i. Post Development Peak Flow Conditions (Basin #1)

DONALD H. STIRES ASSOCIATES
PROFESSIONAL ENGINEERS, PLANNERS AND SURVEYORS SINCE 1955
MAIN OFFICE: 43 W. HIGH STREET • SOMERVILLE, N.J. 08876
(201) 725-0230 FAX (201) 707-0831

ENGINEER'S REPORT
FOR
MAJOR SUBDIVISION
LOT 2 BLOCK 468.08

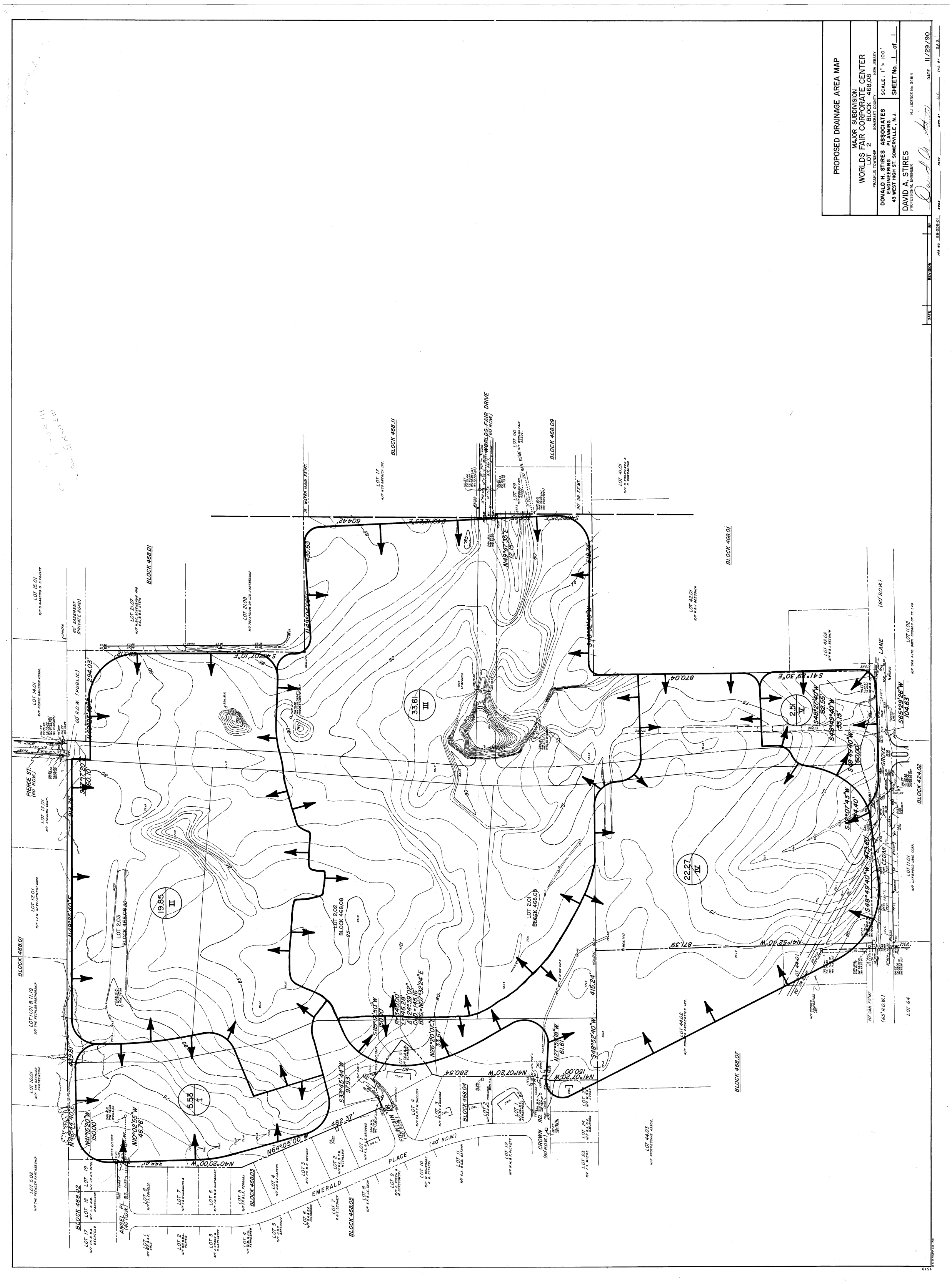
FRANKLIN TOWNSHIP, SOMERSET COUNTY

NEW JERSEY

NOVEMBER 1990

David A. Stires

David A. Stires, PE
N.J. License 34814


PROPOSED DRAINAGE AREA MAP
MAJOR SUBDIVISION
WORLDS FAIR CORPORATE CENTER
LOT 2 BLOCK 468.08
FRANKLIN TOWNSHIP SOMERSET COUNTY NEW JERSEY
DONALD H. STIRES ASSOCIATES
ENGINEERING PLANNING
43 WEST HIGH ST. SOMERVILLE, N.J.
SCALE: 1" = 100'
SHEET No. 1 of 1
DAVID A. STIRES
PROFESSIONAL ENGINEER
N.J. LICENCE No. 34814
DATE 11/29/90
DWN. BY J.J.C.
CKD. BY D.A.S.
JOB NO. 88-256-01
DATE
REVISION
BY
WORLDS FAIR DRIVE
(60' R.O.W.)
BLOCK 468.11
BLOCK 468.09
BLOCK 468.01
BLOCK 468.07
BLOCK 424.02
BLOCK 468.02
BLOCK 468.03
BLOCK 468.04
BLOCK 468.05
PIERCE ST.
(60' R.O.W.)
60' R.O.W. (PUBLIC)
60' EASEMENT
(PRIVATE ROAD)
15' WATER MAIN ES'MT.
GROVE
CEDAR
LANE
(80' R.O.W.)
(65' R.O.W.)
EMERALD
PLACE
(40' R.O.W.)
ANGEL PL.
(40' R.O.W.)
FOUNTAIN DR.
(40' R.O.W.)
CROWN RD.
(60' R.O.W.)
LOT 2.01
BLOCK 468.08
LOT 2.02
BLOCK 468.08
LOT 2.03
BLOCK 468.08
5.53
I
19.85
II
33.61
III
22.27
IV
2.51
V
604.42'
435.63'
294.03'
913.75'
429.81'
870.04'
871.39'
415.24'
482.37'
280.54'
150.00'
S33°45'44"W
97.93'
N64°05'00"W
N40°20'00"W
N41°15'20"W
150.00'
N10°02'55"W
46.76'
N48°44'40"E
N49°25'40"E
N49°04'00"E
N49°47'35"E
12.15'
S41°29'30"E
S48°27'40"W
82.55'
S48°49'40"W
35.15'
S65°29'26"W
104.63'
S48°49'40"W
60.00'
S48°49'40"W
473.60'
N41°52'40"W
S48°52'40"W
N27°53'18"W
61.61'
N41°07'20"W
N26°20'07"E
33.67'
S85°12'50"W
50.00'
R=340.00'
L=146.28'
Δ=24°39'02"
CHD.=145.16'
BRG.=N07°32'24"E
LOT 44.01
LOT 44.02
N/F BONNER PROPERTIES INC.
LOT 44.03
N/F PROGRESSIVE ASSOC.
LOT 42.01
N/F W & J BEZSONIW
LOT 42.02
N/F W & J BEZONIW
LOT 41.01
LOT 11.01
N/F LAKEWOOD LAND CORP.
LOT 11.02
LOT 64
LOT 17
N/F NSG AMERICA INC.
LOT 49
LOT 50
LOT 21.08
N/F 700 ATRIUM DR. LTD. PARTNERSHIP
LOT 21.07
LOT 15.01
LOT 14.01
N/F PIERCE DAVIDSON ASSOC.
LOT 13.01
N/F AIRCOMO CORP.
LOT 12.01
N/F I.J.M. DEVELOPMENT CORP.
LOT 11.01 & 11.10
N/F THE RECHLER PARTNERSHIP
LOT 10.01
N/F THE RECHLER PARTNERSHIP
LOT 5.02
N/F THE RECHLER PARTNERSHIP

B 2319

1) Drainage Area #1

Summary for Subcatchment PA #1: PA #1

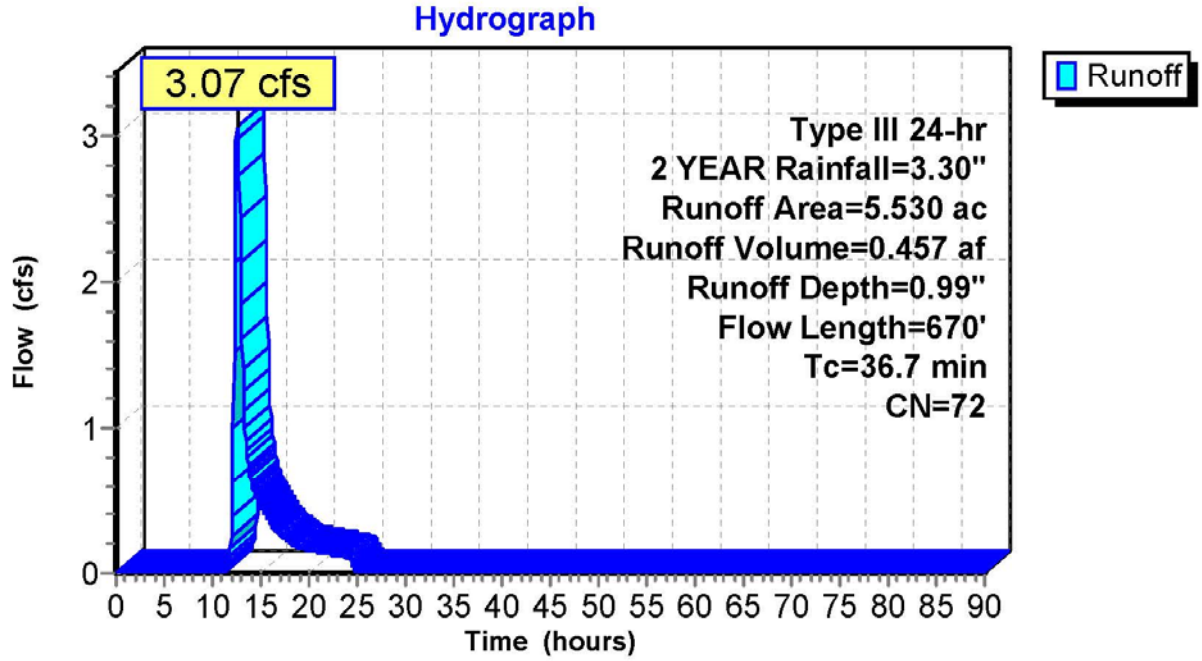
Runoff = 3.07 cfs @ 12.56 hrs, Volume= 0.457 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 2 YEAR Rainfall=3.30"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



Summary for Subcatchment PA #1: PA #1

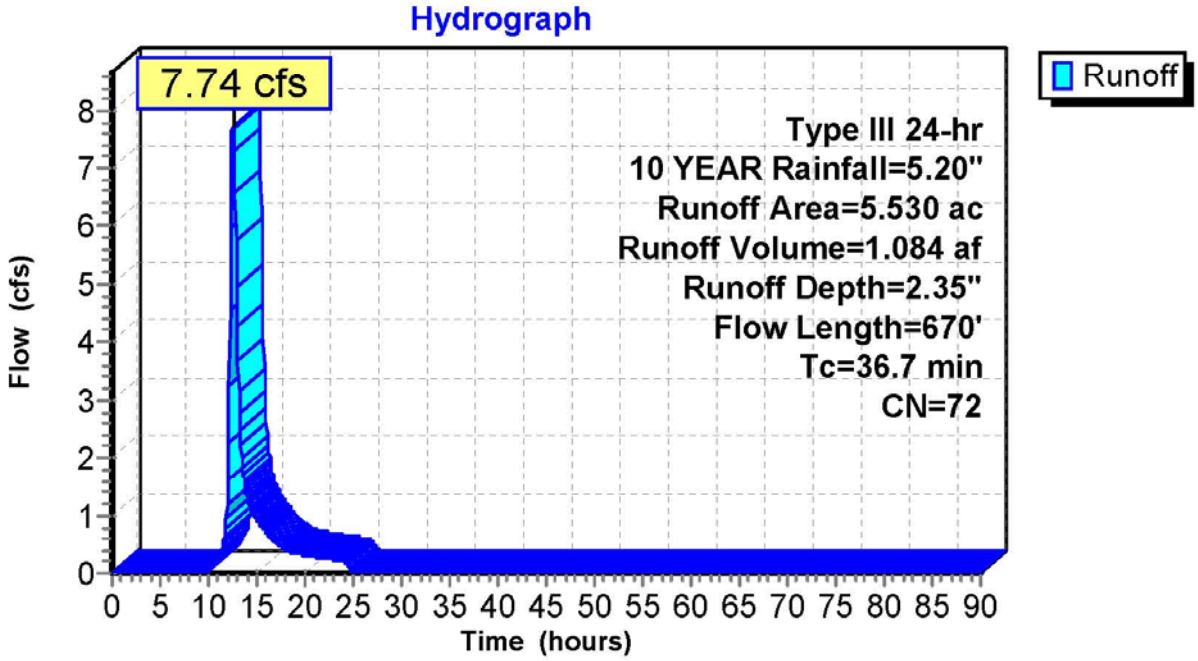
Runoff = 7.74 cfs @ 12.53 hrs, Volume= 1.084 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 10 YEAR Rainfall=5.20"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



Summary for Subcatchment PA #1: PA #1

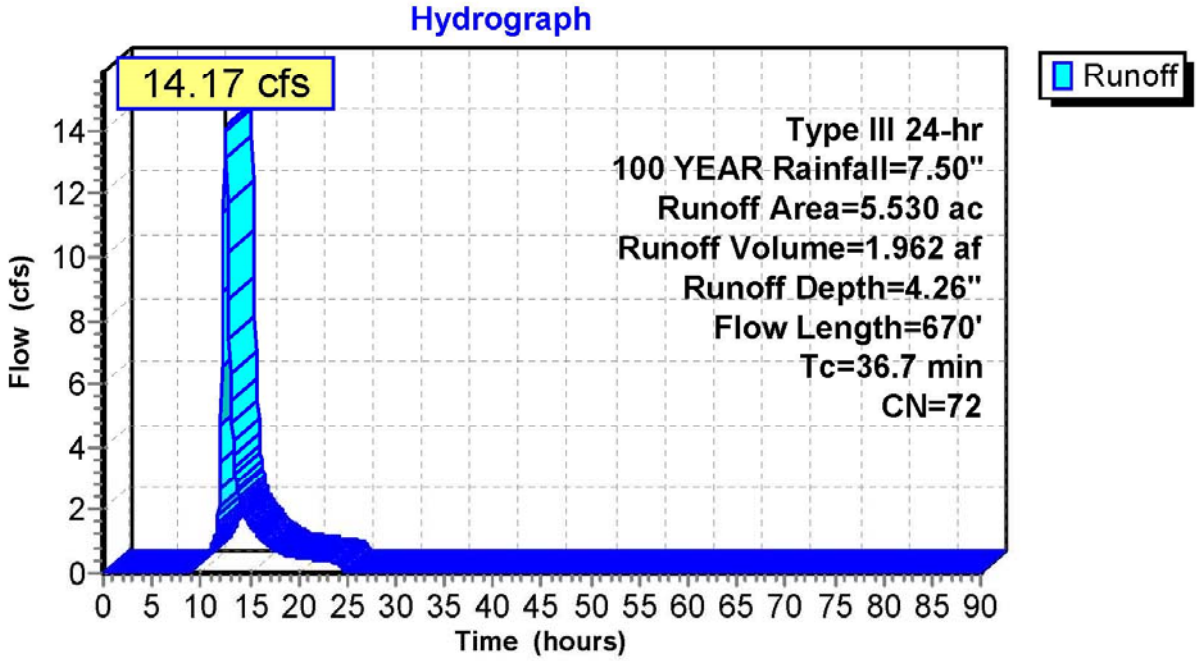
Runoff = 14.17 cfs @ 12.51 hrs, Volume= 1.962 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 100 YEAR Rainfall=7.50"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



2) Drainage Area #2

Summary for Subcatchment PA #2: PA #2

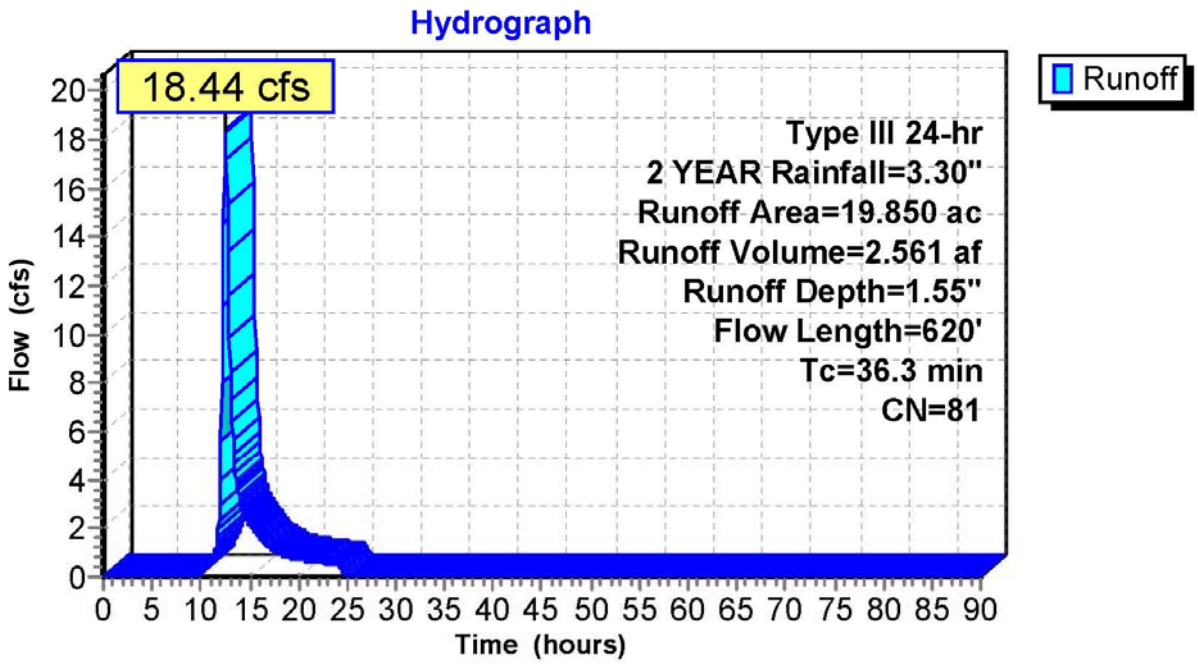
Runoff = 18.44 cfs @ 12.52 hrs, Volume= 2.561 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 2 YEAR Rainfall=3.30"

	Area (ac)	CN	Description
*	13.380	86	Urban industrial, 65% imp, HSG C
	1.130	98	Paved parking, HSG C
*	4.930	64	>75% Grass cover, Good, HSG C
*	0.410	61	Brush, Good, HSG C
	19.850	81	Weighted Average
	10.023		50.49% Pervious Area
	9.827		49.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.5	320	0.0112	2.15		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
36.3	620	Total			

