.06803 hrs
Computed Peak Time	=	12.1781 hrs
Computed Peak Flow	=	38.70 cfs

Time Increment for HYG File	=	.0500 hrs
Peak Time, Interpolated Output	=	12.2000 hrs
Peak Flow, Interpolated Output	=	38.48 cfs

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DRAINAGE AREA

ID:AREA 1
CN = 73
Area = 24.990 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.8957 in
3.948 ac-ft

HYG Volume... 3.948 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .51026 hrs (ID: AREA 1)
Computational Incr, Tm = .06803 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak,	qp =	55.49 cfs
Unit peak time	Tp =	.34017 hrs
Unit receding limb,	Tr =	1.36068 hrs
Total unit time,	Tb =	1.70085 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 4.7500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 100
Tc = .5103 hrs
Drainage Area = 24.990 acres Runoff CN= 73

==========
Computational Time Increment = .06803 hrs
Computed Peak Time = 12.1781 hrs
Computed Peak Flow = 42.85 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 42.56 cfs
==========

DRAINAGE AREA

ID:AREA 1
CN = 73
Area = 24.990 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

2.0862 in
4.345 ac-ft

HYG Volume... 4.344 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .51026 hrs (ID: AREA 1)
Computational Incr, Tm = .06803 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 55.49 cfs
Unit peak time Tp = .34017 hrs
Unit receding limb, Tr = 1.36068 hrs
Total unit time, Tb = 1.70085 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 ..2
Tc = .5516 hrs
Drainage Area = 33.470 acres Runoff CN= 73

==========
Computational Time Increment = .07354 hrs
Computed Peak Time = 12.2814 hrs
Computed Peak Flow = 9.10 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.3000 hrs
Peak Flow, Interpolated Output = 8.98 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 73
Area = 33.470 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

.4379 in
1.221 ac-ft

HYG Volume... 1.221 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .55156 hrs (ID: AREA 2)
Computational Incr, Tm = .07354 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 68.76 cfs
Unit peak time Tp = .36771 hrs
Unit receding limb, Tr = 1.47082 hrs
Total unit time, Tb = 1.83853 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 ..5
Tc = .5516 hrs
Drainage Area = 33.470 acres Runoff CN= 73

==========
Computational Time Increment = .07354 hrs
Computed Peak Time = 12.2078 hrs
Computed Peak Flow = 24.86 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2500 hrs
Peak Flow, Interpolated Output = 24.75 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 73
Area = 33.470 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.0149 in
2.831 ac-ft

HYG Volume... 2.831 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .55156 hrs (ID: AREA 2)
Computational Incr, Tm = .07354 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 68.76 cfs
Unit peak time Tp = .36771 hrs
Unit receding limb, Tr = 1.47082 hrs
Total unit time, Tb = 1.83853 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 3.7000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 .10
Tc = .5516 hrs
Drainage Area = 33.470 acres Runoff CN= 73

==========
Computational Time Increment = .07354 hrs
Computed Peak Time = 12.2078 hrs
Computed Peak Flow = 33.31 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 33.00 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 73
Area = 33.470 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.3160 in
3.671 ac-ft

HYG Volume... 3.670 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .55156 hrs (ID: AREA 2)
Computational Incr, Tm = .07354 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 68.76 cfs
Unit peak time Tp = .36771 hrs
Unit receding limb, Tr = 1.47082 hrs
Total unit time, Tb = 1.83853 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.0000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 .25
Tc = .5516 hrs
Drainage Area = 33.470 acres Runoff CN= 73

==========
Computational Time Increment = .07354 hrs
Computed Peak Time = 12.2078 hrs
Computed Peak Flow = 39.23 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 38.88 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 73
Area = 33.470 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.5275 in
4.260 ac-ft

HYG Volume... 4.260 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .55156 hrs (ID: AREA 2)
Computational Incr, Tm = .07354 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 68.76 cfs
Unit peak time Tp = .36771 hrs
Unit receding limb, Tr = 1.47082 hrs
Total unit time, Tb = 1.83853 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 4.5000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 .50
Tc = .5516 hrs
Drainage Area = 33.470 acres Runoff CN= 73

==========
Computational Time Increment = .07354 hrs
Computed Peak Time = 12.2078 hrs
Computed Peak Flow = 49.50 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 49.10 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 73
Area = 33.470 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.8957 in
5.287 ac-ft

HYG Volume... 5.287 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .55156 hrs (ID: AREA 2)
Computational Incr, Tm = .07354 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 68.76 cfs
Unit peak time Tp = .36771 hrs
Unit receding limb, Tr = 1.47082 hrs
Total unit time, Tb = 1.83853 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 4.7500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 100
Tc = .5516 hrs
Drainage Area = 33.470 acres Runoff CN= 73

==========
Computational Time Increment = .07354 hrs
Computed Peak Time = 12.2078 hrs
Computed Peak Flow = 54.80 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 54.37 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 73
Area = 33.470 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