Subcatchment PA #2: PA #2



Summary for Subcatchment PA #2: PA #2

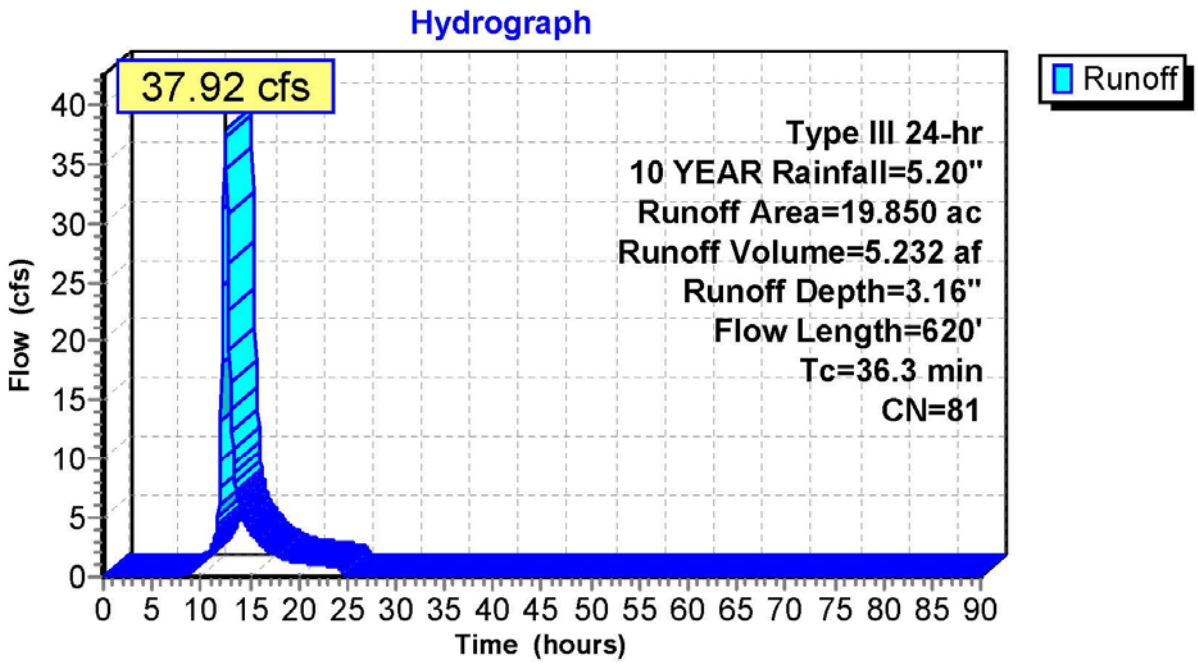
Runoff = 37.92 cfs @ 12.50 hrs, Volume= 5.232 af, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 10 YEAR Rainfall=5.20"

	Area (ac)	CN	Description
*	13.380	86	Urban industrial, 65% imp, HSG C
	1.130	98	Paved parking, HSG C
*	4.930	64	>75% Grass cover, Good, HSG C
*	0.410	61	Brush, Good, HSG C
	19.850	81	Weighted Average
	10.023		50.49% Pervious Area
	9.827		49.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.5	320	0.0112	2.15		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
36.3	620	Total			

Subcatchment PA #2: PA #2



Summary for Subcatchment PA #2: PA #2

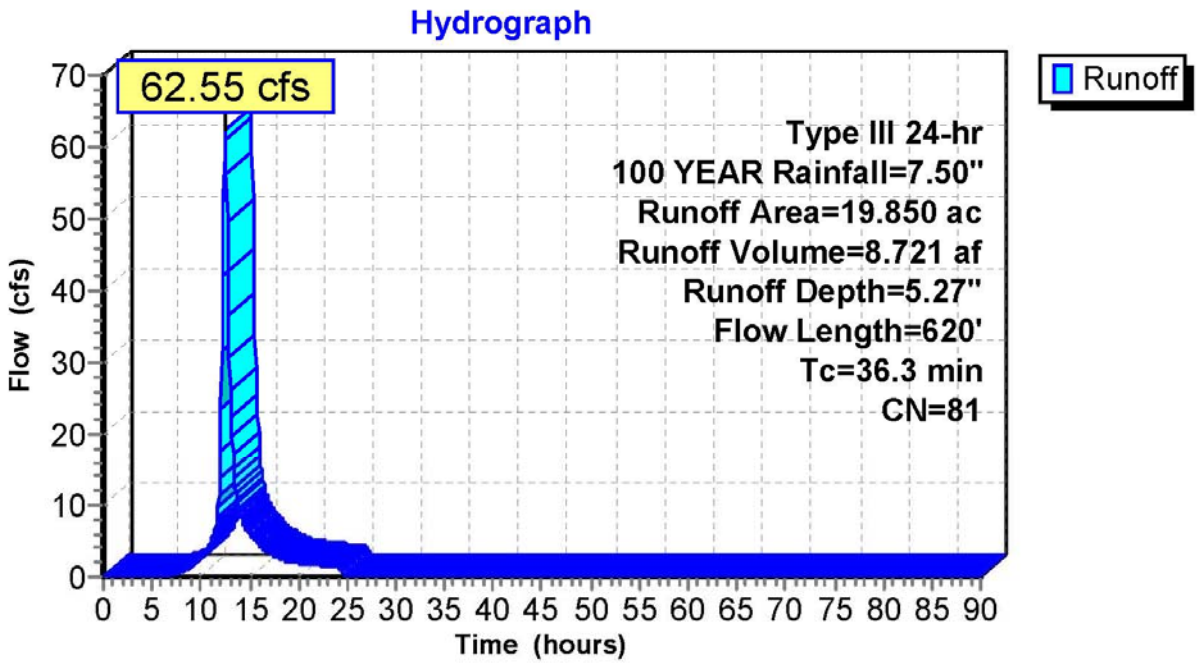
Runoff = 62.55 cfs @ 12.49 hrs, Volume= 8.721 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 100 YEAR Rainfall=7.50"

	Area (ac)	CN	Description
*	13.380	86	Urban industrial, 65% imp, HSG C
	1.130	98	Paved parking, HSG C
*	4.930	64	>75% Grass cover, Good, HSG C
*	0.410	61	Brush, Good, HSG C
	19.850	81	Weighted Average
	10.023		50.49% Pervious Area
	9.827		49.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.5	320	0.0112	2.15		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
36.3	620	Total			

Subcatchment PA #2: PA #2



3) Routing for Basin #1

Summary for Pond Basin #1: Pond #1

Inflow Area = 25.380 ac, 44.37% Impervious, Inflow Depth = 1.43" for 2 YEAR event
Inflow = 21.46 cfs @ 12.52 hrs, Volume= 3.018 af
Outflow = 0.37 cfs @ 24.43 hrs, Volume= 2.088 af, Atten= 98%, Lag= 714.3 min
Primary = 0.37 cfs @ 24.43 hrs, Volume= 2.088 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 73.99' @ 24.43 hrs Surf.Area= 36,436 sf Storage= 115,097 cf

Plug-Flow detention time= 2,162.2 min calculated for 2.088 af (69% of inflow)
Center-of-Mass det. time= 2,060.4 min (2,930.9 - 870.5)

Volume	Invert	Avail.Storage	Storage Description
#1	68.90'	308,042 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

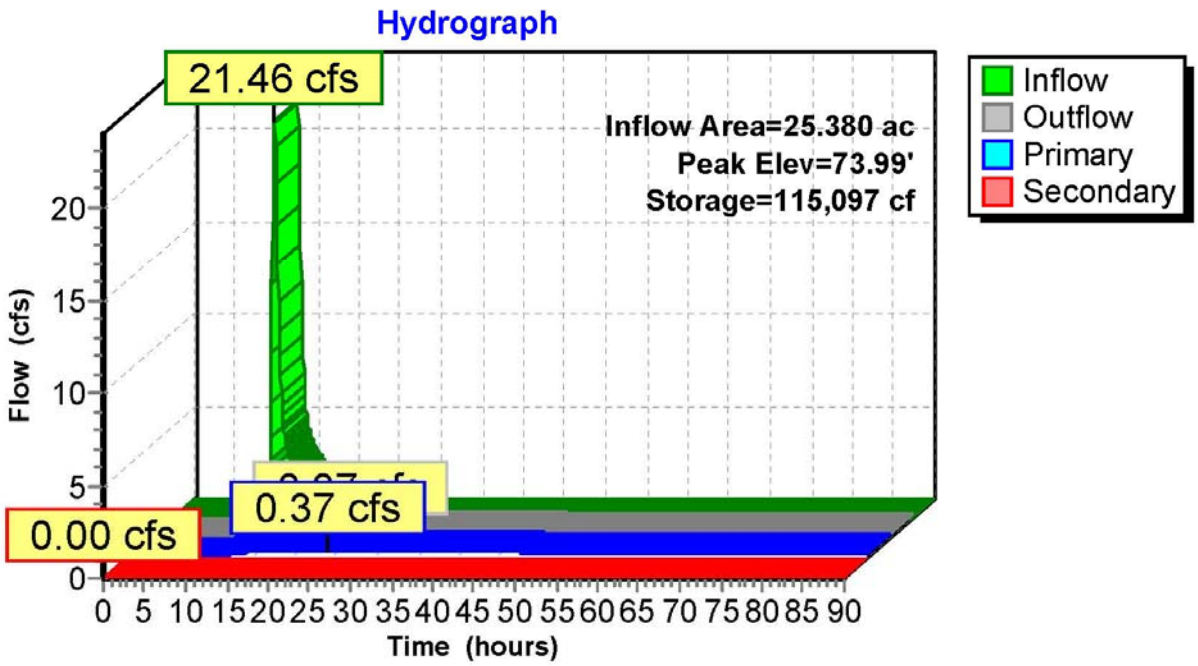
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.90	0	0	0
70.00	16,701	9,186	9,186
71.00	21,975	19,338	28,524
72.00	26,427	24,201	52,725
73.00	31,116	28,772	81,496
74.00	36,464	33,790	115,286
75.00	42,160	39,312	154,598
76.00	47,915	45,038	199,636
77.00	54,076	50,996	250,631
77.50	57,500	27,894	278,525
78.00	60,567	29,517	308,042

Device	Routing	Invert	Outlet Devices
#1	Device 6	68.90'	**2.5" Vert. Orifice/Grate** C= 0.600
#2	Device 6	74.00'	**9.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	76.00'	**60.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	68.80'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 68.80' / 66.53' S= 0.0264 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	77.50'	**75.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.37 cfs @ 24.43 hrs HW=73.99' (Free Discharge)
└**6=Culvert** (Passes 0.37 cfs of 65.42 cfs potential flow)
  ├**1=Orifice/Grate** (Orifice Controls 0.37 cfs @ 10.76 fps)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.90' (Free Discharge)
└**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #1: Pond #1



Summary for Pond Basin #1: Pond #1

Inflow Area = 25.380 ac, 44.37% Impervious, Inflow Depth = 2.99" for 10 YEAR event
Inflow = 45.65 cfs @ 12.51 hrs, Volume= 6.316 af
Outflow = 4.67 cfs @ 15.16 hrs, Volume= 5.175 af, Atten= 90%, Lag= 159.0 min
Primary = 4.67 cfs @ 15.16 hrs, Volume= 5.175 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 75.46' @ 15.16 hrs Surf.Area= 44,814 sf Storage= 174,650 cf

Plug-Flow detention time= 1,105.1 min calculated for 5.175 af (82% of inflow)
Center-of-Mass det. time= 1,032.0 min (1,881.6 - 849.5)

Volume	Invert	Avail.Storage	Storage Description
#1	68.90'	308,042 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

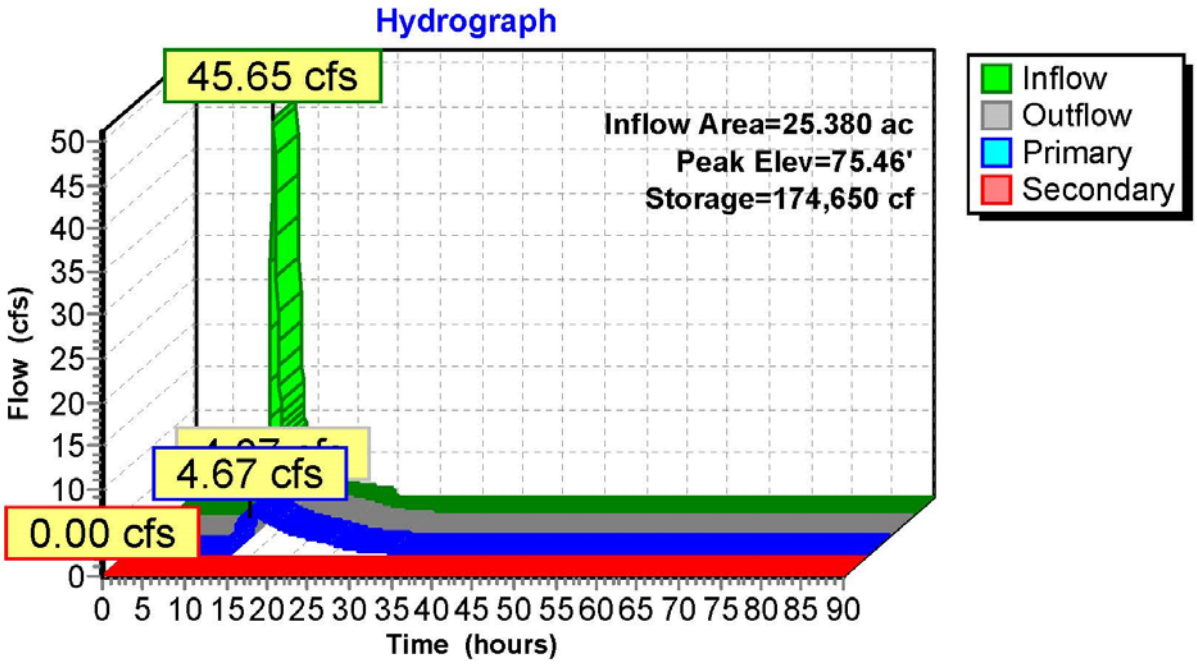
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.90	0	0	0
70.00	16,701	9,186	9,186
71.00	21,975	19,338	28,524
72.00	26,427	24,201	52,725
73.00	31,116	28,772	81,496
74.00	36,464	33,790	115,286
75.00	42,160	39,312	154,598
76.00	47,915	45,038	199,636
77.00	54,076	50,996	250,631
77.50	57,500	27,894	278,525
78.00	60,567	29,517	308,042

Device	Routing	Invert	Outlet Devices
#1	Device 6	68.90'	**2.5" Vert. Orifice/Grate** C= 0.600
#2	Device 6	74.00'	**9.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	76.00'	**60.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	68.80'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 68.80' / 66.53' S= 0.0264 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	77.50'	**75.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.67 cfs @ 15.16 hrs HW=75.46' (Free Discharge)
└**6=Culvert** (Passes 4.67 cfs of 77.32 cfs potential flow)
  ├**1=Orifice/Grate** (Orifice Controls 0.42 cfs @ 12.24 fps)
  ├**2=Orifice/Grate** (Orifice Controls 4.25 cfs @ 3.88 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.90' (Free Discharge)
└**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #1: Pond #1



Summary for Pond Basin #1: Pond #1

Inflow Area = 25.380 ac, 44.37% Impervious, Inflow Depth = 5.05" for 100 YEAR event
Inflow = 76.69 cfs @ 12.50 hrs, Volume= 10.683 af
Outflow = 31.30 cfs @ 13.07 hrs, Volume= 9.511 af, Atten= 59%, Lag= 34.4 min
Primary = 31.30 cfs @ 13.07 hrs, Volume= 9.511 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 76.62' @ 13.07 hrs Surf.Area= 51,721 sf Storage= 230,411 cf

Plug-Flow detention time= 667.1 min calculated for 9.502 af (89% of inflow)
Center-of-Mass det. time= 618.2 min (1,453.1 - 834.8)

Volume	Invert	Avail.Storage	Storage Description
#1	68.90'	308,042 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

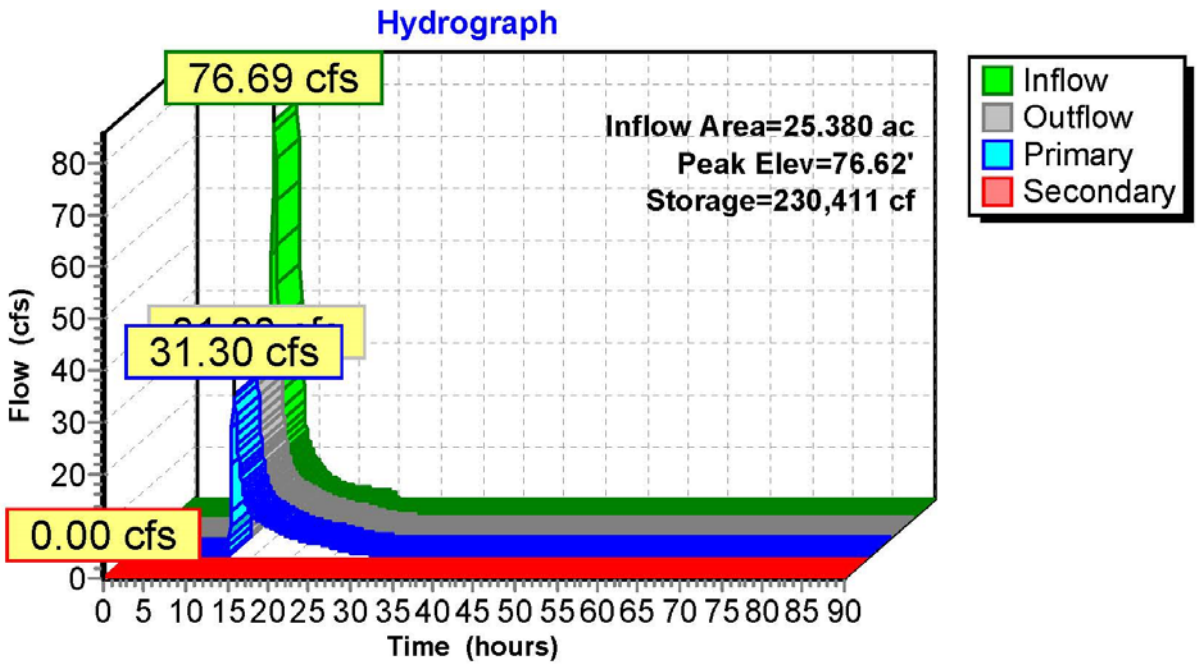
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.90	0	0	0
70.00	16,701	9,186	9,186
71.00	21,975	19,338	28,524
72.00	26,427	24,201	52,725
73.00	31,116	28,772	81,496
74.00	36,464	33,790	115,286
75.00	42,160	39,312	154,598
76.00	47,915	45,038	199,636
77.00	54,076	50,996	250,631
77.50	57,500	27,894	278,525
78.00	60,567	29,517	308,042

Device	Routing	Invert	Outlet Devices
#1	Device 6	68.90'	**2.5" Vert. Orifice/Grate** C= 0.600
#2	Device 6	74.00'	**9.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	76.00'	**60.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	68.80'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 68.80' / 66.53' S= 0.0264 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	77.50'	**75.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=31.09 cfs @ 13.07 hrs HW=76.61' (Free Discharge)
└─**6=Culvert** (Passes 31.09 cfs of 85.52 cfs potential flow)
  ├─**1=Orifice/Grate** (Orifice Controls 0.45 cfs @ 13.28 fps)
  ├─**2=Orifice/Grate** (Orifice Controls 9.02 cfs @ 6.01 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 7.72 cfs @ 2.52 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 6.95 cfs @ 2.52 fps)
  └─**5=Orifice/Grate** (Orifice Controls 6.95 cfs @ 2.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.90' (Free Discharge)
└─**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #1: Pond #1



ii. Post Development Peak Flow Conditions (Basin #3)

1) Drainage Area #3

Summary for Subcatchment PA #3: PA #3

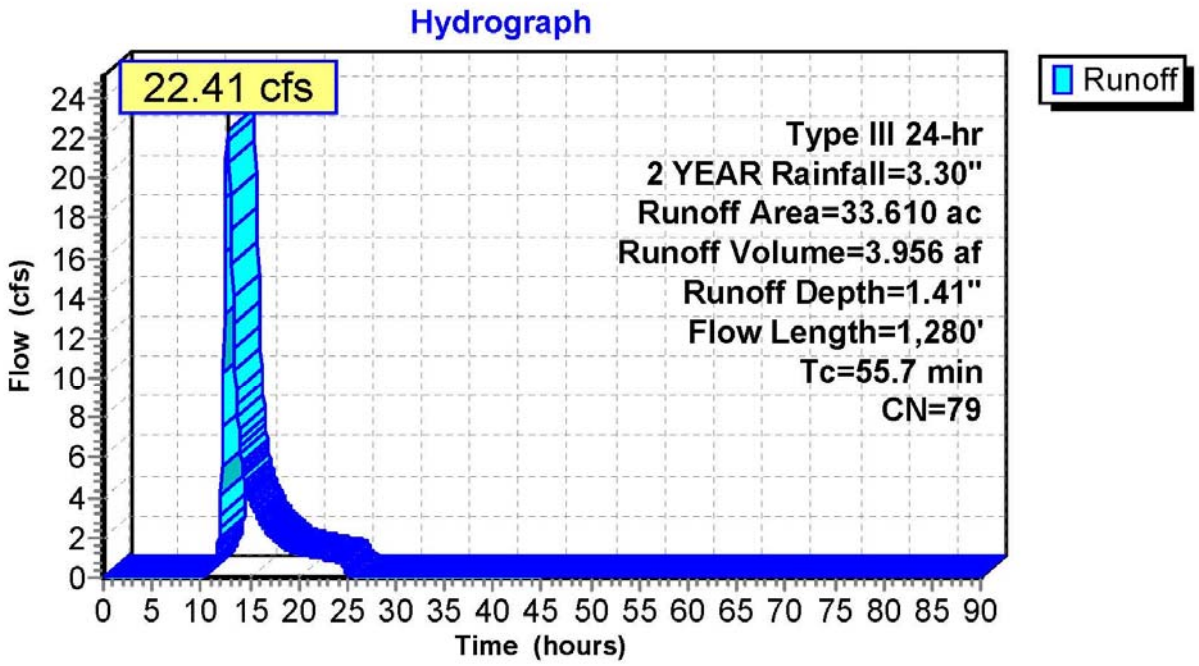
Runoff = 22.41 cfs @ 12.79 hrs, Volume= 3.956 af, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 2 YEAR Rainfall=3.30"

	Area (ac)	CN	Description
*	13.350	86	Urban industrial, 65% imp, HSG C
	5.100	98	Paved parking, HSG C
*	5.280	64	>75% Grass cover, Good, HSG C
	2.030	98	Paved roads w/curbs & sewers, HSG C
*	0.670	61	>75% Grass cover, Good, HSG C
*	4.240	61	>75% Grass cover, Good, HSG C
*	2.940	61	>75% Grass cover, Good, HSG C
	33.610	79	Weighted Average
	17.802		52.97% Pervious Area
	15.808		47.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
44.9	240	0.0063	0.09		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
10.8	1,040	0.0100	1.61		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
55.7	1,280	Total			

Subcatchment PA #3: PA #3



Summary for Subcatchment PA #3: PA #3

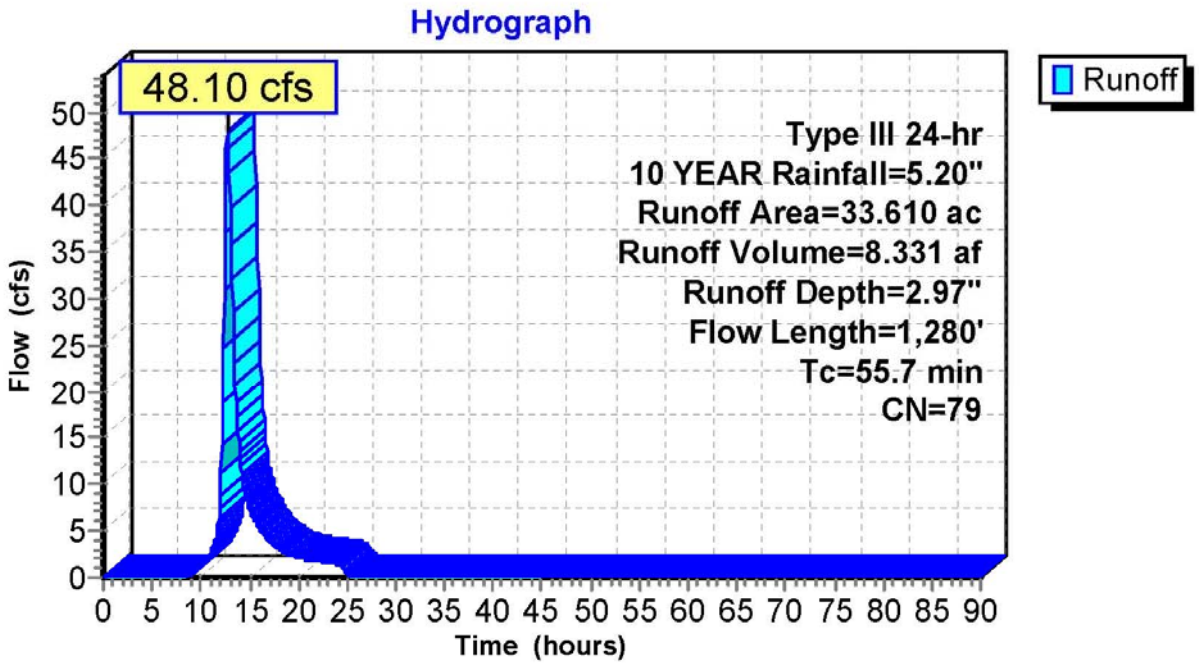
Runoff = 48.10 cfs @ 12.76 hrs, Volume= 8.331 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 10 YEAR Rainfall=5.20"

	Area (ac)	CN	Description
*	13.350	86	Urban industrial, 65% imp, HSG C
	5.100	98	Paved parking, HSG C
*	5.280	64	>75% Grass cover, Good, HSG C
	2.030	98	Paved roads w/curbs & sewers, HSG C
*	0.670	61	>75% Grass cover, Good, HSG C
*	4.240	61	>75% Grass cover, Good, HSG C
*	2.940	61	>75% Grass cover, Good, HSG C
	33.610	79	Weighted Average
	17.802		52.97% Pervious Area
	15.808		47.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
44.9	240	0.0063	0.09		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
10.8	1,040	0.0100	1.61		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
55.7	1,280	Total			

Subcatchment PA #3: PA #3



Summary for Subcatchment PA #3: PA #3

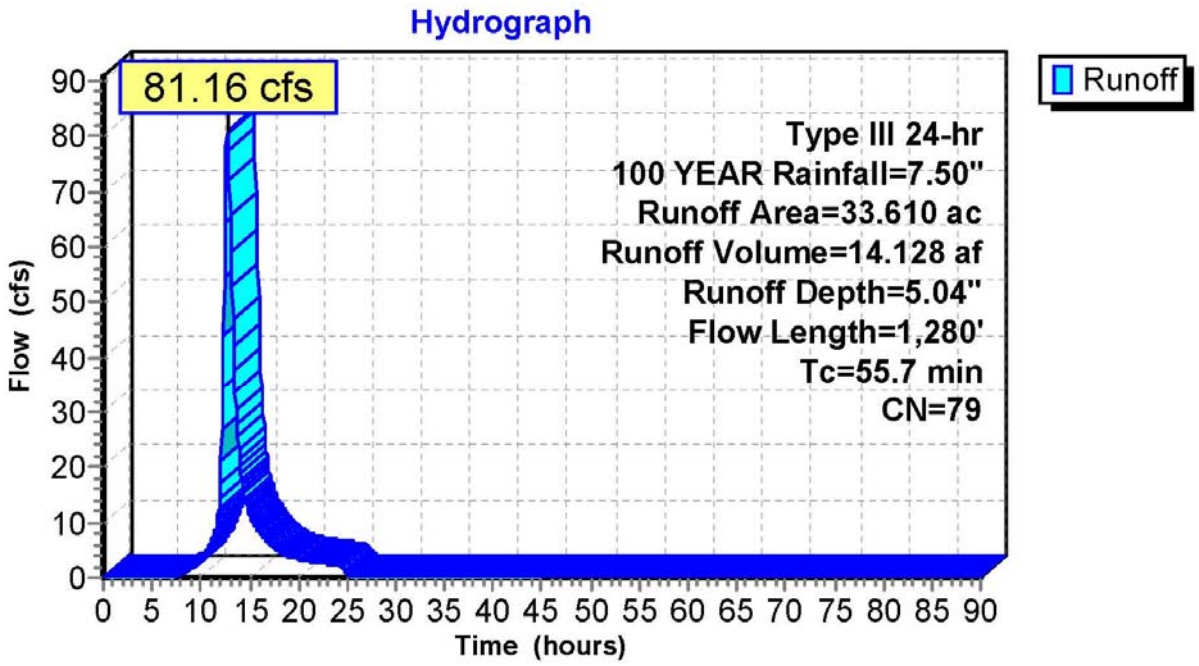
Runoff = 81.16 cfs @ 12.75 hrs, Volume= 14.128 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 100 YEAR Rainfall=7.50"

	Area (ac)	CN	Description
*	13.350	86	Urban industrial, 65% imp, HSG C
	5.100	98	Paved parking, HSG C
*	5.280	64	>75% Grass cover, Good, HSG C
	2.030	98	Paved roads w/curbs & sewers, HSG C
*	0.670	61	>75% Grass cover, Good, HSG C
*	4.240	61	>75% Grass cover, Good, HSG C
*	2.940	61	>75% Grass cover, Good, HSG C
	33.610	79	Weighted Average
	17.802		52.97% Pervious Area
	15.808		47.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
44.9	240	0.0063	0.09		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
10.8	1,040	0.0100	1.61		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
55.7	1,280	Total			

Subcatchment PA #3: PA #3



2) Routing for Basin #3

Summary for Pond Basin #3: Pond #3

Inflow Area = 33.610 ac, 47.03% Impervious, Inflow Depth = 1.41" for 2 YEAR event
Inflow = 22.41 cfs @ 12.79 hrs, Volume= 3.956 af
Outflow = 1.37 cfs @ 18.84 hrs, Volume= 3.249 af, Atten= 94%, Lag= 363.4 min
Primary = 1.37 cfs @ 18.84 hrs, Volume= 3.249 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 72.78' @ 18.84 hrs Surf.Area= 2.176 ac Storage= 2.981 af

Plug-Flow detention time= 1,719.4 min calculated for 3.246 af (82% of inflow)
Center-of-Mass det. time= 1,647.2 min (2,537.7 - 890.4)

Volume	Invert	Avail.Storage	Storage Description
#1	69.50'	13.505 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

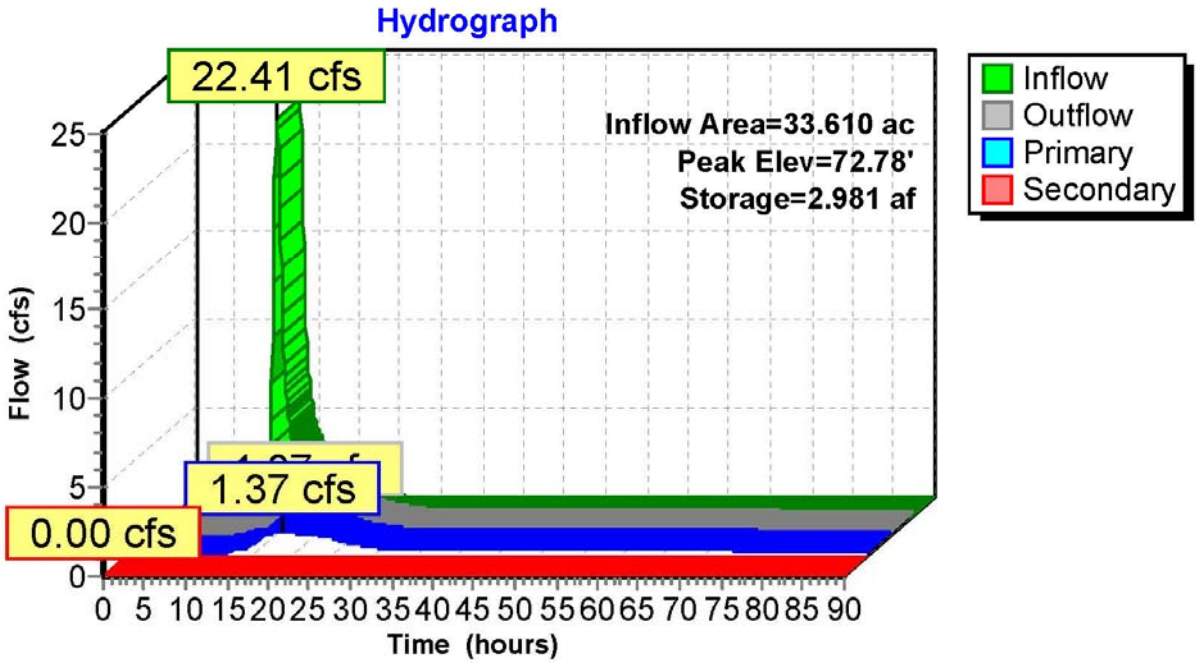
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
69.50	0.000	0.000	0.000
70.00	0.160	0.040	0.040
71.00	0.500	0.330	0.370
72.00	1.700	1.100	1.470
73.00	2.310	2.005	3.475
74.00	2.400	2.355	5.830
75.00	2.500	2.450	8.280
76.00	2.620	2.560	10.840
77.00	2.710	2.665	13.505

Device	Routing	Invert	Outlet Devices
#1	Device 6	69.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Device 6	72.50'	**24.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	74.00'	**60.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	74.00'	**60.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	74.00'	**60.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	69.40'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.40' / 67.50' S= 0.0221 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	76.00'	**120.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.37 cfs @ 18.84 hrs HW=72.78' (Free Discharge)
└**6=Culvert** (Passes 1.37 cfs of 46.66 cfs potential flow)
  ├**1=Orifice/Grate** (Orifice Controls 0.42 cfs @ 8.55 fps)
  ├**2=Orifice/Grate** (Orifice Controls 0.95 cfs @ 1.70 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=69.50' (Free Discharge)
└**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #3: Pond #3



Summary for Pond Basin #3: Pond #3

Inflow Area = 33.610 ac, 47.03% Impervious, Inflow Depth = 2.97" for 10 YEAR event
Inflow = 48.10 cfs @ 12.76 hrs, Volume= 8.331 af
Outflow = 7.91 cfs @ 14.79 hrs, Volume= 7.525 af, Atten= 84%, Lag= 121.8 min
Primary = 7.91 cfs @ 14.79 hrs, Volume= 7.525 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 73.60' @ 14.79 hrs Surf.Area= 2.364 ac Storage= 4.884 af

Plug-Flow detention time= 901.3 min calculated for 7.518 af (90% of inflow)
Center-of-Mass det. time= 856.7 min (1,725.5 - 868.8)

Volume	Invert	Avail.Storage	Storage Description
#1	69.50'	13.505 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

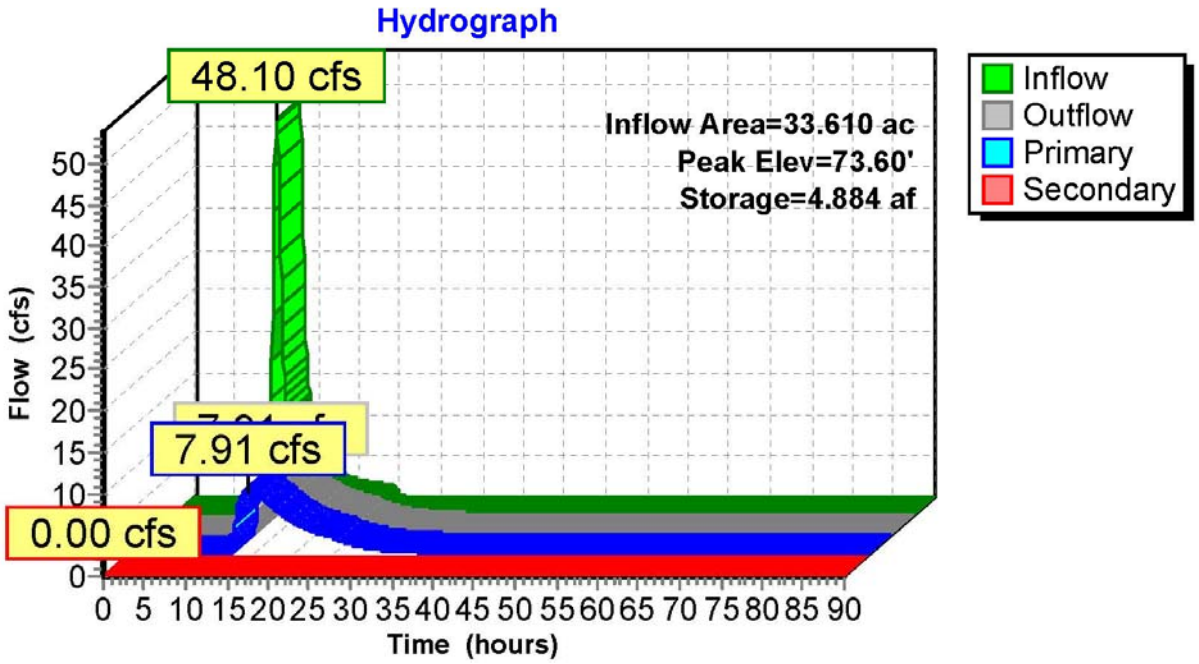
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
69.50	0.000	0.000	0.000
70.00	0.160	0.040	0.040
71.00	0.500	0.330	0.370
72.00	1.700	1.100	1.470
73.00	2.310	2.005	3.475
74.00	2.400	2.355	5.830
75.00	2.500	2.450	8.280
76.00	2.620	2.560	10.840
77.00	2.710	2.665	13.505

Device	Routing	Invert	Outlet Devices
#1	Device 6	69.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Device 6	72.50'	**24.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	74.00'	**60.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	74.00'	**60.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	74.00'	**60.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	69.40'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.40' / 67.50' S= 0.0221 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	76.00'	**120.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.91 cfs @ 14.79 hrs HW=73.60' (Free Discharge)
└**6=Culvert** (Passes 7.91 cfs of 55.95 cfs potential flow)
  ├**1=Orifice/Grate** (Orifice Controls 0.47 cfs @ 9.60 fps)
  ├**2=Orifice/Grate** (Orifice Controls 7.44 cfs @ 3.37 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=69.50' (Free Discharge)
└**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #3: Pond #3



Summary for Pond Basin #3: Pond #3

Inflow Area = 33.610 ac, 47.03% Impervious, Inflow Depth = 5.04" for 100 YEAR event
Inflow = 81.16 cfs @ 12.75 hrs, Volume= 14.128 af
Outflow = 31.24 cfs @ 13.58 hrs, Volume= 13.282 af, Atten= 62%, Lag= 50.3 min
Primary = 31.24 cfs @ 13.58 hrs, Volume= 13.282 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 74.46' @ 13.58 hrs Surf.Area= 2.446 ac Storage= 6.948 af

Plug-Flow detention time= 581.6 min calculated for 13.282 af (94% of inflow)
Center-of-Mass det. time= 549.2 min (1,403.0 - 853.8)

Volume	Invert	Avail.Storage	Storage Description
#1	69.50'	13.505 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

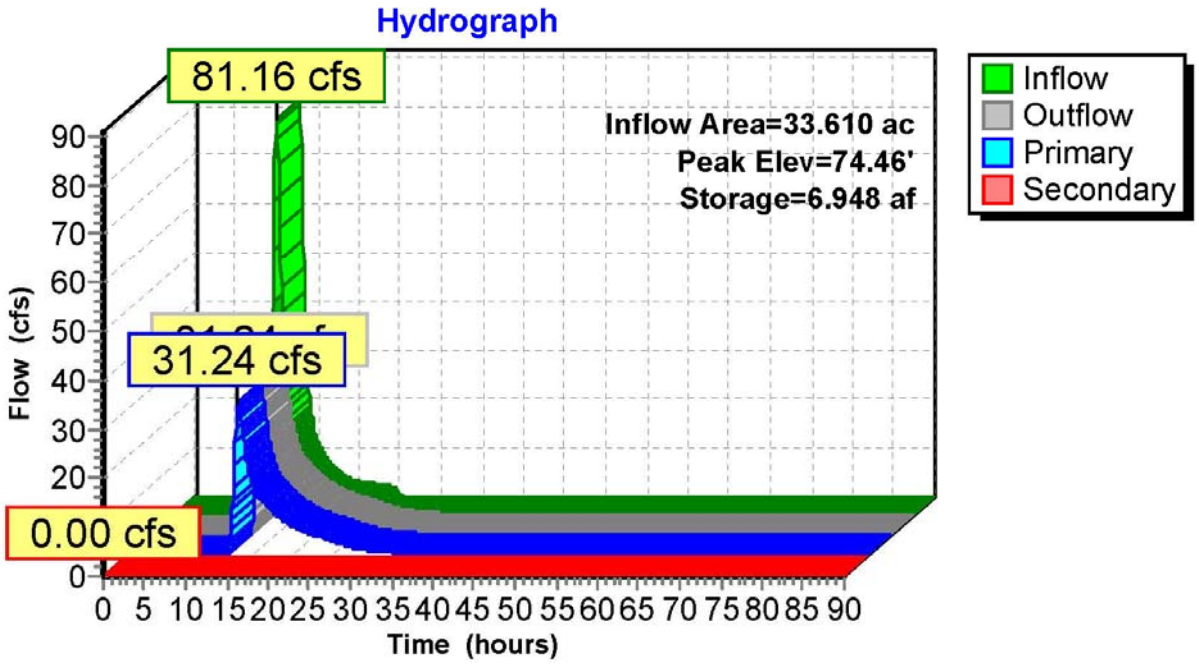
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
69.50	0.000	0.000	0.000
70.00	0.160	0.040	0.040
71.00	0.500	0.330	0.370
72.00	1.700	1.100	1.470
73.00	2.310	2.005	3.475
74.00	2.400	2.355	5.830
75.00	2.500	2.450	8.280
76.00	2.620	2.560	10.840
77.00	2.710	2.665	13.505