2.0862 in
5.819 ac-ft

HYG Volume... 5.819 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .55156 hrs (ID: AREA 2)
Computational Incr, Tm = .07354 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 68.76 cfs
Unit peak time Tp = .36771 hrs
Unit receding limb, Tr = 1.47082 hrs
Total unit time, Tb = 1.83853 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 3 ..2
Tc = .2708 hrs
Drainage Area = 1.730 acres Runoff CN= 73

==========
Computational Time Increment = .03610 hrs
Computed Peak Time = 12.0935 hrs
Computed Peak Flow = .74 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1000 hrs
Peak Flow, Interpolated Output = .73 cfs
==========

DRAINAGE AREA

ID:AREA 3
CN = 73
Area = 1.730 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

.4379 in
.063 ac-ft

HYG Volume... .063 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .27075 hrs (ID: AREA 3)
Computational Incr, Tm = .03610 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 7.24 cfs
Unit peak time Tp = .18050 hrs
Unit receding limb, Tr = .72200 hrs
Total unit time, Tb = .90250 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 3 ..5
Tc = .2708 hrs
Drainage Area = 1.730 acres Runoff CN= 73

==========
Computational Time Increment = .03610 hrs
Computed Peak Time = 12.0574 hrs
Computed Peak Flow = 1.96 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 1.94 cfs
==========

DRAINAGE AREA

ID:AREA 3
CN = 73
Area = 1.730 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.0149 in
.146 ac-ft

HYG Volume... .146 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .27075 hrs (ID: AREA 3)
Computational Incr, Tm = .03610 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 7.24 cfs
Unit peak time Tp = .18050 hrs
Unit receding limb, Tr = .72200 hrs
Total unit time, Tb = .90250 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 3.7000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 3 .10
Tc = .2708 hrs
Drainage Area = 1.730 acres Runoff CN= 73

==========
Computational Time Increment = .03610 hrs
Computed Peak Time = 12.0574 hrs
Computed Peak Flow = 2.60 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 2.57 cfs
==========

DRAINAGE AREA

ID:AREA 3
CN = 73
Area = 1.730 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.3160 in
.190 ac-ft

HYG Volume... .190 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .27075 hrs (ID: AREA 3)
Computational Incr, Tm = .03610 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 7.24 cfs
Unit peak time Tp = .18050 hrs
Unit receding limb, Tr = .72200 hrs
Total unit time, Tb = .90250 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.0000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 3 .25
Tc = .2708 hrs
Drainage Area = 1.730 acres Runoff CN= 73

==========
Computational Time Increment = .03610 hrs
Computed Peak Time = 12.0574 hrs
Computed Peak Flow = 3.05 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 3.02 cfs
==========

DRAINAGE AREA

ID:AREA 3
CN = 73
Area = 1.730 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.5275 in
.220 ac-ft

HYG Volume... .220 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .27075 hrs (ID: AREA 3)
Computational Incr, Tm = .03610 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 7.24 cfs
Unit peak time Tp = .18050 hrs
Unit receding limb, Tr = .72200 hrs
Total unit time, Tb = .90250 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 4.5000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 3 .50
Tc = .2708 hrs
Drainage Area = 1.730 acres Runoff CN= 73

==========
Computational Time Increment = .03610 hrs
Computed Peak Time = 12.0574 hrs
Computed Peak Flow = 3.82 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 3.79 cfs
==========

DRAINAGE AREA

ID:AREA 3
CN = 73
Area = 1.730 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.8957 in
.273 ac-ft

HYG Volume... .273 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .27075 hrs (ID: AREA 3)
Computational Incr, Tm = .03610 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 7.24 cfs
Unit peak time Tp = .18050 hrs
Unit receding limb, Tr = .72200 hrs
Total unit time, Tb = .90250 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 4.7500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 3 100
Tc = .2708 hrs
Drainage Area = 1.730 acres Runoff CN= 73

==========
Computational Time Increment = .03610 hrs
Computed Peak Time = 12.0574 hrs
Computed Peak Flow = 4.22 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 4.19 cfs
==========

DRAINAGE AREA

ID:AREA 3
CN = 73
Area = 1.730 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

2.0862 in
.301 ac-ft

HYG Volume... .301 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .27075 hrs (ID: AREA 3)
Computational Incr, Tm = .03610 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 7.24 cfs
Unit peak time Tp = .18050 hrs
Unit receding limb, Tr = .72200 hrs
Total unit time, Tb = .90250 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 4 ..2
Tc = .2499 hrs
Drainage Area = 3.100 acres Runoff CN= 73

==========
Computational Time Increment = .03331 hrs
Computed Peak Time = 12.0600 hrs
Computed Peak Flow = 1.38 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1000 hrs
Peak Flow, Interpolated Output = 1.35 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
==========

DRAINAGE AREA

ID:AREA 4
CN = 73
Area = 3.100 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

.4379 in
.113 ac-ft

HYG Volume... .113 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .24986 hrs (ID: AREA 4)
Computational Incr, Tm = .03331 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 14.06 cfs
Unit peak time Tp = .16657 hrs
Unit receding limb, Tr = .66630 hrs
Total unit time, Tb = .83287 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 4 ..5
Tc = .2499 hrs
Drainage Area = 3.100 acres Runoff CN= 73