Device	Routing	Invert	Outlet Devices
#1	Device 6	69.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Device 6	72.50'	**24.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	74.00'	**60.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	74.00'	**60.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	74.00'	**60.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	69.40'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.40' / 67.50' S= 0.0221 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	76.00'	**120.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=31.20 cfs @ 13.58 hrs HW=74.46' (Free Discharge)
└**6=Culvert** (Passes 31.20 cfs of 64.22 cfs potential flow)
  ├**1=Orifice/Grate** (Orifice Controls 0.52 cfs @ 10.59 fps)
  ├**2=Orifice/Grate** (Orifice Controls 15.62 cfs @ 5.21 fps)
  ├**3=Orifice/Grate** (Orifice Controls 5.02 cfs @ 2.18 fps)
  ├**4=Orifice/Grate** (Orifice Controls 5.02 cfs @ 2.18 fps)
  └**5=Orifice/Grate** (Orifice Controls 5.02 cfs @ 2.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=69.50' (Free Discharge)
└**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #3: Pond #3



4. 150 Pierce Street, LLC (Thomas Edison School Site Plan)
July 2016

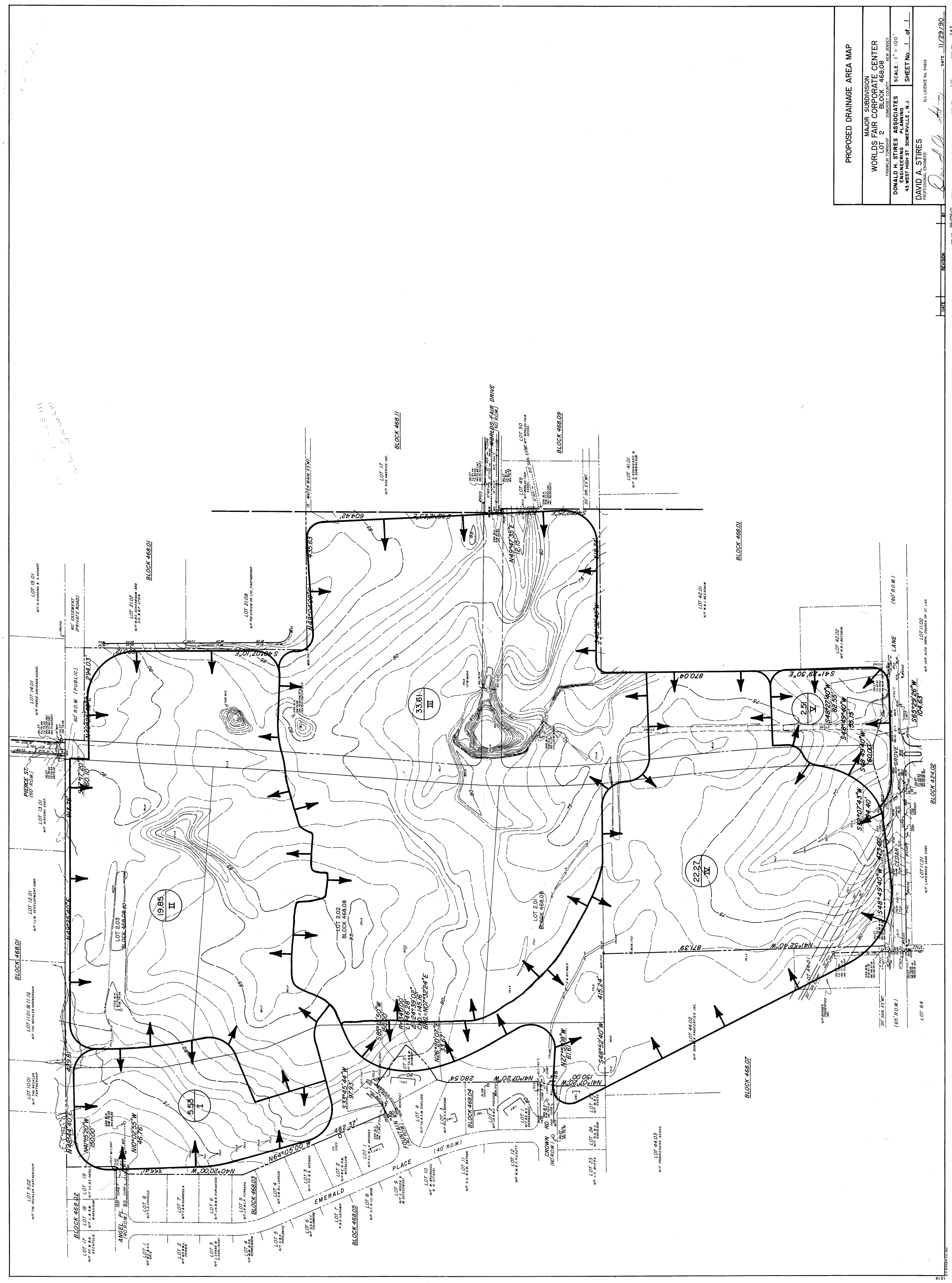
i.Post Development Peak Flow Conditions (Basin #1)

STIRES ASSOCIATES, P.A.

STORMWATER MANAGEMENT REPORT
CENTRAL JERSEY COLLEGE PREP CHARTER SCHOOL
SITE PLAN
LOT 1.02, BLOCK 511
FRANKLIN TOWNSHIP
SOMERSET COUNTY, NEW JERSEY
July, 2016

Craig W. Stires
N.J. License #39078

A MEMBER OF THE "STIRES GROUP" OF COMPANIES


PROPOSED DRAINAGE AREA MAP
MAJOR SUBDIVISION
WORLDS FAIR CORPORATE CENTER
LOT 2 BLOCK 468.08
FRANKLIN TOWNSHIP SOMERSET COUNTY NEW JERSEY
DONALD H. STIRES ASSOCIATES
ENGINEERING PLANNING
43 WEST HIGH ST. SOMERVILLE, N.J.
SCALE: 1" = 100'
SHEET No. 1 of 1
DAVID A. STIRES
PROFESSIONAL ENGINEER
N.J. LICENCE No. 34814
DATE 11/29/90
JOB NO. 88-256-01
DWN. BY J.J.C.
CKD. BY D.A.S.

B2319

1) Drainage Area #1

Summary for Subcatchment PA #1: PA #1

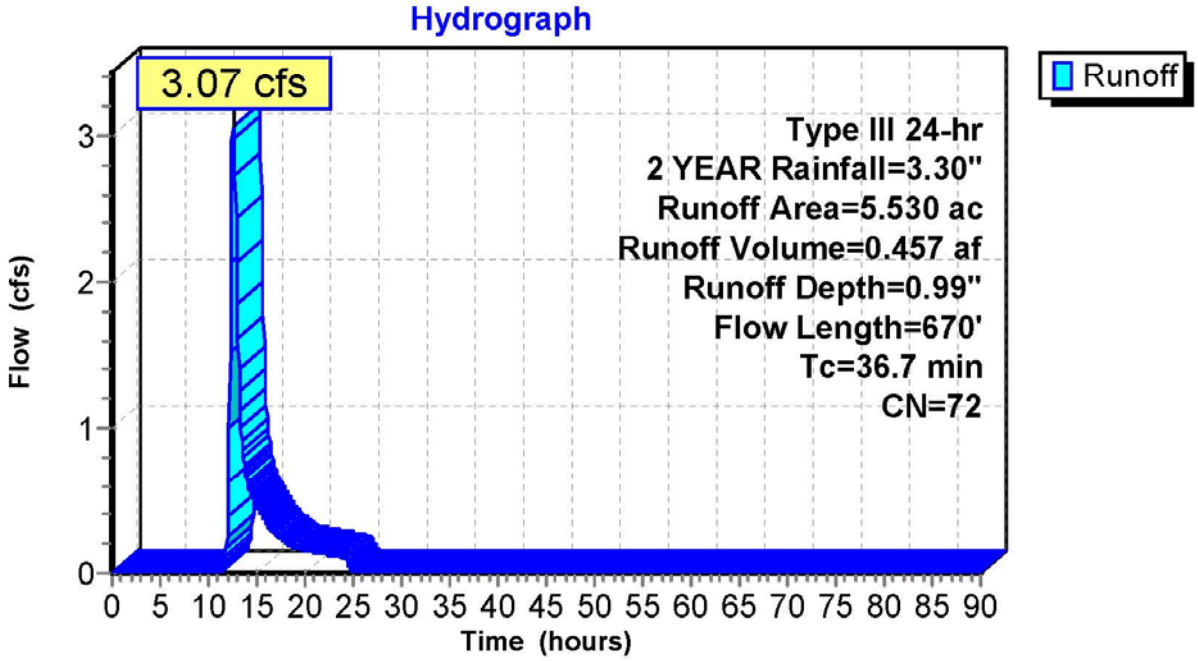
Runoff = 3.07 cfs @ 12.56 hrs, Volume= 0.457 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 2 YEAR Rainfall=3.30"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



Summary for Subcatchment PA #1: PA #1

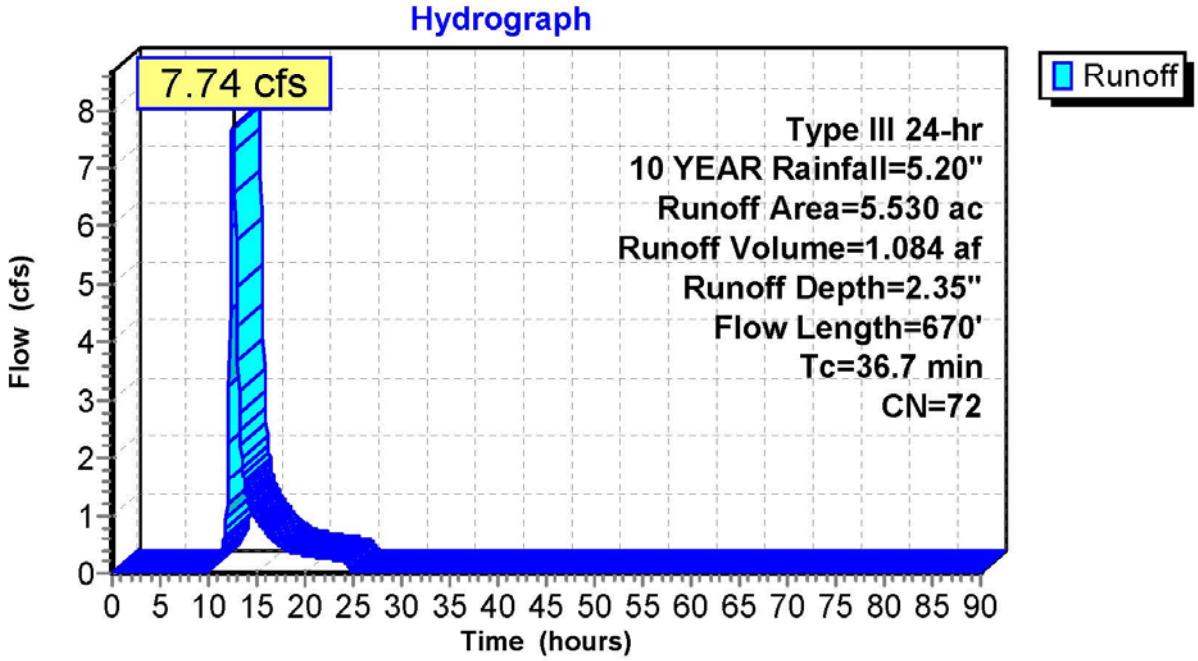
Runoff = 7.74 cfs @ 12.53 hrs, Volume= 1.084 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 10 YEAR Rainfall=5.20"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



Summary for Subcatchment PA #1: PA #1

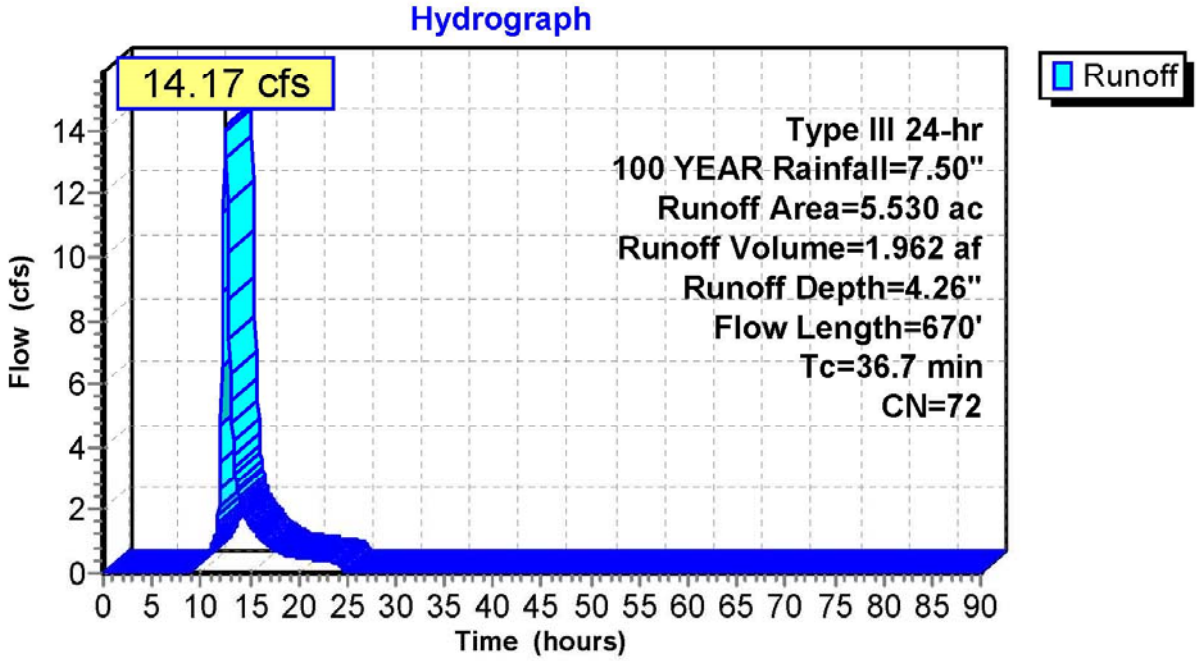
Runoff = 14.17 cfs @ 12.51 hrs, Volume= 1.962 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 100 YEAR Rainfall=7.50"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



2) Drainage Area #2

Summary for Subcatchment PA #2: PA #2

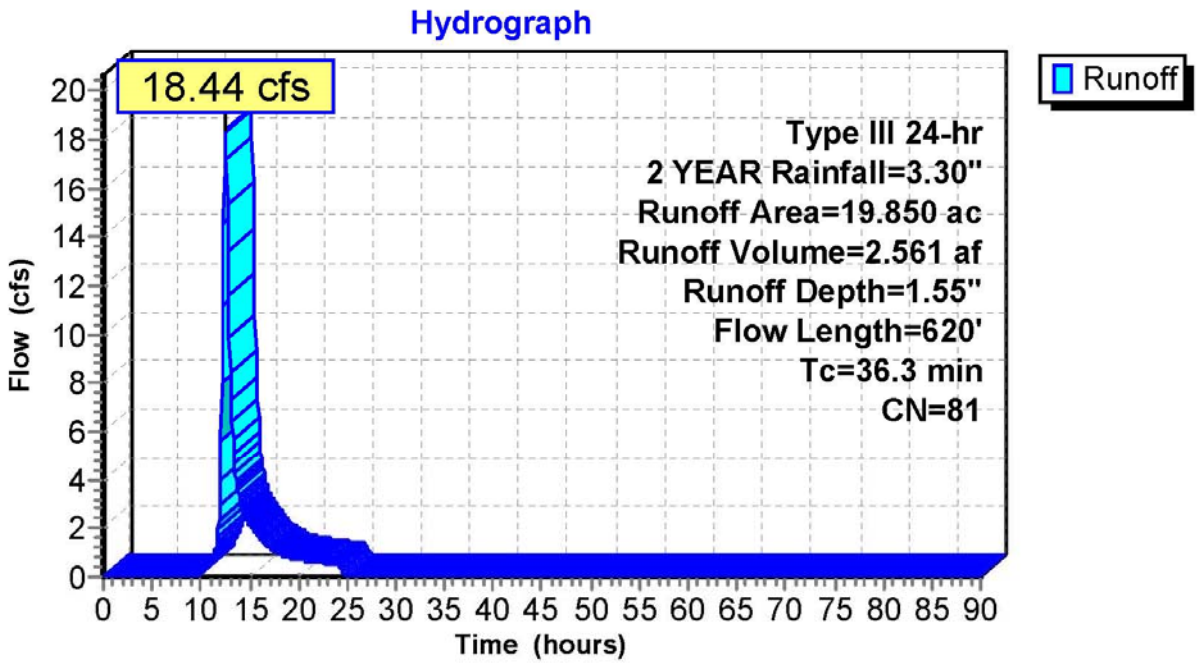
Runoff = 18.44 cfs @ 12.52 hrs, Volume= 2.561 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 2 YEAR Rainfall=3.30"

	Area (ac)	CN	Description
*	13.380	86	Urban industrial, 65% imp, HSG C
	1.130	98	Paved parking, HSG C
*	4.930	64	>75% Grass cover, Good, HSG C
*	0.410	61	Brush, Good, HSG C
	19.850	81	Weighted Average
	10.023		50.49% Pervious Area
	9.827		49.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.5	320	0.0112	2.15		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
36.3	620	Total			

Subcatchment PA #2: PA #2



Summary for Subcatchment PA #2: PA #2

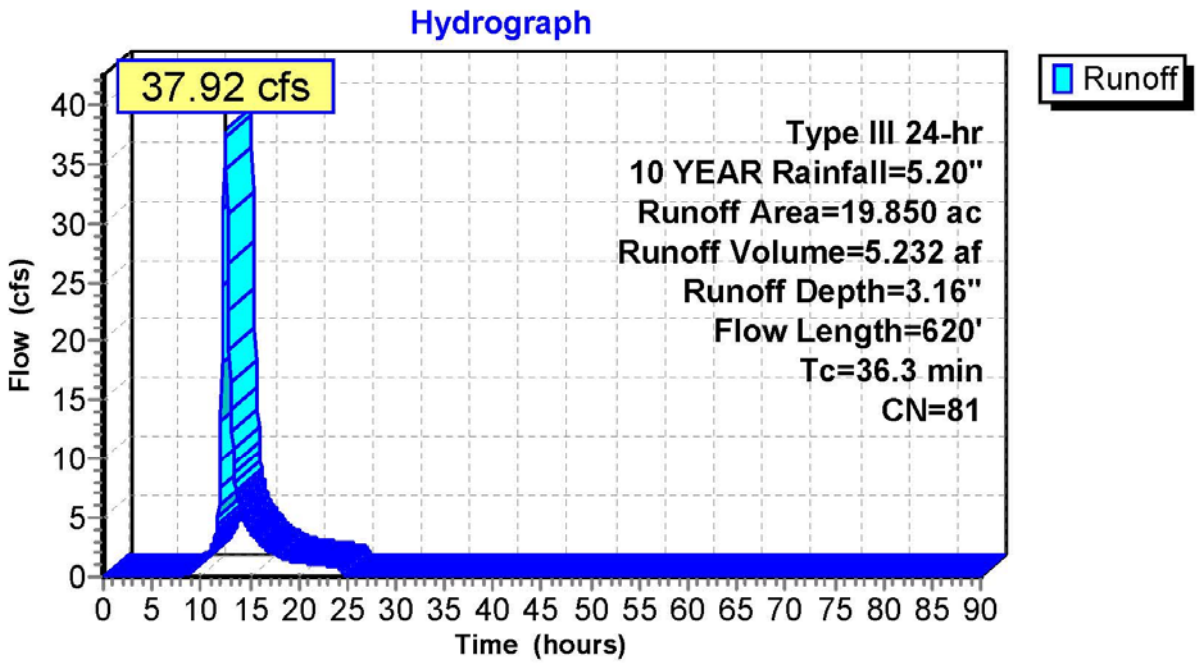
Runoff = 37.92 cfs @ 12.50 hrs, Volume= 5.232 af, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 10 YEAR Rainfall=5.20"

	Area (ac)	CN	Description
*	13.380	86	Urban industrial, 65% imp, HSG C
	1.130	98	Paved parking, HSG C
*	4.930	64	>75% Grass cover, Good, HSG C
*	0.410	61	Brush, Good, HSG C
	19.850	81	Weighted Average
	10.023		50.49% Pervious Area
	9.827		49.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.5	320	0.0112	2.15		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
36.3	620	Total			

Subcatchment PA #2: PA #2



Summary for Subcatchment PA #2: PA #2

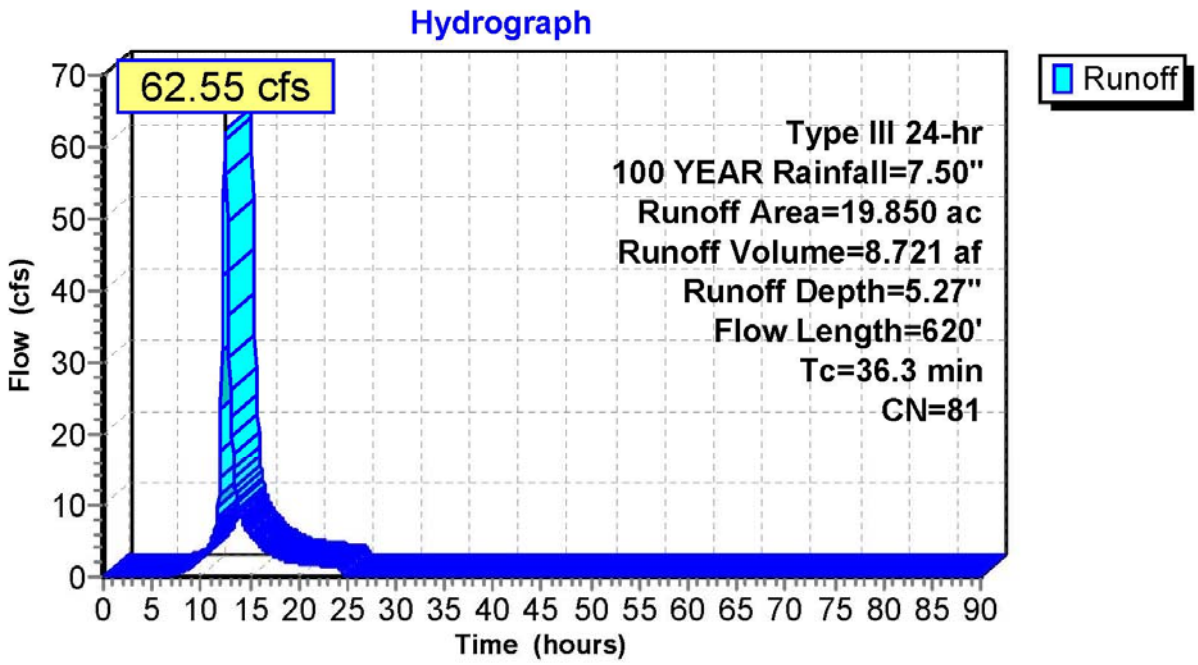
Runoff = 62.55 cfs @ 12.49 hrs, Volume= 8.721 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 100 YEAR Rainfall=7.50"

	Area (ac)	CN	Description
*	13.380	86	Urban industrial, 65% imp, HSG C
	1.130	98	Paved parking, HSG C
*	4.930	64	>75% Grass cover, Good, HSG C
*	0.410	61	Brush, Good, HSG C
	19.850	81	Weighted Average
	10.023		50.49% Pervious Area
	9.827		49.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.5	320	0.0112	2.15		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
36.3	620	Total			

Subcatchment PA #2: PA #2



3) Routing for Basin #1

Summary for Pond Basin #1: Pond #1

Inflow Area = 25.380 ac, 44.37% Impervious, Inflow Depth = 1.43" for 2 YEAR event
Inflow = 21.46 cfs @ 12.52 hrs, Volume= 3.018 af
Outflow = 0.50 cfs @ 24.28 hrs, Volume= 2.194 af, Atten= 98%, Lag= 705.4 min
Primary = 0.50 cfs @ 24.28 hrs, Volume= 2.194 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 74.14' @ 24.28 hrs Surf.Area= 43,048 sf Storage= 113,088 cf

Plug-Flow detention time= 2,118.5 min calculated for 2.192 af (73% of inflow)
Center-of-Mass det. time= 2,025.0 min (2,895.5 - 870.5)

Volume	Invert	Avail.Storage	Storage Description
#1	68.90'	382,696 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

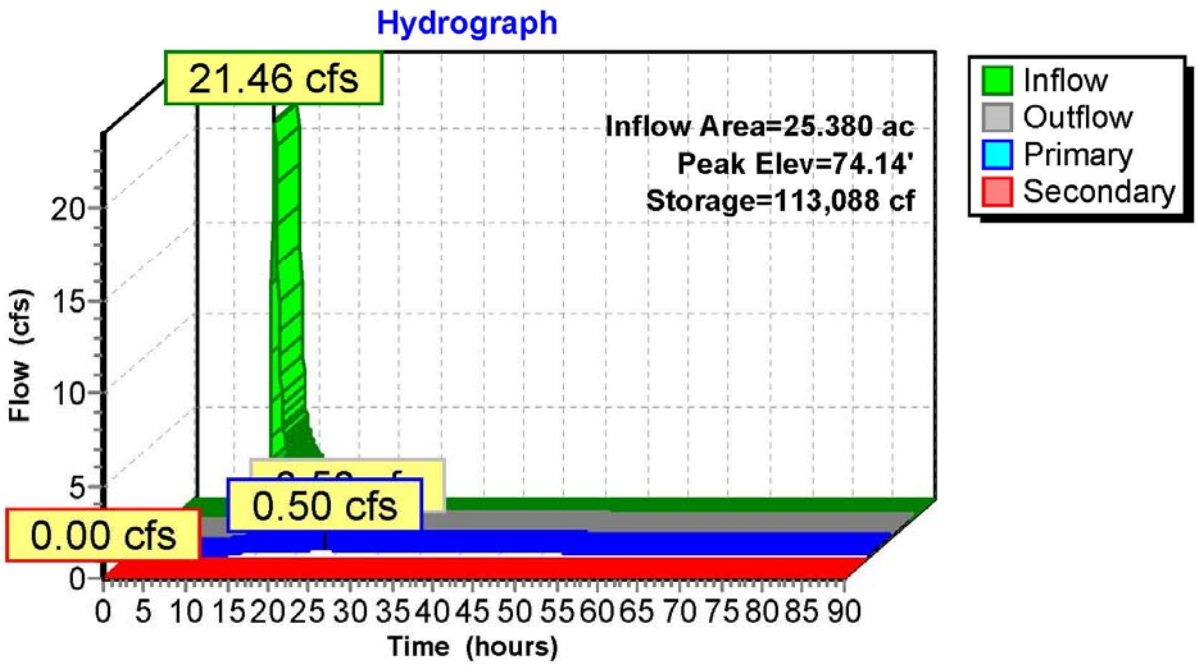
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.90	0	0	0
70.00	9,148	5,031	5,031
71.00	21,344	15,246	20,277
72.00	25,700	23,522	43,799
73.00	30,492	28,096	71,895
74.00	40,075	35,284	107,179
75.00	60,984	50,530	157,708
76.00	70,132	65,558	223,266
77.00	79,715	74,924	298,190
78.00	89,298	84,507	382,696

Device	Routing	Invert	Outlet Devices
#1	Device 6	68.90'	**2.5" Vert. Orifice/Grate** C= 0.600
#2	Device 6	74.00'	**9.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	76.00'	**60.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	68.80'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 68.80' / 66.53' S= 0.0264 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	77.50'	**75.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.50 cfs @ 24.28 hrs HW=74.14' (Free Discharge)
└**6=Culvert** (Passes 0.50 cfs of 66.71 cfs potential flow)
  ├**1=Orifice/Grate** (Orifice Controls 0.37 cfs @ 10.91 fps)
  ├**2=Orifice/Grate** (Orifice Controls 0.13 cfs @ 1.21 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.90' (Free Discharge)
└**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #1: Pond #1



Summary for Pond Basin #1: Pond #1

Inflow Area = 25.380 ac, 44.37% Impervious, Inflow Depth = 2.99" for 10 YEAR event
Inflow = 45.65 cfs @ 12.51 hrs, Volume= 6.316 af
Outflow = 4.11 cfs @ 15.60 hrs, Volume= 5.308 af, Atten= 91%, Lag= 185.8 min
Primary = 4.11 cfs @ 15.60 hrs, Volume= 5.308 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 75.33' @ 15.60 hrs Surf.Area= 64,023 sf Storage= 178,473 cf

Plug-Flow detention time= 1,119.3 min calculated for 5.308 af (84% of inflow)
Center-of-Mass det. time= 1,051.7 min (1,901.2 - 849.5)

Volume	Invert	Avail.Storage	Storage Description
#1	68.90'	382,696 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

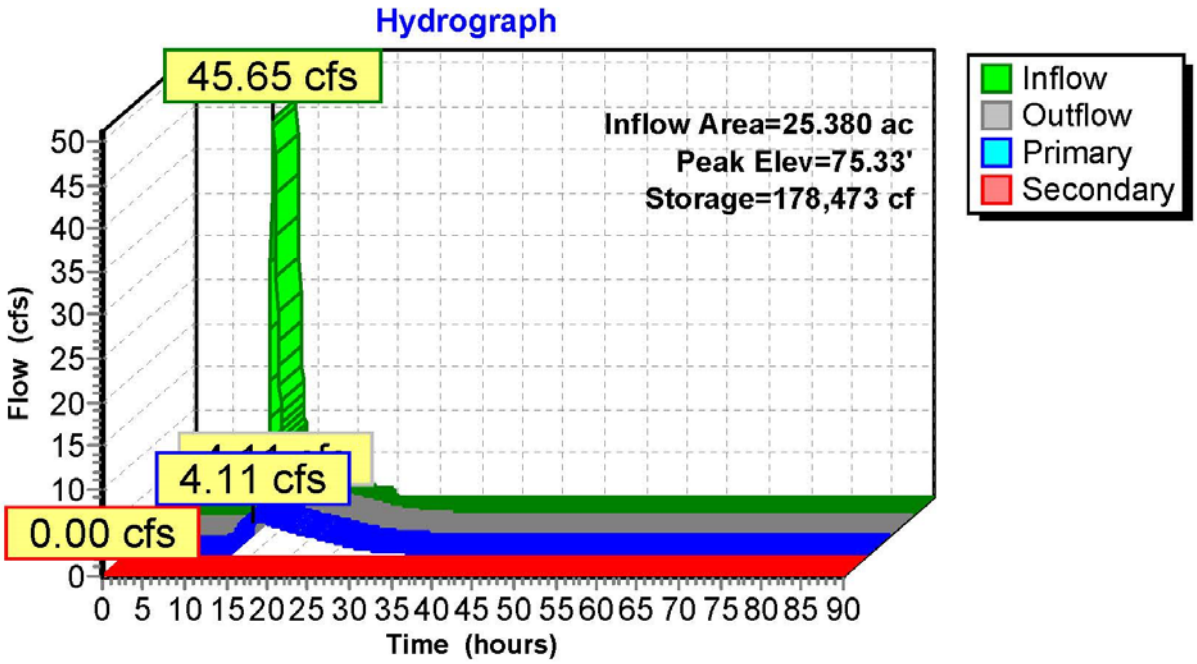
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.90	0	0	0
70.00	9,148	5,031	5,031
71.00	21,344	15,246	20,277
72.00	25,700	23,522	43,799
73.00	30,492	28,096	71,895
74.00	40,075	35,284	107,179
75.00	60,984	50,530	157,708
76.00	70,132	65,558	223,266
77.00	79,715	74,924	298,190
78.00	89,298	84,507	382,696

Device	Routing	Invert	Outlet Devices
#1	Device 6	68.90'	**2.5" Vert. Orifice/Grate** C= 0.600
#2	Device 6	74.00'	**9.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	76.00'	**60.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	68.80'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 68.80' / 66.53' S= 0.0264 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	77.50'	**75.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.11 cfs @ 15.60 hrs HW=75.33' (Free Discharge)
↑—**6=Culvert** (Passes 4.11 cfs of 76.35 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.41 cfs @ 12.11 fps)
—**2=Orifice/Grate** (Orifice Controls 3.70 cfs @ 3.71 fps)
—**3=Orifice/Grate** (Controls 0.00 cfs)
—**4=Orifice/Grate** (Controls 0.00 cfs)
—**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.90' (Free Discharge)
↑—**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #1: Pond #1



Summary for Pond Basin #1: Pond #1

Inflow Area = 25.380 ac, 44.37% Impervious, Inflow Depth = 5.05" for 100 YEAR event
Inflow = 76.69 cfs @ 12.50 hrs, Volume= 10.683 af
Outflow = 20.36 cfs @ 13.32 hrs, Volume= 9.627 af, Atten= 73%, Lag= 49.3 min
Primary = 20.36 cfs @ 13.32 hrs, Volume= 9.627 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 76.40' @ 13.32 hrs Surf.Area= 74,008 sf Storage= 252,414 cf

Plug-Flow detention time= 713.0 min calculated for 9.618 af (90% of inflow)
Center-of-Mass det. time= 667.9 min (1,502.8 - 834.8)

Volume	Invert	Avail.Storage	Storage Description
#1	68.90'	382,696 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

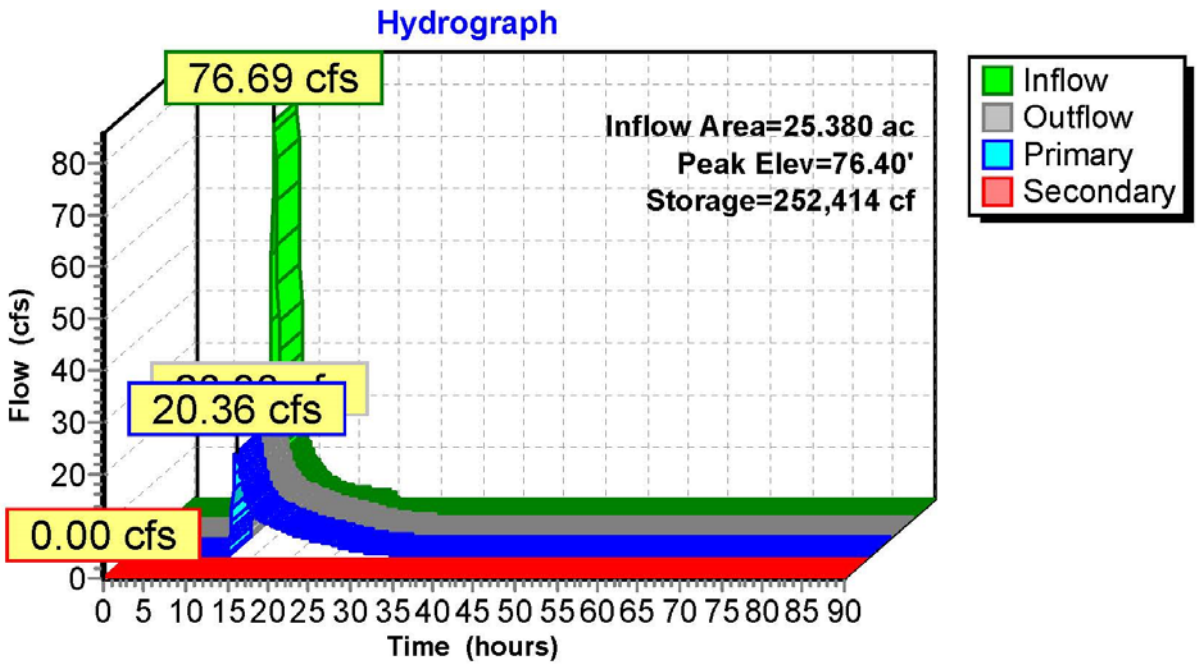
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.90	0	0	0
70.00	9,148	5,031	5,031
71.00	21,344	15,246	20,277
72.00	25,700	23,522	43,799
73.00	30,492	28,096	71,895
74.00	40,075	35,284	107,179
75.00	60,984	50,530	157,708
76.00	70,132	65,558	223,266
77.00	79,715	74,924	298,190
78.00	89,298	84,507	382,696

Device	Routing	Invert	Outlet Devices
#1	Device 6	68.90'	**2.5" Vert. Orifice/Grate** C= 0.600
#2	Device 6	74.00'	**9.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	76.00'	**60.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	68.80'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 68.80' / 66.53' S= 0.0264 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	77.50'	**75.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=20.30 cfs @ 13.32 hrs HW=76.40' (Free Discharge)
↑—**6=Culvert** (Passes 20.30 cfs of 84.08 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.45 cfs @ 13.10 fps)
—**2=Orifice/Grate** (Orifice Controls 8.35 cfs @ 5.57 fps)
—**3=Orifice/Grate** (Orifice Controls 4.11 cfs @ 2.04 fps)
—**4=Orifice/Grate** (Orifice Controls 3.70 cfs @ 2.04 fps)
—**5=Orifice/Grate** (Orifice Controls 3.70 cfs @ 2.04 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.90' (Free Discharge)
↑—**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #1: Pond #1



ii. Post Development Peak Flow Conditions (Basin #3)

1) Drainage Area #3

Summary for Subcatchment PA #3: PA #3

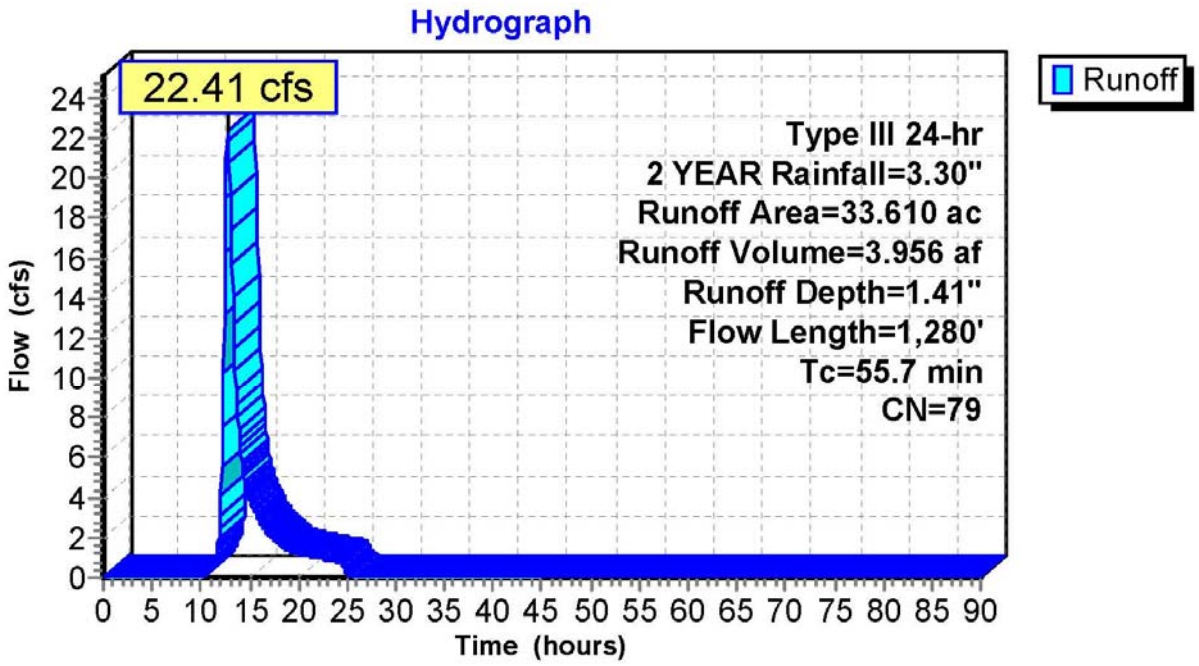
Runoff = 22.41 cfs @ 12.79 hrs, Volume= 3.956 af, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 2 YEAR Rainfall=3.30"