==========
Computational Time Increment = .03331 hrs
Computed Peak Time = 12.0600 hrs
Computed Peak Flow = 3.67 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 3.63 cfs
==========

DRAINAGE AREA

ID:AREA 4
CN = 73
Area = 3.100 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.0149 in
.262 ac-ft

HYG Volume... .262 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .24986 hrs (ID: AREA 4)
Computational Incr, Tm = .03331 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 14.06 cfs
Unit peak time Tp = .16657 hrs
Unit receding limb, Tr = .66630 hrs
Total unit time, Tb = .83287 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 3.7000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 4 .10
Tc = .2499 hrs
Drainage Area = 3.100 acres Runoff CN= 73

==========
Computational Time Increment = .03331 hrs
Computed Peak Time = 12.0600 hrs
Computed Peak Flow = 4.84 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 4.81 cfs
==========

DRAINAGE AREA

ID:AREA 4
CN = 73
Area = 3.100 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.3160 in
.340 ac-ft

HYG Volume... .340 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .24986 hrs (ID: AREA 4)
Computational Incr, Tm = .03331 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 14.06 cfs
Unit peak time Tp = .16657 hrs
Unit receding limb, Tr = .66630 hrs
Total unit time, Tb = .83287 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.0000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 4 .25
Tc = .2499 hrs
Drainage Area = 3.100 acres Runoff CN= 73

==========
Computational Time Increment = .03331 hrs
Computed Peak Time = 12.0600 hrs
Computed Peak Flow = 5.66 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 5.63 cfs
==========

DRAINAGE AREA

ID:AREA 4
CN = 73
Area = 3.100 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.5275 in
.395 ac-ft

HYG Volume... .395 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .24986 hrs (ID: AREA 4)
Computational Incr, Tm = .03331 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 14.06 cfs
Unit peak time Tp = .16657 hrs
Unit receding limb, Tr = .66630 hrs
Total unit time, Tb = .83287 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 4.5000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 4 .50
Tc = .2499 hrs
Drainage Area = 3.100 acres Runoff CN= 73

==========
Computational Time Increment = .03331 hrs
Computed Peak Time = 12.0600 hrs
Computed Peak Flow = 7.08 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 7.05 cfs
==========

DRAINAGE AREA

ID:AREA 4
CN = 73
Area = 3.100 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

1.8957 in
.490 ac-ft

HYG Volume... .490 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .24986 hrs (ID: AREA 4)
Computational Incr, Tm = .03331 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 14.06 cfs
Unit peak time Tp = .16657 hrs
Unit receding limb, Tr = .66630 hrs
Total unit time, Tb = .83287 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 4.7500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 4 100
Tc = .2499 hrs
Drainage Area = 3.100 acres Runoff CN= 73

==========
Computational Time Increment = .03331 hrs
Computed Peak Time = 12.0600 hrs
Computed Peak Flow = 7.80 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 7.78 cfs
==========

DRAINAGE AREA

ID:AREA 4
CN = 73
Area = 3.100 acres
S = 3.6986 in
0.2S = .7397 in

Cumulative Runoff

2.0862 in
.539 ac-ft

HYG Volume... .539 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .24986 hrs (ID: AREA 4)
Computational Incr, Tm = .03331 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 14.06 cfs
Unit peak time Tp = .16657 hrs
Unit receding limb, Tr = .66630 hrs
Total unit time, Tb = .83287 hrs

APPENDIX D

POST-DEVELOPED SITE COMPUTATIONS

SUMMARY

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = ..2

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 2.2500 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	AREA 1		AREA	6.143		12.0000	100.75	
	AREA 2		AREA	.276		12.2000	2.60	
Outfall	OUTFALL 1		JCT	6.142		13.9500	4.70	
Outfall	OUTFALL 2		JCT	.276		12.2000	2.60	
	POND 1	IN	POND	6.143		12.0000	100.75	
	POND 1	OUT	POND	6.142		13.9500	4.70	976.65

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = ..5

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 3.2500 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	AREA 1		AREA	11.253		12.0000	184.30	
	AREA 2		AREA	.562		12.2000	5.66	
Outfall	OUTFALL 1		JCT	11.252		14.7500	6.09	
Outfall	OUTFALL 2		JCT	.562		12.2000	5.66	
	POND 1	IN	POND	11.253		12.0000	184.30	
	POND 1	OUT	POND	11.252		14.7500	6.09	978.10

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = .10

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 3.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	AREA 1		AREA	13.698		12.0000	223.31	
	AREA 2		AREA	.705		12.2000	7.16	
Outfall	OUTFALL 1		JCT	13.697		15.2500	6.63	
Outfall	OUTFALL 2		JCT	.705		12.2000	7.16	
	POND 1	IN	POND	13.698		12.0000	223.31	
	POND 1	OUT	POND	13.697		15.2500	6.63	978.77