	Area (ac)	CN	Description
*	13.350	86	Urban industrial, 65% imp, HSG C
	5.100	98	Paved parking, HSG C
*	5.280	64	>75% Grass cover, Good, HSG C
	2.030	98	Paved roads w/curbs & sewers, HSG C
*	0.670	61	>75% Grass cover, Good, HSG C
*	4.240	61	>75% Grass cover, Good, HSG C
*	2.940	61	>75% Grass cover, Good, HSG C
	33.610	79	Weighted Average
	17.802		52.97% Pervious Area
	15.808		47.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
44.9	240	0.0063	0.09		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
10.8	1,040	0.0100	1.61		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
55.7	1,280	Total			

Subcatchment PA #3: PA #3



Summary for Subcatchment PA #3: PA #3

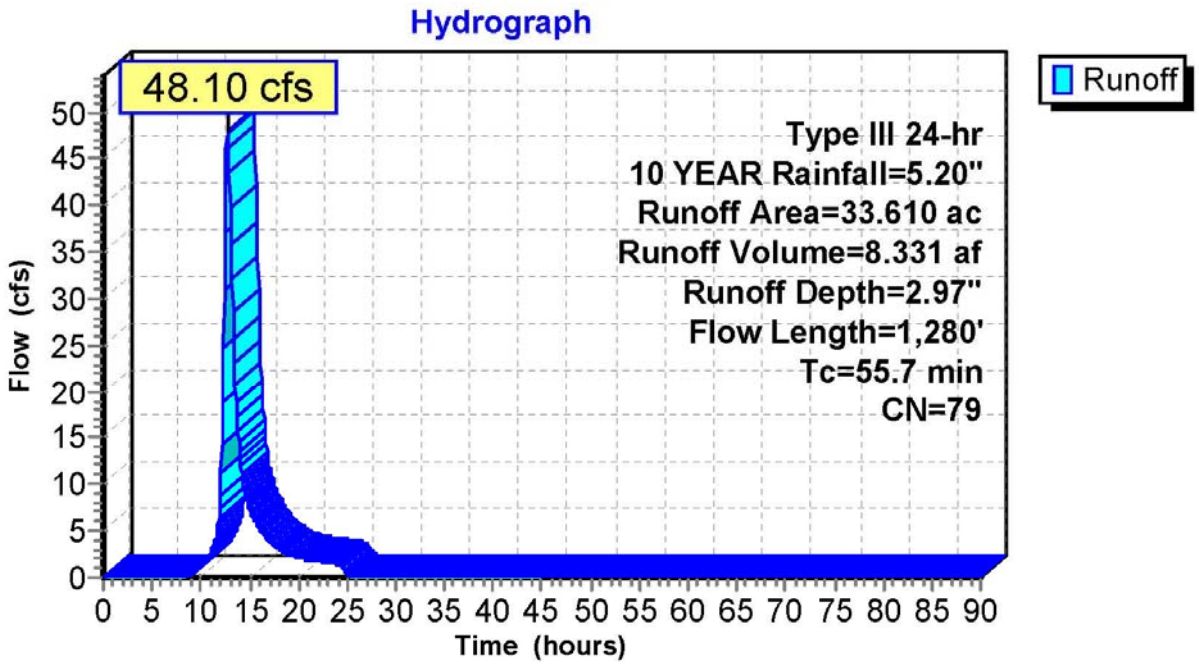
Runoff = 48.10 cfs @ 12.76 hrs, Volume= 8.331 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 10 YEAR Rainfall=5.20"

	Area (ac)	CN	Description
*	13.350	86	Urban industrial, 65% imp, HSG C
	5.100	98	Paved parking, HSG C
*	5.280	64	>75% Grass cover, Good, HSG C
	2.030	98	Paved roads w/curbs & sewers, HSG C
*	0.670	61	>75% Grass cover, Good, HSG C
*	4.240	61	>75% Grass cover, Good, HSG C
*	2.940	61	>75% Grass cover, Good, HSG C
	33.610	79	Weighted Average
	17.802		52.97% Pervious Area
	15.808		47.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
44.9	240	0.0063	0.09		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
10.8	1,040	0.0100	1.61		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
55.7	1,280	Total			

Subcatchment PA #3: PA #3



Summary for Subcatchment PA #3: PA #3

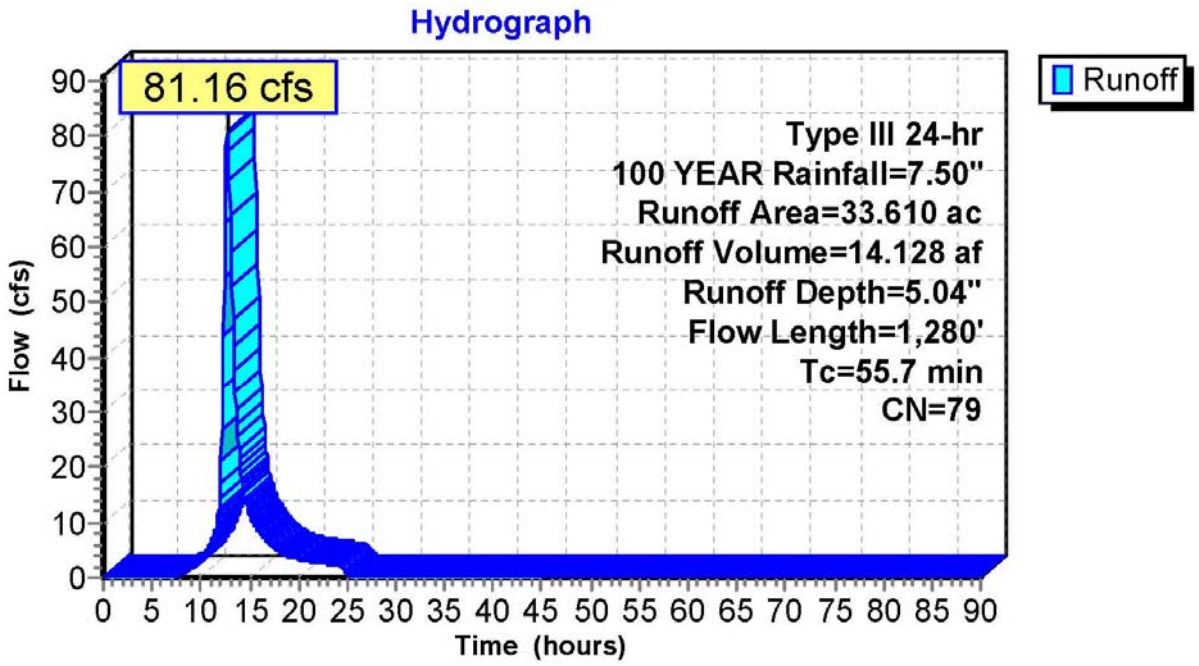
Runoff = 81.16 cfs @ 12.75 hrs, Volume= 14.128 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 100 YEAR Rainfall=7.50"

	Area (ac)	CN	Description
*	13.350	86	Urban industrial, 65% imp, HSG C
	5.100	98	Paved parking, HSG C
*	5.280	64	>75% Grass cover, Good, HSG C
	2.030	98	Paved roads w/curbs & sewers, HSG C
*	0.670	61	>75% Grass cover, Good, HSG C
*	4.240	61	>75% Grass cover, Good, HSG C
*	2.940	61	>75% Grass cover, Good, HSG C
	33.610	79	Weighted Average
	17.802		52.97% Pervious Area
	15.808		47.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
44.9	240	0.0063	0.09		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
10.8	1,040	0.0100	1.61		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
55.7	1,280	Total			

Subcatchment PA #3: PA #3



2) Routing for Basin #3

Summary for Pond Basin #3: Pond #3

Inflow Area = 33.610 ac, 47.03% Impervious, Inflow Depth = 1.41" for 2 YEAR event
Inflow = 22.41 cfs @ 12.79 hrs, Volume= 3.956 af
Outflow = 1.28 cfs @ 19.35 hrs, Volume= 3.220 af, Atten= 94%, Lag= 393.8 min
Primary = 1.28 cfs @ 19.35 hrs, Volume= 3.220 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 72.79' @ 19.35 hrs Surf.Area= 2.185 ac Storage= 3.013 af

Plug-Flow detention time= 1,744.5 min calculated for 3.217 af (81% of inflow)
Center-of-Mass det. time= 1,670.4 min (2,560.8 - 890.4)

Volume	Invert	Avail.Storage	Storage Description
#1	69.50'	13.505 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

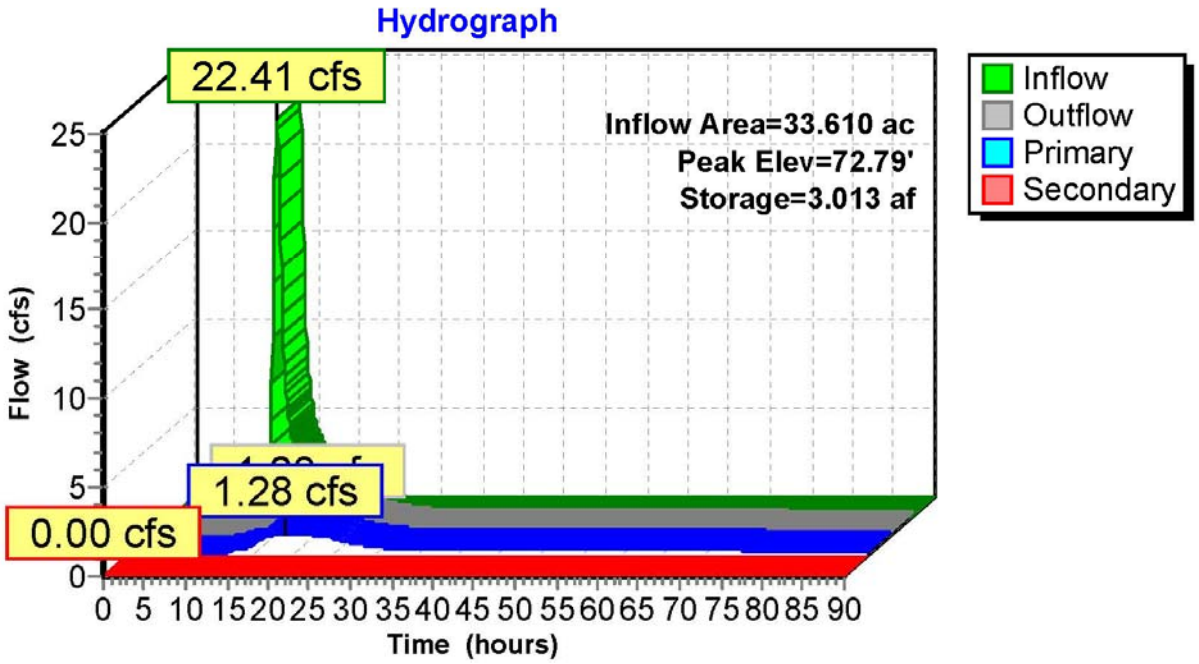
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
69.50	0.000	0.000	0.000
70.00	0.160	0.040	0.040
71.00	0.500	0.330	0.370
72.00	1.700	1.100	1.470
73.00	2.310	2.005	3.475
74.00	2.400	2.355	5.830
75.00	2.500	2.450	8.280
76.00	2.620	2.560	10.840
77.00	2.710	2.665	13.505

Device	Routing	Invert	Outlet Devices
#1	Device 3	69.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Device 3	72.50'	**20.0" W x 17.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	69.40'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.40' / 67.50' S= 0.0221 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#4	Secondary	76.00'	**120.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.28 cfs @ 19.35 hrs HW=72.79' (Free Discharge)
└**3=Culvert** (Passes 1.28 cfs of 46.85 cfs potential flow)
  └**1=Orifice/Grate** (Orifice Controls 0.42 cfs @ 8.57 fps)
  └**2=Orifice/Grate** (Orifice Controls 0.85 cfs @ 1.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=69.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #3: Pond #3



Summary for Pond Basin #3: Pond #3

Inflow Area = 33.610 ac, 47.03% Impervious, Inflow Depth = 2.97" for 10 YEAR event
Inflow = 48.10 cfs @ 12.76 hrs, Volume= 8.331 af
Outflow = 7.13 cfs @ 15.05 hrs, Volume= 7.471 af, Atten= 85%, Lag= 137.3 min
Primary = 7.13 cfs @ 15.05 hrs, Volume= 7.471 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 73.66' @ 15.05 hrs Surf.Area= 2.369 ac Storage= 5.012 af

Plug-Flow detention time= 935.0 min calculated for 7.471 af (90% of inflow)
Center-of-Mass det. time= 885.0 min (1,753.8 - 868.8)

Volume	Invert	Avail.Storage	Storage Description
#1	69.50'	13.505 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

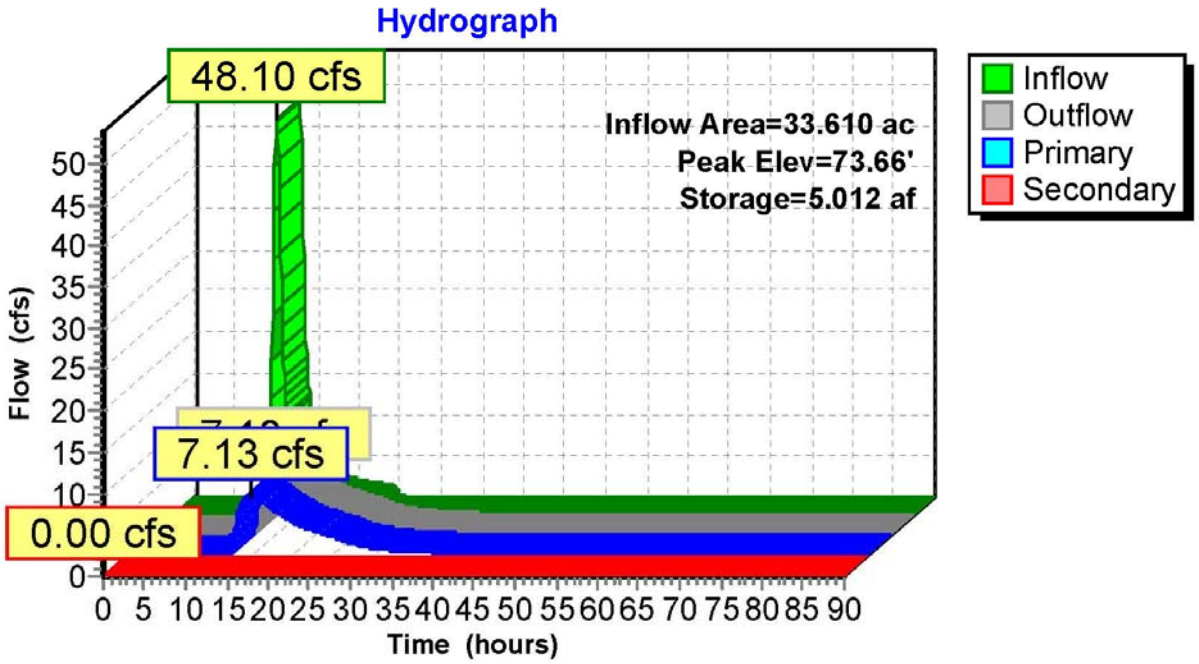
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
69.50	0.000	0.000	0.000
70.00	0.160	0.040	0.040
71.00	0.500	0.330	0.370
72.00	1.700	1.100	1.470
73.00	2.310	2.005	3.475
74.00	2.400	2.355	5.830
75.00	2.500	2.450	8.280
76.00	2.620	2.560	10.840
77.00	2.710	2.665	13.505

Device	Routing	Invert	Outlet Devices
#1	Device 3	69.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Device 3	72.50'	**20.0" W x 17.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	69.40'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.40' / 67.50' S= 0.0221 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#4	Secondary	76.00'	**120.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.13 cfs @ 15.05 hrs HW=73.66' (Free Discharge)
└**3=Culvert** (Passes 7.13 cfs of 56.51 cfs potential flow)
  └**1=Orifice/Grate** (Orifice Controls 0.47 cfs @ 9.67 fps)
  └**2=Orifice/Grate** (Orifice Controls 6.66 cfs @ 3.45 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=69.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #3: Pond #3



Summary for Pond Basin #3: Pond #3

Inflow Area = 33.610 ac, 47.03% Impervious, Inflow Depth = 5.04" for 100 YEAR event
Inflow = 81.16 cfs @ 12.75 hrs, Volume= 14.128 af
Outflow = 15.16 cfs @ 14.41 hrs, Volume= 13.212 af, Atten= 81%, Lag= 99.6 min
Primary = 15.16 cfs @ 14.41 hrs, Volume= 13.212 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 74.89' @ 14.41 hrs Surf.Area= 2.489 ac Storage= 7.996 af

Plug-Flow detention time= 644.5 min calculated for 13.212 af (94% of inflow)
Center-of-Mass det. time= 609.8 min (1,463.6 - 853.8)

Volume	Invert	Avail.Storage	Storage Description
#1	69.50'	13.505 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

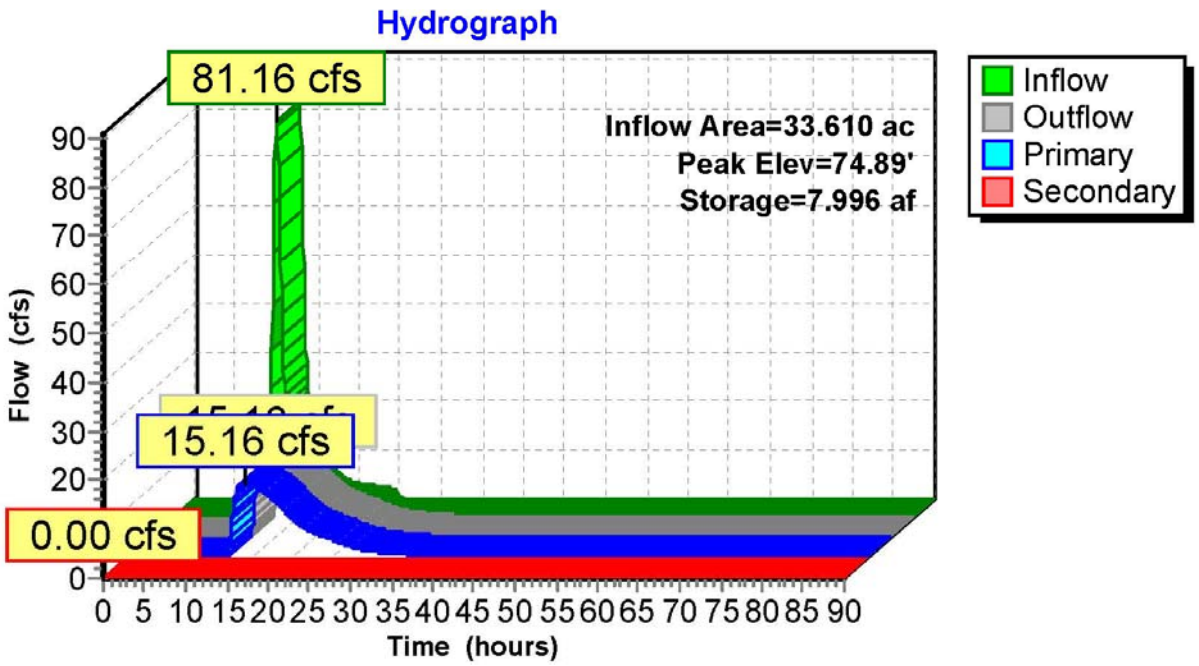
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
69.50	0.000	0.000	0.000
70.00	0.160	0.040	0.040
71.00	0.500	0.330	0.370
72.00	1.700	1.100	1.470
73.00	2.310	2.005	3.475
74.00	2.400	2.355	5.830
75.00	2.500	2.450	8.280
76.00	2.620	2.560	10.840
77.00	2.710	2.665	13.505