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = .25

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 25 yr
Total Rainfall Depth= 4.0000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	AREA 1		AREA	15.362		12.0000	249.56	
	AREA 2		AREA	.803		12.2000	8.19	
Outfall	OUTFALL 1		JCT	15.361		13.9000	10.63	
Outfall	OUTFALL 2		JCT	.803		12.2000	8.19	
	POND 1	IN	POND	15.362		12.0000	249.56	
	POND 1	OUT	POND	15.361		13.9000	10.63	979.08

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = .50

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	AREA 1		AREA	18.183		12.0000	293.56	
	AREA 2		AREA	.972		12.2000	9.95	
Outfall	OUTFALL 1		JCT	18.182		12.8000	23.15	
Outfall	OUTFALL 2		JCT	.972		12.2000	9.95	
	POND 1	IN	POND	18.183		12.0000	293.56	
	POND 1	OUT	POND	18.182		12.8000	23.15	979.32

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

DEFAULT Design Storm File,ID = NEOHIO.RNQ 98228

Storm Tag Name = 100

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 4.7500 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
AREA 1		AREA	19.611		12.0000	315.64	
AREA 2		AREA	1.059		12.2000	10.84	
Outfall OUTFALL 1		JCT	19.611		12.6000	31.42	
Outfall OUTFALL 2		JCT	1.059		12.2000	10.84	
POND 1	IN	POND	19.611		12.0000	315.64	
POND 1	OUT	POND	19.611		12.6000	31.42	979.49

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 ..2
Tc = .1670 hrs
Drainage Area = 75.000 acres Runoff CN= 85

==========
Computational Time Increment = .02227 hrs
Computed Peak Time = 12.0017 hrs
Computed Peak Flow = 100.83 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 100.75 cfs
==========

DRAINAGE AREA

ID:AREA 1
CN = 85
Area = 75.000 acres
S = 1.7647 in
0.2S = .3529 in

Cumulative Runoff

.9828 in
6.143 ac-ft

HYG Volume... 6.143 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16700 hrs (ID: None Selected)
Computational Incr, Tm = .02227 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 508.85 cfs
Unit peak time Tp = .11133 hrs
Unit receding limb, Tr = .44533 hrs
Total unit time, Tb = .55667 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 ..5
Tc = .1670 hrs
Drainage Area = 75.000 acres Runoff CN= 85

==========

Computational Time Increment	=	.02227 hrs
Computed Peak Time	=	12.0017 hrs
Computed Peak Flow	=	184.31 cfs

Time Increment for HYG File	=	.0500 hrs
Peak Time, Interpolated Output	=	12.0000 hrs
Peak Flow, Interpolated Output	=	184.30 cfs

==========

DRAINAGE AREA

ID:AREA 1
CN = 85
Area = 75.000 acres
S = 1.7647 in
0.2S = .3529 in

Cumulative Runoff

1.8004 in
11.252 ac-ft

HYG Volume... 11.253 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16700 hrs (ID: None Selected)
Computational Incr, Tm = .02227 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak,	qp =	508.85 cfs
Unit peak time	Tp =	.11133 hrs
Unit receding limb,	Tr =	.44533 hrs
Total unit time,	Tb =	.55667 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 3.7000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 .10
Tc = .1670 hrs
Drainage Area = 75.000 acres Runoff CN= 85

==========
Computational Time Increment = .02227 hrs
Computed Peak Time = 11.9795 hrs
Computed Peak Flow = 223.79 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 223.31 cfs
==========

DRAINAGE AREA

ID:AREA 1
CN = 85
Area = 75.000 acres
S = 1.7647 in
0.2S = .3529 in

Cumulative Runoff

2.1916 in
13.697 ac-ft

HYG Volume... 13.698 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16700 hrs (ID: None Selected)
Computational Incr, Tm = .02227 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 508.85 cfs
Unit peak time Tp = .11133 hrs
Unit receding limb, Tr = .44533 hrs
Total unit time, Tb = .55667 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.0000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 .25
Tc = .1670 hrs
Drainage Area = 75.000 acres Runoff CN= 85

==========
Computational Time Increment = .02227 hrs
Computed Peak Time = 11.9795 hrs
Computed Peak Flow = 250.45 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 249.56 cfs
==========

DRAINAGE AREA

ID:AREA 1
CN = 85
Area = 75.000 acres
S = 1.7647 in
0.2S = .3529 in

Cumulative Runoff

2.4578 in
15.361 ac-ft

HYG Volume... 15.362 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16700 hrs (ID: None Selected)
Computational Incr, Tm = .02227 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 508.85 cfs
Unit peak time Tp = .11133 hrs
Unit receding limb, Tr = .44533 hrs
Total unit time, Tb = .55667 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 4.5000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 .50
Tc = .1670 hrs
Drainage Area = 75.000 acres Runoff CN= 85

==========
Computational Time Increment = .02227 hrs
Computed Peak Time = 11.9795 hrs
Computed Peak Flow = 295.19 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 293.56 cfs
==========

DRAINAGE AREA

ID:AREA 1
CN = 85
Area = 75.000 acres
S = 1.7647 in
0.2S = .3529 in

Cumulative Runoff

2.9091 in
18.182 ac-ft

HYG Volume... 18.183 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16700 hrs (ID: None Selected)
Computational Incr, Tm = .02227 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 508.85 cfs
Unit peak time Tp = .11133 hrs
Unit receding limb, Tr = .44533 hrs
Total unit time, Tb = .55667 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 4.7500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 1 100
Tc = .1670 hrs
Drainage Area = 75.000 acres Runoff CN= 85

==========
Computational Time Increment = .02227 hrs
Computed Peak Time = 11.9795 hrs
Computed Peak Flow = 317.65 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 315.64 cfs
==========

DRAINAGE AREA

ID:AREA 1
CN = 85
Area = 75.000 acres
S = 1.7647 in
0.2S = .3529 in

Cumulative Runoff

3.1378 in
19.611 ac-ft

HYG Volume... 19.611 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16700 hrs (ID: None Selected)
Computational Incr, Tm = .02227 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 508.85 cfs
Unit peak time Tp = .11133 hrs
Unit receding limb, Tr = .44533 hrs
Total unit time, Tb = .55667 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 ..2
Tc = .5000 hrs
Drainage Area = 4.910 acres Runoff CN= 79

==========
Computational Time Increment = .06667 hrs
Computed Peak Time = 12.2000 hrs
Computed Peak Flow = 2.60 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 2.60 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 79
Area = 4.910 acres
S = 2.6582 in
0.2S = .5316 in

Cumulative Runoff

.6747 in
.276 ac-ft

HYG Volume... .276 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .50000 hrs (ID: AREA 2)
Computational Incr, Tm = .06667 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 11.13 cfs
Unit peak time Tp = .33333 hrs
Unit receding limb, Tr = 1.33333 hrs
Total unit time, Tb = 1.66667 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.2500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 ..5
Tc = .5000 hrs
Drainage Area = 4.910 acres Runoff CN= 79

==========
Computational Time Increment = .06667 hrs
Computed Peak Time = 12.2000 hrs
Computed Peak Flow = 5.66 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 5.66 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 79
Area = 4.910 acres
S = 2.6582 in
0.2S = .5316 in

Cumulative Runoff

1.3744 in
.562 ac-ft

HYG Volume... .562 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .50000 hrs (ID: AREA 2)
Computational Incr, Tm = .06667 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 11.13 cfs
Unit peak time Tp = .33333 hrs
Unit receding limb, Tr = 1.33333 hrs
Total unit time, Tb = 1.66667 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 3.7000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 .10
Tc = .5000 hrs
Drainage Area = 4.910 acres Runoff CN= 79

==========
Computational Time Increment = .06667 hrs
Computed Peak Time = 12.2000 hrs
Computed Peak Flow = 7.16 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 7.16 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 79
Area = 4.910 acres
S = 2.6582 in
0.2S = .5316 in

Cumulative Runoff

1.7229 in
.705 ac-ft

HYG Volume... .705 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .50000 hrs (ID: AREA 2)
Computational Incr, Tm = .06667 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 11.13 cfs
Unit peak time Tp = .33333 hrs
Unit receding limb, Tr = 1.33333 hrs
Total unit time, Tb = 1.66667 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.0000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 .25
Tc = .5000 hrs
Drainage Area = 4.910 acres Runoff CN= 79

==========
Computational Time Increment = .06667 hrs
Computed Peak Time = 12.2000 hrs
Computed Peak Flow = 8.19 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 8.19 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 79
Area = 4.910 acres
S = 2.6582 in
0.2S = .5316 in

Cumulative Runoff

1.9635 in
.803 ac-ft

HYG Volume... .803 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .50000 hrs (ID: AREA 2)
Computational Incr, Tm = .06667 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 11.13 cfs
Unit peak time Tp = .33333 hrs
Unit receding limb, Tr = 1.33333 hrs
Total unit time, Tb = 1.66667 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 4.5000 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 .50
Tc = .5000 hrs
Drainage Area = 4.910 acres Runoff CN= 79

==========
Computational Time Increment = .06667 hrs
Computed Peak Time = 12.2000 hrs
Computed Peak Flow = 9.95 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 9.95 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 79
Area = 4.910 acres
S = 2.6582 in
0.2S = .5316 in

Cumulative Runoff

2.3765 in
.972 ac-ft

HYG Volume... .972 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .50000 hrs (ID: AREA 2)
Computational Incr, Tm = .06667 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 11.13 cfs
Unit peak time Tp = .33333 hrs
Unit receding limb, Tr = 1.33333 hrs
Total unit time, Tb = 1.66667 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 4.7500 in
Rain Dir = J:\POND 7\UTIL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = J:\POND 7\98228\
HYG File - ID = - AREA 2 100
Tc = .5000 hrs
Drainage Area = 4.910 acres Runoff CN= 79