Device	Routing	Invert	Outlet Devices
#1	Device 3	69.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Device 3	72.50'	**20.0" W x 17.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	69.40'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.40' / 67.50' S= 0.0221 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#4	Secondary	76.00'	**120.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=15.16 cfs @ 14.41 hrs HW=74.89' (Free Discharge)
└**3=Culvert** (Passes 15.16 cfs of 67.95 cfs potential flow)
  ├**1=Orifice/Grate** (Orifice Controls 0.54 cfs @ 11.04 fps)
  └**2=Orifice/Grate** (Orifice Controls 14.61 cfs @ 6.19 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=69.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #3: Pond #3



5. 150 Pierce Street, LLC (Pharmscript Site Plan)
March 2016

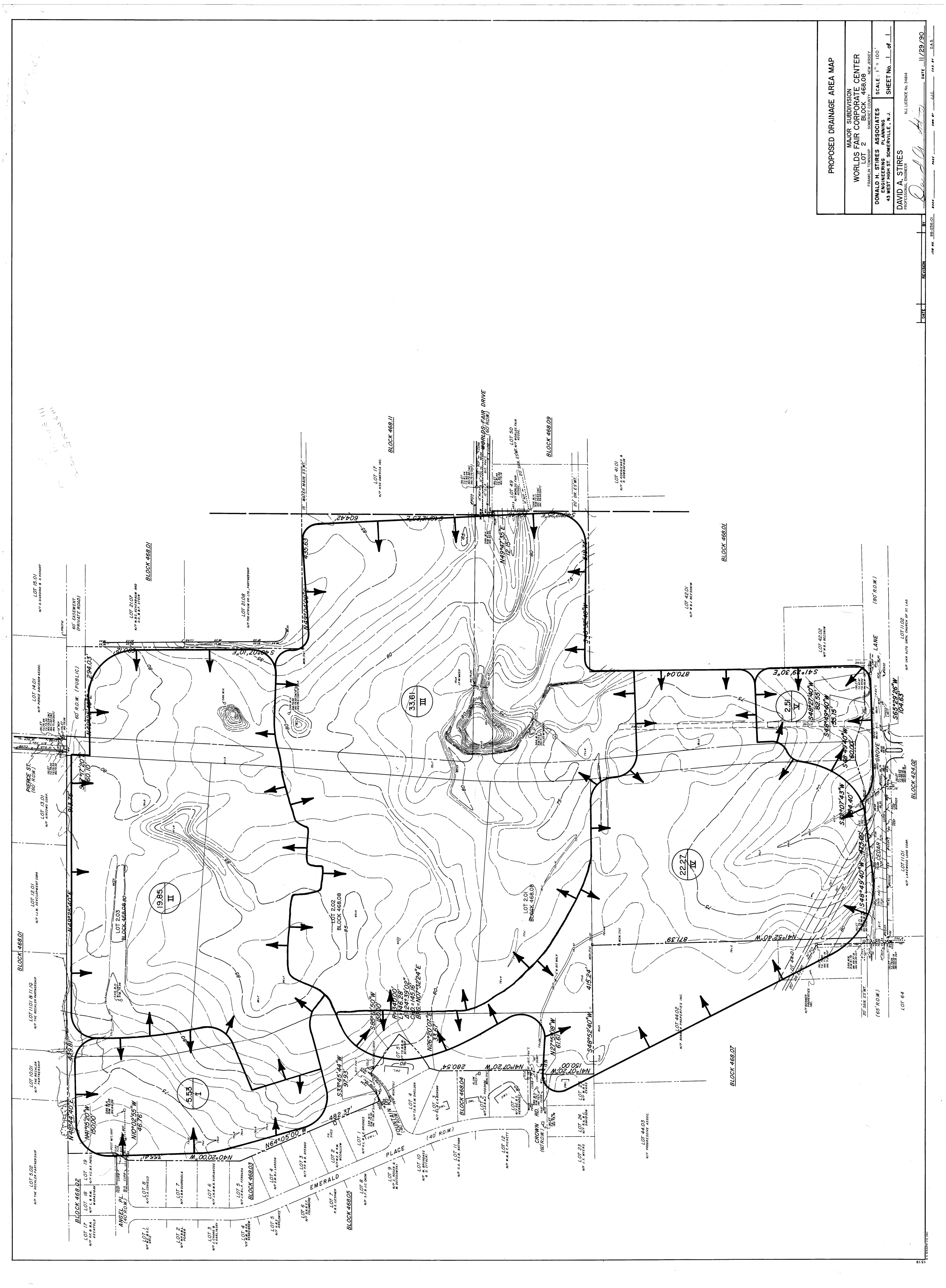
i. Post Development Peak Flow Conditions (Basin #1)

STIRES ASSOCIATES, P.A.

DRAINAGE REPORT
PHARMASCRIPT PARKING ADDITION
SITE PLAN
LOT 2.02, BLOCK 468.08
FRANKLIN TOWNSHIP
SOMERSET COUNTY, NEW JERSEY
March, 2016

Craig W. Stires
N.J. License #39078

A MEMBER OF THE "STIRES GROUP" OF COMPANIES


PROPOSED DRAINAGE AREA MAP
MAJOR SUBDIVISION
WORLDS FAIR CORPORATE CENTER
LOT 2 BLOCK 468.08
FRANKLIN TOWNSHIP SOMERSET COUNTY NEW JERSEY
DONALD H. STIRES ASSOCIATES
ENGINEERING PLANNING
43 WEST HIGH ST. SOMERVILLE, N.J.
SCALE : 1" = 100'
SHEET No. 1 of 1
DAVID A. STIRES
PROFESSIONAL ENGINEER
N.J. LICENCE No. 34814
DATE 11/29/90
JOB NO. 88-256-01
DWN. BY J.J.C.
CKD. BY D.A.S.
WORLDS FAIR DRIVE (60' R.O.W.)
EMERALD PLACE (40' R.O.W.)
CEDAR GROVE LANE (80' R.O.W.)
PIERCE ST. (60' R.O.W.)
33.61 III
19.85 II
5.53 I
22.27 IV
2.51 V

1) Drainage Area #1

Summary for Subcatchment PA #1: PA #1

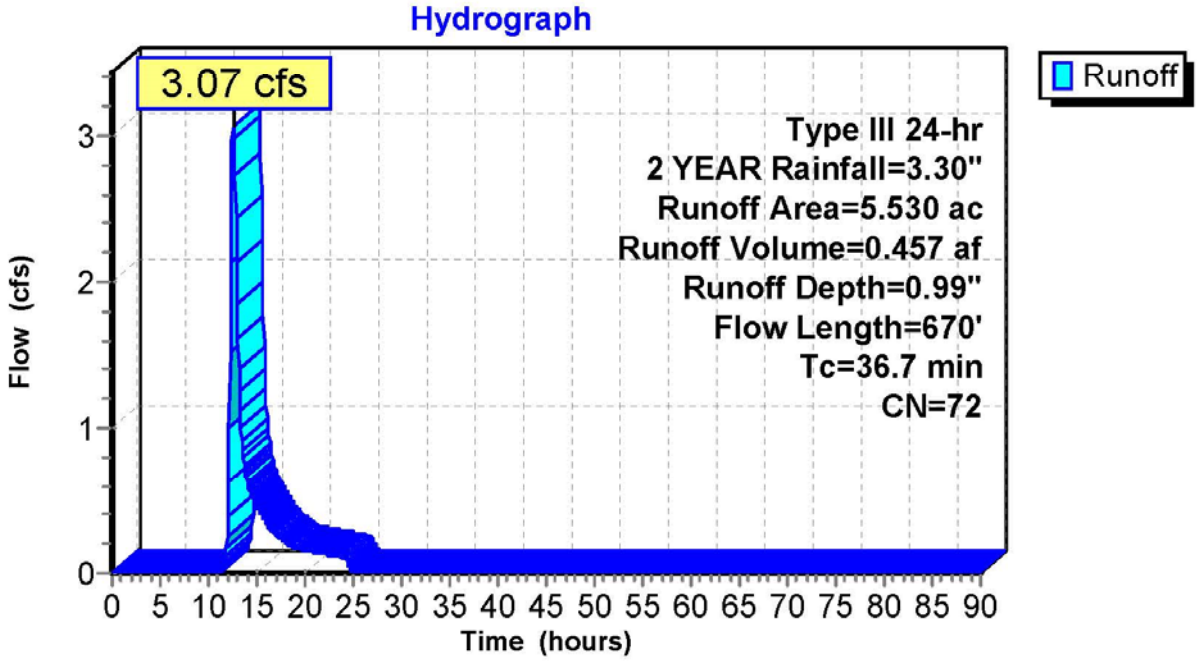
Runoff = 3.07 cfs @ 12.56 hrs, Volume= 0.457 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 2 YEAR Rainfall=3.30"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



Summary for Subcatchment PA #1: PA #1

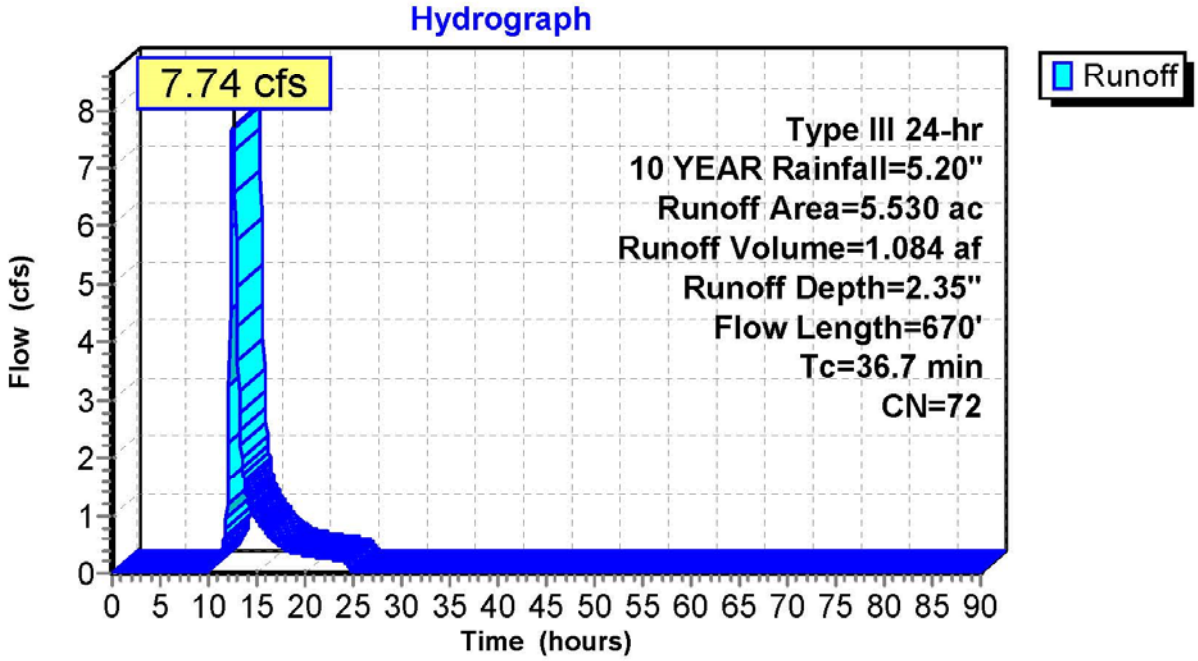
Runoff = 7.74 cfs @ 12.53 hrs, Volume= 1.084 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 10 YEAR Rainfall=5.20"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



Summary for Subcatchment PA #1: PA #1

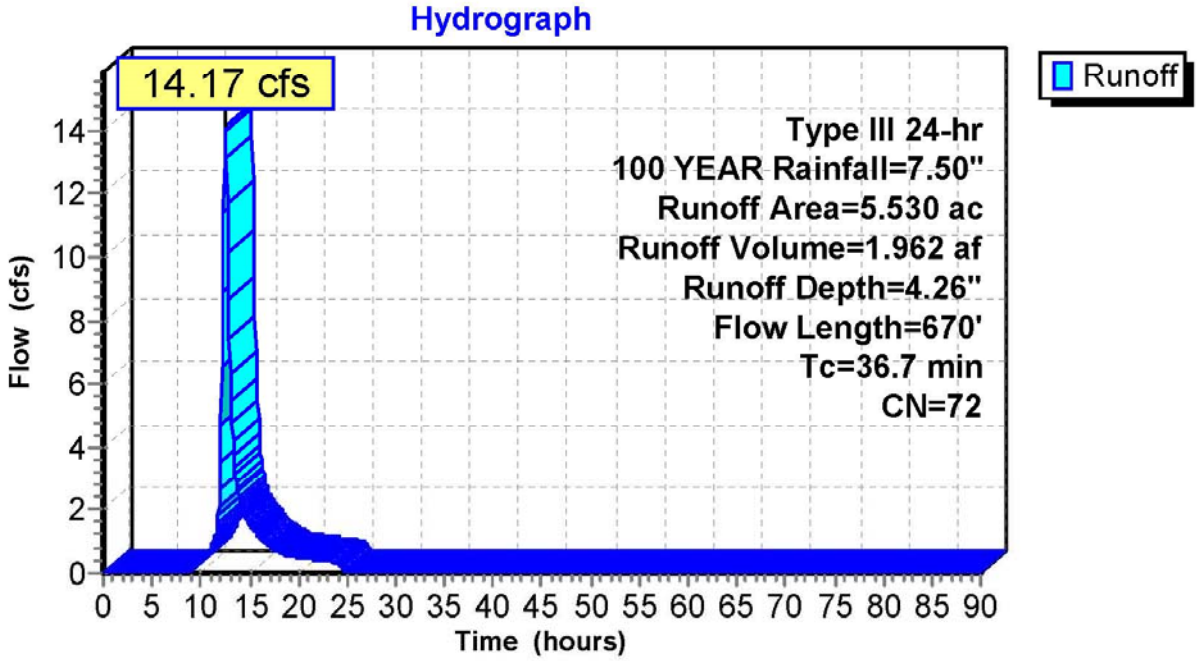
Runoff = 14.17 cfs @ 12.51 hrs, Volume= 1.962 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 100 YEAR Rainfall=7.50"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



2) Drainage Area #2

Summary for Subcatchment PA #2: PA #2

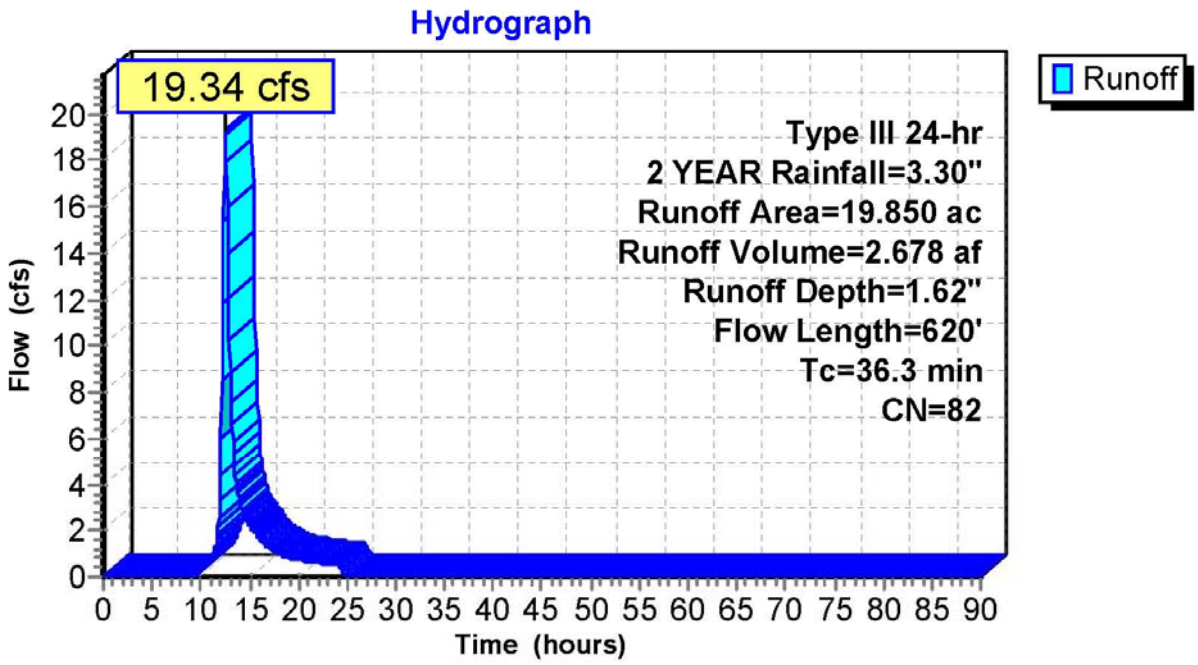
Runoff = 19.34 cfs @ 12.52 hrs, Volume= 2.678 af, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 2 YEAR Rainfall=3.30"

	Area (ac)	CN	Description
*	13.380	86	Urban industrial, 65% imp, HSG C
	2.000	98	Paved parking, HSG C
*	4.060	64	>75% Grass cover, Good, HSG C
*	0.410	61	Brush, Good, HSG C
	19.850	82	Weighted Average
	9.153		46.11% Pervious Area
	10.697		53.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.5	320	0.0112	2.15		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
36.3	620	Total			

Subcatchment PA #2: PA #2



Summary for Subcatchment PA #2: PA #2

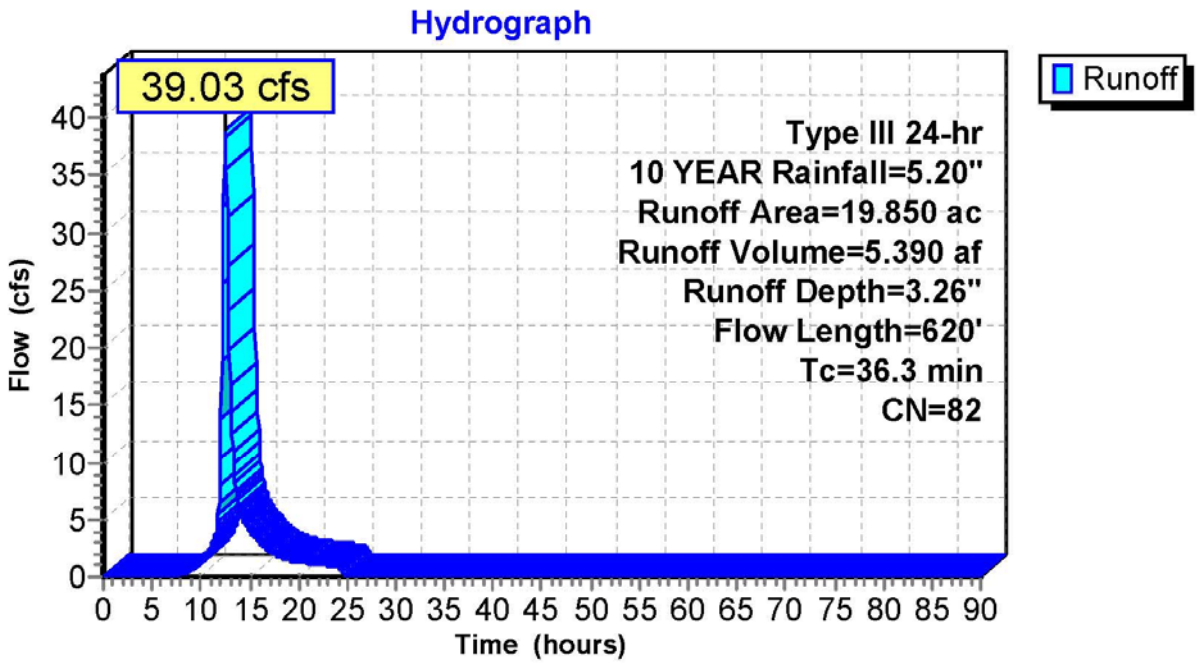
Runoff = 39.03 cfs @ 12.50 hrs, Volume= 5.390 af, Depth= 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 10 YEAR Rainfall=5.20"

	Area (ac)	CN	Description
*	13.380	86	Urban industrial, 65% imp, HSG C
	2.000	98	Paved parking, HSG C
*	4.060	64	>75% Grass cover, Good, HSG C
*	0.410	61	Brush, Good, HSG C
	19.850	82	Weighted Average
	9.153		46.11% Pervious Area
	10.697		53.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.5	320	0.0112	2.15		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
36.3	620	Total			