==========
Computational Time Increment = .06667 hrs
Computed Peak Time = 12.2000 hrs
Computed Peak Flow = 10.84 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 10.84 cfs
==========

DRAINAGE AREA

ID:AREA 2
CN = 79
Area = 4.910 acres
S = 2.6582 in
0.2S = .5316 in

Cumulative Runoff

2.5877 in
1.059 ac-ft

HYG Volume... 1.059 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .50000 hrs (ID: AREA 2)
Computational Incr, Tm = .06667 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 11.13 cfs
Unit peak time Tp = .33333 hrs
Unit receding limb, Tr = 1.33333 hrs
Total unit time, Tb = 1.66667 hrs

POND ROUTING

File.... J:\POND 7\98228\POSTDEVELOPEDALT.PPW

Elevation (ft)	Planimeter (sq.in)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	Volume (ac-ft)	Volume Sum (ac-ft)
974.00	-----	0	0	.000	.000
975.00	-----	48019	48019	.367	.367
976.00	-----	88152	201232	1.540	1.907
977.00	-----	104448	288555	2.208	4.115
978.00	-----	111350	323642	2.477	6.592
979.00	-----	118276	344387	2.635	9.227
980.00	-----	125225	365202	2.795	12.022
981.00	-----	132278	386206	2.955	14.977
982.00	-----	139365	407418	3.118	18.095
983.00	-----	146485	428731	3.281	21.376

POND VOLUME EQUATIONS

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

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

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

Type.... Outlet Input Data
Name.... POND 1

File.... J:\POND 7\98228\POSTDEVELOPEDALT.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 974.00 ft
Increment = 1.00 ft
Max. Elev.= 983.00 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	W1	--->	TW	979.000	983.000
Orifice-Circular	O1	--->	TW	974.000	983.000

TW SETUP, DS Channel

File.... J:\POND 7\98228\POSTDEVELOPEDALT.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = W1
Structure Type = Weir-Rectangular

# of Openings = 1
Crest Elev. = 979.00 ft
Weir Length = 16.00 ft
Weir Coeff. = 3.100000

Weir TW effects (Use adjustment equation)

Structure ID = O1
Structure Type = Orifice-Circular

# of Openings = 1
Invert Elev. = 974.00 ft
Diameter = .9200 ft
Orifice Coeff. = .600

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.... J:\POND 7\98228\POSTDEVELOPEDALT.PPW

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

WS Elev, Total Q		Notes		
		Converge		
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
974.00	.00	Free Outfall		None contributing
975.00	2.35	Free Outfall		O1
976.00	3.97	Free Outfall		O1
977.00	5.10	Free Outfall		O1
978.00	6.02	Free Outfall		O1
979.00	6.82	Free Outfall		W1 +O1
980.00	57.13	Free Outfall		W1 +O1
981.00	148.47	Free Outfall		W1 +O1
982.00	266.51	Free Outfall		W1 +O1
983.00	406.15	Free Outfall		W1 +O1

LEVEL POOL ROUTING DATA

HYG Dir = J:\POND 7\98228\
Inflow HYG file = NONE STORED - POND 1 IN ..2
Outflow HYG file = NONE STORED - POND 1 OUT ..2

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = POND 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	974.00 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
974.00	.00	.000	0	.00	.00	.00
975.00	2.35	.367	48019	.00	2.35	180.20
976.00	3.97	1.907	88152	.00	3.97	927.12
977.00	5.10	4.115	104448	.00	5.10	1996.97
978.00	6.02	6.592	111350	.00	6.02	3196.57
979.00	6.82	9.227	118276	.00	6.82	4472.87
980.00	57.13	12.022	125225	.00	57.13	5875.78
981.00	148.47	14.977	132278	.00	148.47	7397.52
982.00	266.51	18.095	139365	.00	266.51	9024.52
983.00	406.15	21.376	146485	.00	406.15	10752.04

LEVEL POOL ROUTING SUMMARY

HYG Dir = J:\POND 7\98228\
Inflow HYG file = NONE STORED - POND 1 IN ..2
Outflow HYG file = NONE STORED - POND 1 OUT ..2

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = POND 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	974.00 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	100.75 cfs	at	12.0000 hrs
Peak Outflow	=	4.70 cfs	at	13.9500 hrs
Peak Elevation	=	976.65 ft		
Peak Storage	=	3.295 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	6.143
- Infiltration	=	.000
- HYG Vol OUT	=	6.142
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.007% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = J:\POND 7\98228\
Inflow HYG file = NONE STORED - POND 1 IN ..5
Outflow HYG file = NONE STORED - POND 1 OUT ..5

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = POND 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	974.00 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	184.30 cfs	at	12.0000 hrs
Peak Outflow	=	6.10 cfs	at	14.7500 hrs
Peak Elevation	=	978.10 ft		
Peak Storage	=	6.840 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	11.253
- Infiltration	=	.000
- HYG Vol OUT	=	11.252
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.004% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = J:\POND 7\98228\
Inflow HYG file = NONE STORED - POND 1 IN .10
Outflow HYG file = NONE STORED - POND 1 OUT .10

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = POND 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	974.00 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	223.31 cfs	at	12.0000 hrs
Peak Outflow	=	6.63 cfs	at	15.2500 hrs
Peak Elevation	=	978.77 ft		
Peak Storage	=	8.596 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	13.698
- Infiltration	=	.000
- HYG Vol OUT	=	13.697
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.003% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = J:\POND 7\98228\
Inflow HYG file = NONE STORED - POND 1 IN .25
Outflow HYG file = NONE STORED - POND 1 OUT .25

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = POND 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	974.00 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	249.56 cfs	at	12.0000 hrs
Peak Outflow	=	10.63 cfs	at	13.9000 hrs
Peak Elevation	=	979.08 ft		
Peak Storage	=	9.434 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	15.362
- Infiltration	=	.000
- HYG Vol OUT	=	15.361
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.003% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = J:\POND 7\98228\
Inflow HYG file = NONE STORED - POND 1 IN .50
Outflow HYG file = NONE STORED - POND 1 OUT .50

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = POND 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	974.00 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	293.56 cfs	at	12.0000 hrs
Peak Outflow	=	23.15 cfs	at	12.8000 hrs
Peak Elevation	=	979.32 ft		
Peak Storage	=	10.117 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	18.183
- Infiltration	=	.000
- HYG Vol OUT	=	18.182
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.003% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = J:\POND 7\98228\
Inflow HYG file = NONE STORED - POND 1 IN 100
Outflow HYG file = NONE STORED - POND 1 OUT 100

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = POND 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	974.00 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	315.64 cfs	at	12.0000 hrs
Peak Outflow	=	31.42 cfs	at	12.6000 hrs
Peak Elevation	=	979.49 ft		
Peak Storage	=	10.574 ac-ft		

MASS BALANCE (ac-ft)

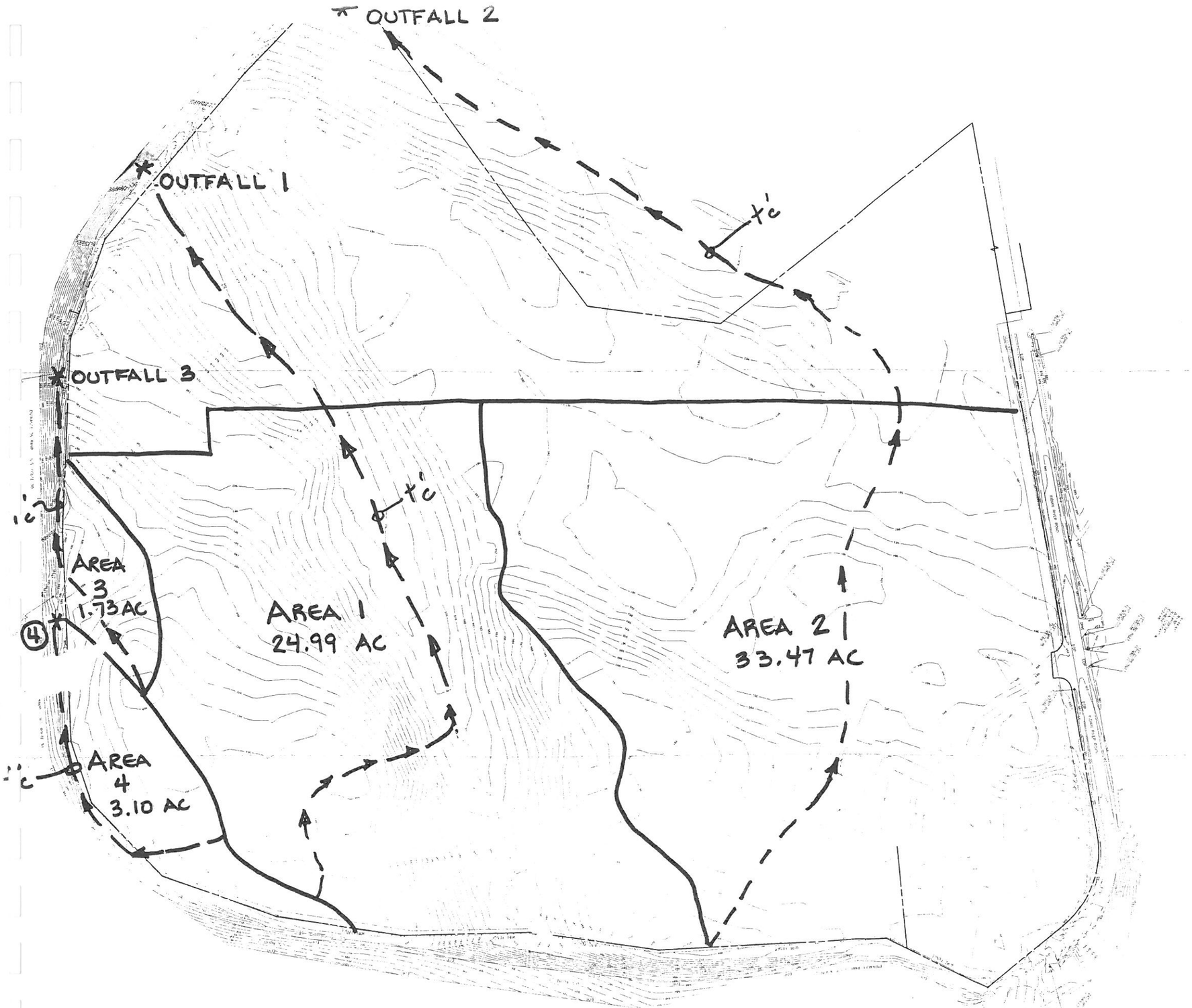
+ Initial Vol	=	.000
+ HYG Vol IN	=	19.611
- Infiltration	=	.000
- HYG Vol OUT	=	19.611
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.002% of Inflow Volume)

APPENDIX E

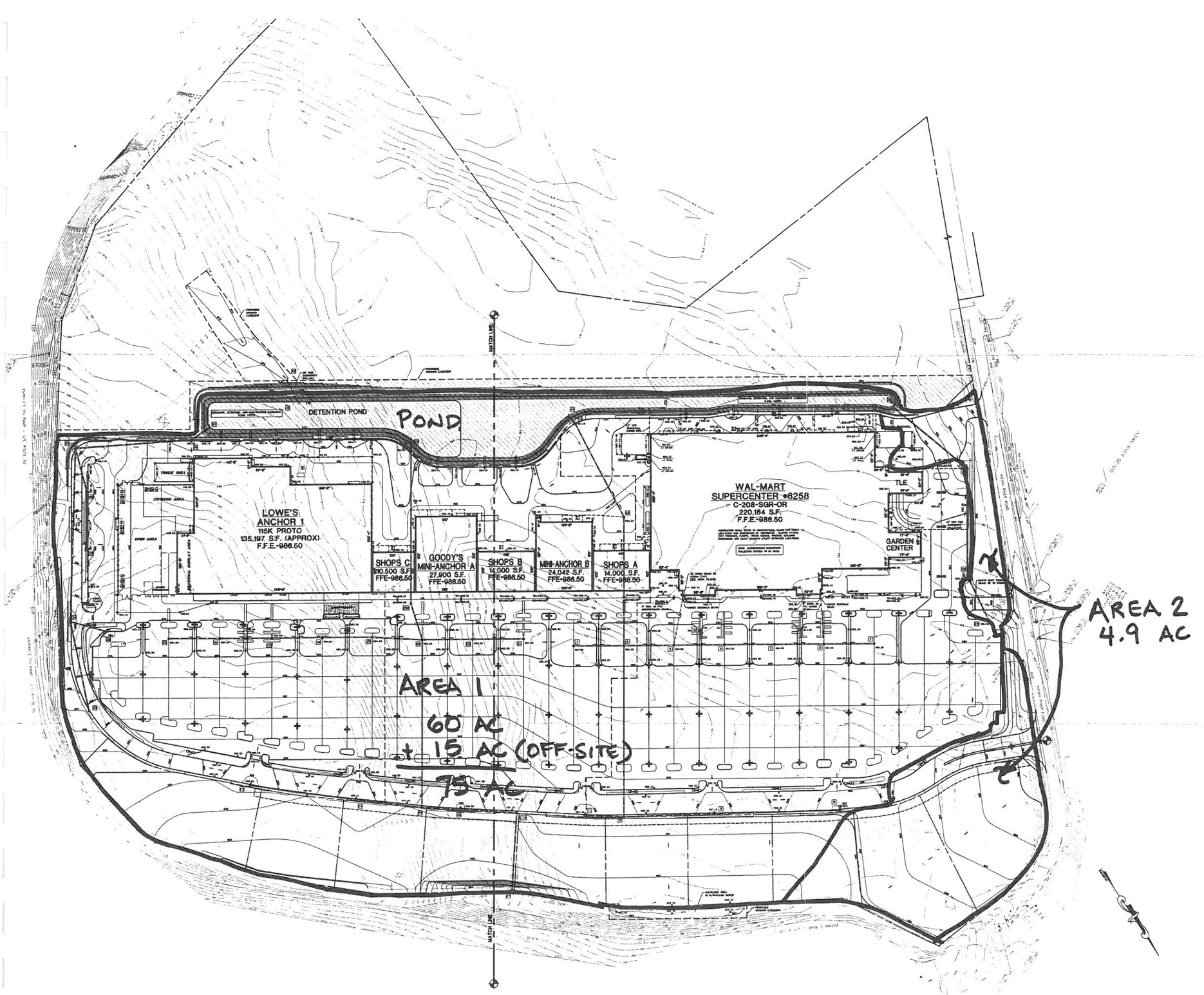
OUTLET STRUCTURE DETAILS

APPENDIX F

DRAINAGE AREA MAPS



PRE-DEVELOPED
DRAINAGE MAP



POST-DEVELOPED DRAINAGE MAP