Subcatchment PA #2: PA #2



Summary for Subcatchment PA #2: PA #2

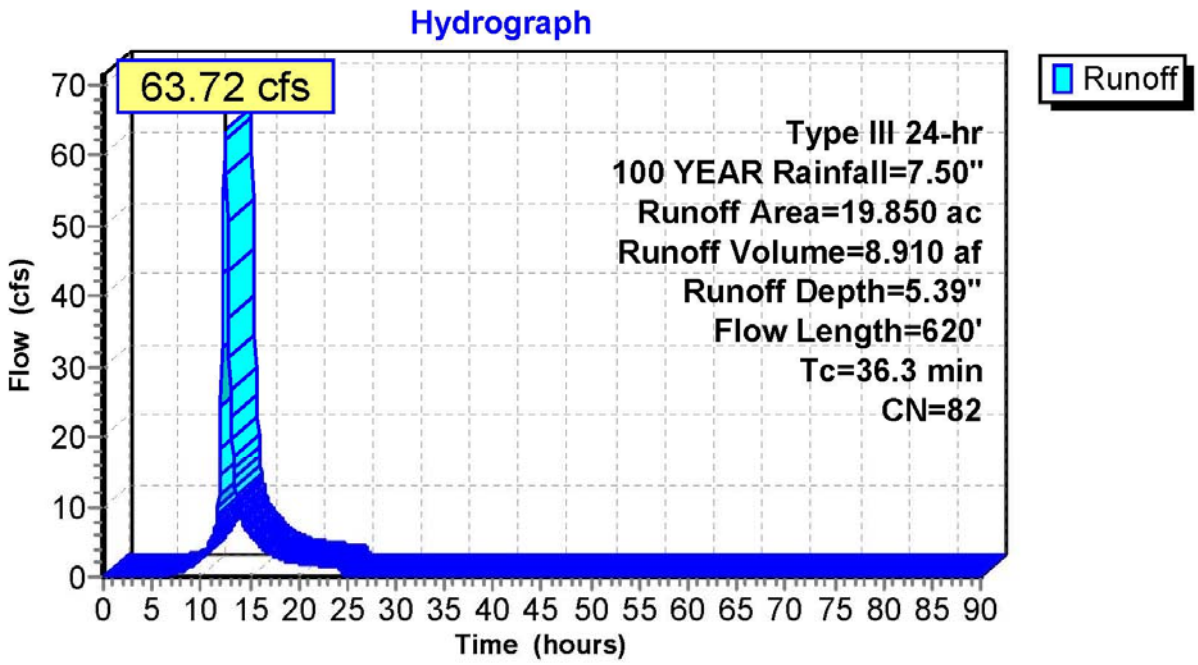
Runoff = 63.72 cfs @ 12.49 hrs, Volume= 8.910 af, Depth= 5.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 100 YEAR Rainfall=7.50"

	Area (ac)	CN	Description
*	13.380	86	Urban industrial, 65% imp, HSG C
	2.000	98	Paved parking, HSG C
*	4.060	64	>75% Grass cover, Good, HSG C
*	0.410	61	Brush, Good, HSG C
	19.850	82	Weighted Average
	9.153		46.11% Pervious Area
	10.697		53.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.5	320	0.0112	2.15		**Shallow Concentrated Flow, Segment #2** Paved Kv= 20.3 fps
36.3	620	Total			

Subcatchment PA #2: PA #2



3) Routing for Basin #1

Summary for Pond Basin #1: Pond #1

Inflow Area = 25.380 ac, 47.80% Impervious, Inflow Depth = 1.48" for 2 YEAR event
Inflow = 22.35 cfs @ 12.52 hrs, Volume= 3.135 af
Outflow = 0.59 cfs @ 24.01 hrs, Volume= 2.282 af, Atten= 97%, Lag= 689.6 min
Primary = 0.59 cfs @ 24.01 hrs, Volume= 2.282 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 74.20' @ 24.01 hrs Surf.Area= 44,303 sf Storage= 115,710 cf

Plug-Flow detention time= 2,072.5 min calculated for 2.282 af (73% of inflow)
Center-of-Mass det. time= 1,977.6 min (2,845.2 - 867.6)

Volume	Invert	Avail.Storage	Storage Description
#1	68.90'	382,696 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

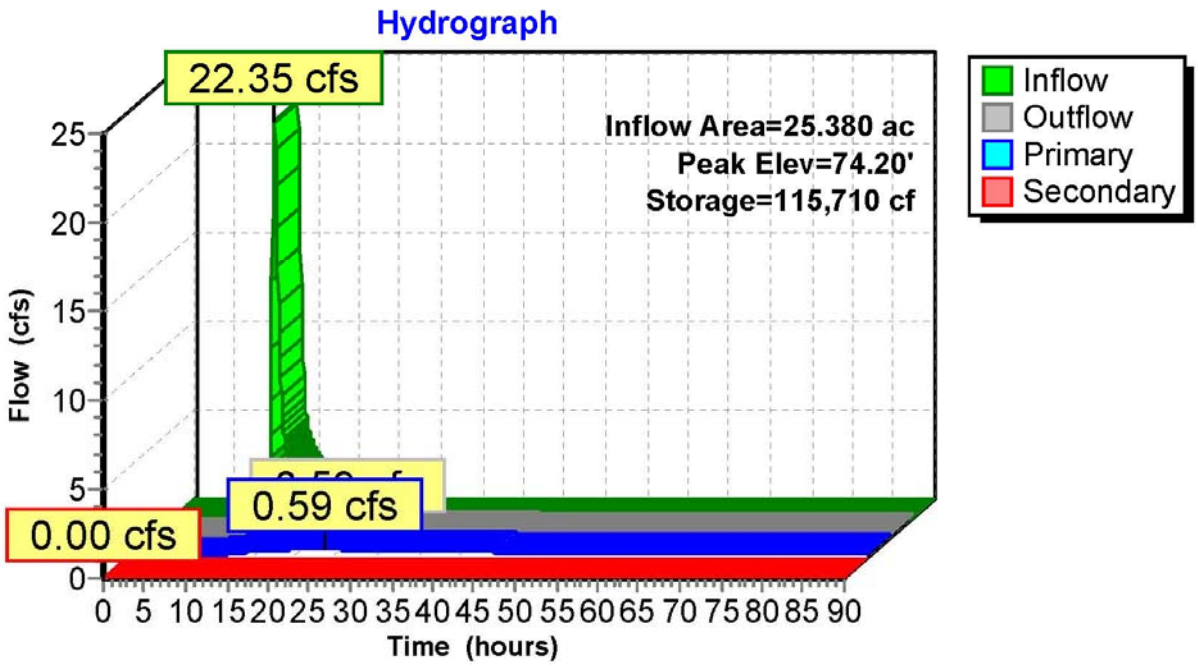
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.90	0	0	0
70.00	9,148	5,031	5,031
71.00	21,344	15,246	20,277
72.00	25,700	23,522	43,799
73.00	30,492	28,096	71,895
74.00	40,075	35,284	107,179
75.00	60,984	50,530	157,708
76.00	70,132	65,558	223,266
77.00	79,715	74,924	298,190
78.00	89,298	84,507	382,696

Device	Routing	Invert	Outlet Devices
#1	Device 6	68.90'	**2.5" Vert. Orifice/Grate** C= 0.600
#2	Device 6	74.00'	**9.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	76.00'	**60.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	68.80'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 68.80' / 66.53' S= 0.0264 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	77.50'	**75.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.59 cfs @ 24.01 hrs HW=74.20' (Free Discharge)
↑—**6=Culvert** (Passes 0.59 cfs of 67.23 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.37 cfs @ 10.98 fps)
—**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 1.44 fps)
—**3=Orifice/Grate** (Controls 0.00 cfs)
—**4=Orifice/Grate** (Controls 0.00 cfs)
—**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.90' (Free Discharge)
↑—**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #1: Pond #1



Summary for Pond Basin #1: Pond #1

Inflow Area = 25.380 ac, 47.80% Impervious, Inflow Depth = 3.06" for 10 YEAR event
Inflow = 46.75 cfs @ 12.50 hrs, Volume= 6.475 af
Outflow = 4.34 cfs @ 15.46 hrs, Volume= 5.465 af, Atten= 91%, Lag= 177.4 min
Primary = 4.34 cfs @ 15.46 hrs, Volume= 5.465 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 75.38' @ 15.46 hrs Surf.Area= 64,506 sf Storage= 181,863 cf

Plug-Flow detention time= 1,096.4 min calculated for 5.465 af (84% of inflow)
Center-of-Mass det. time= 1,029.9 min (1,877.0 - 847.2)

Volume	Invert	Avail.Storage	Storage Description
#1	68.90'	382,696 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

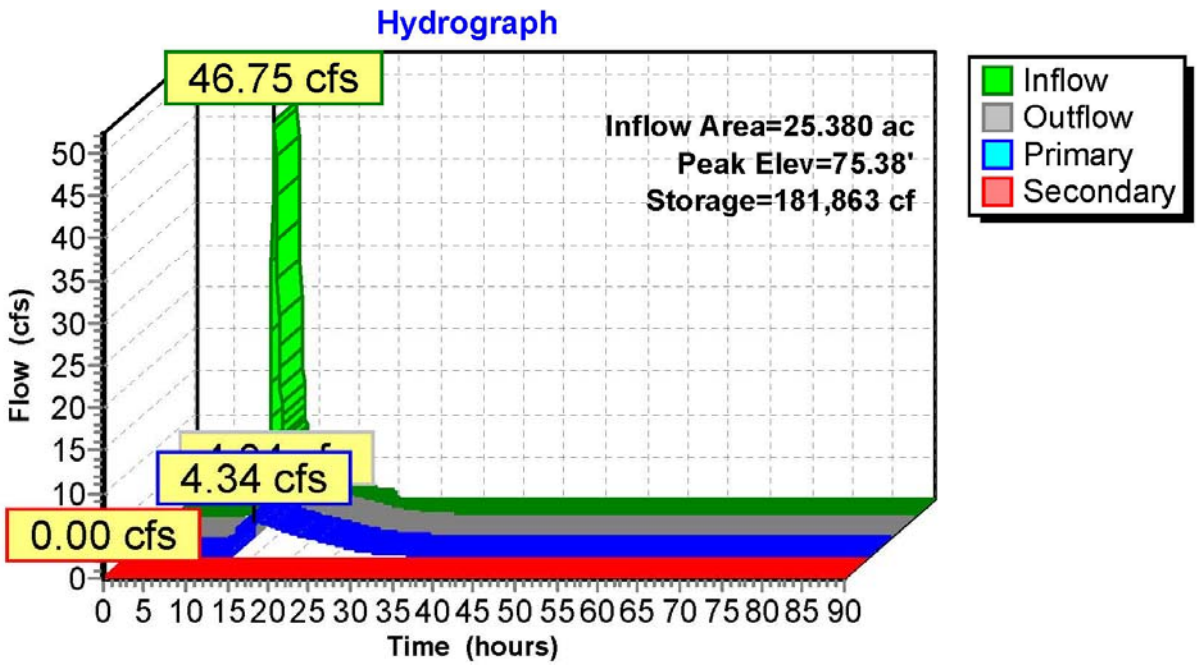
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.90	0	0	0
70.00	9,148	5,031	5,031
71.00	21,344	15,246	20,277
72.00	25,700	23,522	43,799
73.00	30,492	28,096	71,895
74.00	40,075	35,284	107,179
75.00	60,984	50,530	157,708
76.00	70,132	65,558	223,266
77.00	79,715	74,924	298,190
78.00	89,298	84,507	382,696

Device	Routing	Invert	Outlet Devices
#1	Device 6	68.90'	**2.5" Vert. Orifice/Grate** C= 0.600
#2	Device 6	74.00'	**9.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	76.00'	**60.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	68.80'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 68.80' / 66.53' S= 0.0264 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	77.50'	**75.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.34 cfs @ 15.46 hrs HW=75.38' (Free Discharge)
↑—**6=Culvert** (Passes 4.34 cfs of 76.75 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.41 cfs @ 12.16 fps)
—**2=Orifice/Grate** (Orifice Controls 3.92 cfs @ 3.78 fps)
—**3=Orifice/Grate** (Controls 0.00 cfs)
—**4=Orifice/Grate** (Controls 0.00 cfs)
—**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.90' (Free Discharge)
↑—**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #1: Pond #1



Summary for Pond Basin #1: Pond #1

Inflow Area = 25.380 ac, 47.80% Impervious, Inflow Depth = 5.14" for 100 YEAR event
Inflow = 77.86 cfs @ 12.50 hrs, Volume= 10.873 af
Outflow = 21.98 cfs @ 13.28 hrs, Volume= 9.816 af, Atten= 72%, Lag= 46.9 min
Primary = 21.98 cfs @ 13.28 hrs, Volume= 9.816 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 76.44' @ 13.28 hrs Surf.Area= 74,336 sf Storage= 254,957 cf

Plug-Flow detention time= 701.7 min calculated for 9.807 af (90% of inflow)
Center-of-Mass det. time= 657.2 min (1,490.0 - 832.8)

Volume	Invert	Avail.Storage	Storage Description
#1	68.90'	382,696 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

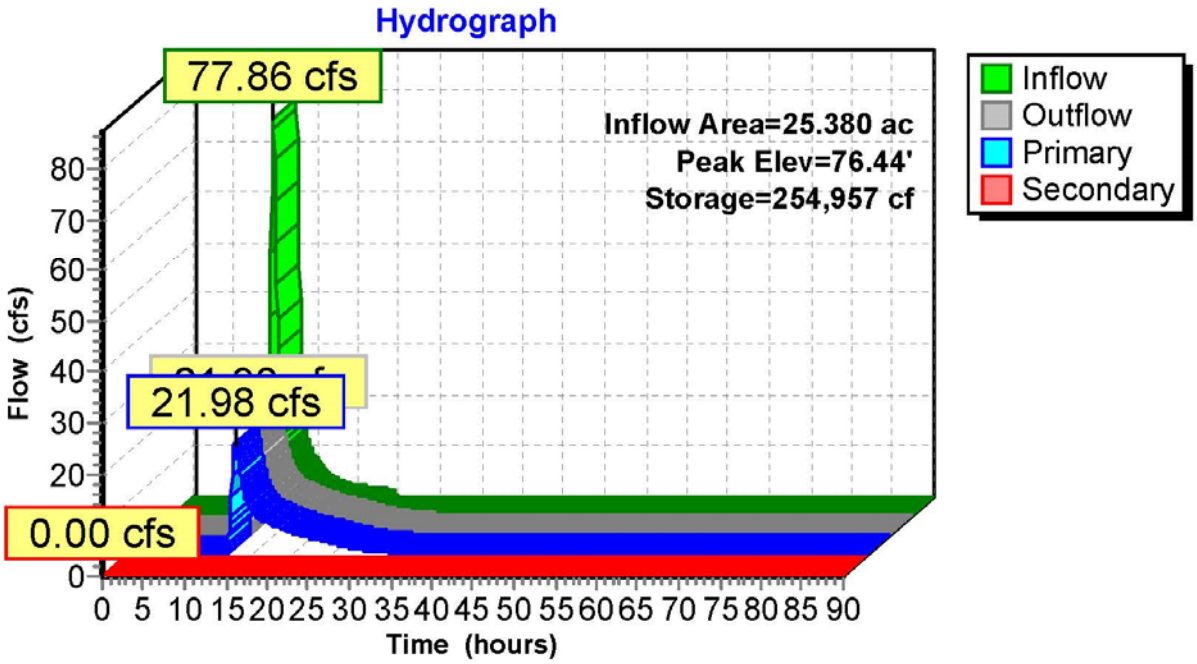
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.90	0	0	0
70.00	9,148	5,031	5,031
71.00	21,344	15,246	20,277
72.00	25,700	23,522	43,799
73.00	30,492	28,096	71,895
74.00	40,075	35,284	107,179
75.00	60,984	50,530	157,708
76.00	70,132	65,558	223,266
77.00	79,715	74,924	298,190
78.00	89,298	84,507	382,696

Device	Routing	Invert	Outlet Devices
#1	Device 6	68.90'	**2.5" Vert. Orifice/Grate** C= 0.600
#2	Device 6	74.00'	**9.0" W x 24.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 6	76.00'	**60.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 6	76.00'	**54.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#6	Primary	68.80'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 68.80' / 66.53' S= 0.0264 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#7	Secondary	77.50'	**75.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=21.97 cfs @ 13.28 hrs HW=76.44' (Free Discharge)
↑—**6=Culvert** (Passes 21.97 cfs of 84.33 cfs potential flow)
↑—**1=Orifice/Grate** (Orifice Controls 0.45 cfs @ 13.13 fps)
—**2=Orifice/Grate** (Orifice Controls 8.47 cfs @ 5.65 fps)
—**3=Orifice/Grate** (Orifice Controls 4.66 cfs @ 2.13 fps)
—**4=Orifice/Grate** (Orifice Controls 4.19 cfs @ 2.13 fps)
—**5=Orifice/Grate** (Orifice Controls 4.19 cfs @ 2.13 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.90' (Free Discharge)
↑—**7=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #1: Pond #1



ii. Post Development Peak Flow Conditions (Basin #3)

1) Drainage Area #3

Summary for Subcatchment PA #3: PA #3

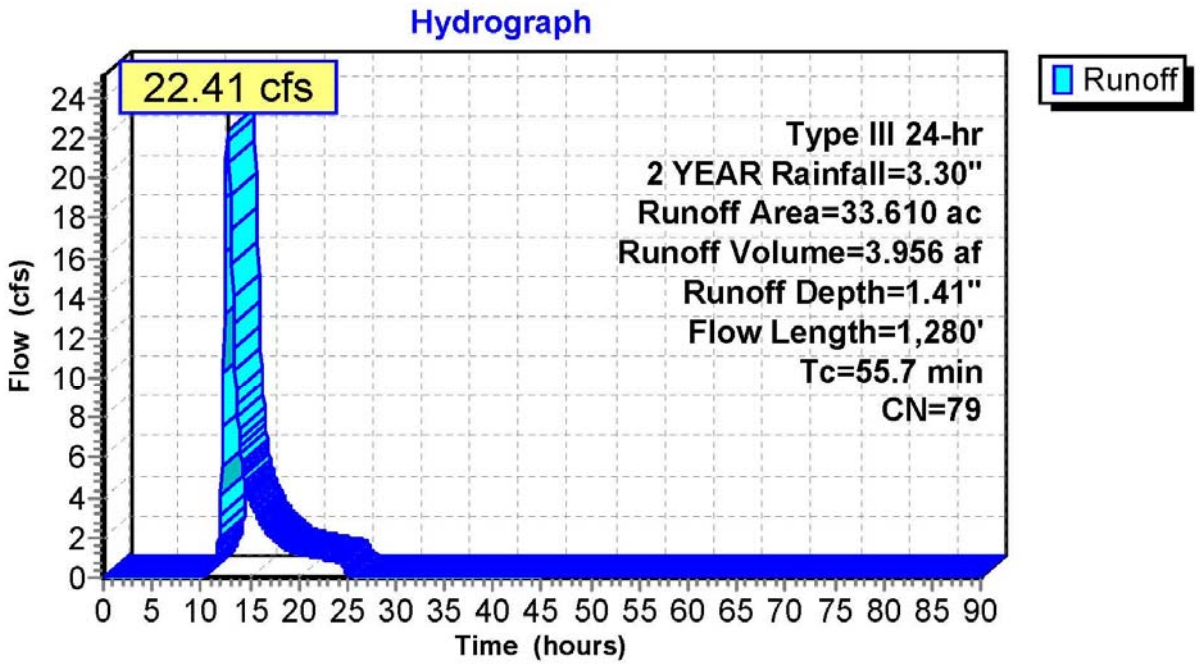
Runoff = 22.41 cfs @ 12.79 hrs, Volume= 3.956 af, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 2 YEAR Rainfall=3.30"

	Area (ac)	CN	Description
*	13.350	86	Urban industrial, 65% imp, HSG C
	5.100	98	Paved parking, HSG C
*	5.280	64	>75% Grass cover, Good, HSG C
	2.030	98	Paved roads w/curbs & sewers, HSG C
*	0.670	61	>75% Grass cover, Good, HSG C
*	4.240	61	>75% Grass cover, Good, HSG C
*	2.940	61	>75% Grass cover, Good, HSG C
	33.610	79	Weighted Average
	17.802		52.97% Pervious Area
	15.808		47.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
44.9	240	0.0063	0.09		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
10.8	1,040	0.0100	1.61		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
55.7	1,280	Total			

Subcatchment PA #3: PA #3



Summary for Subcatchment PA #3: PA #3

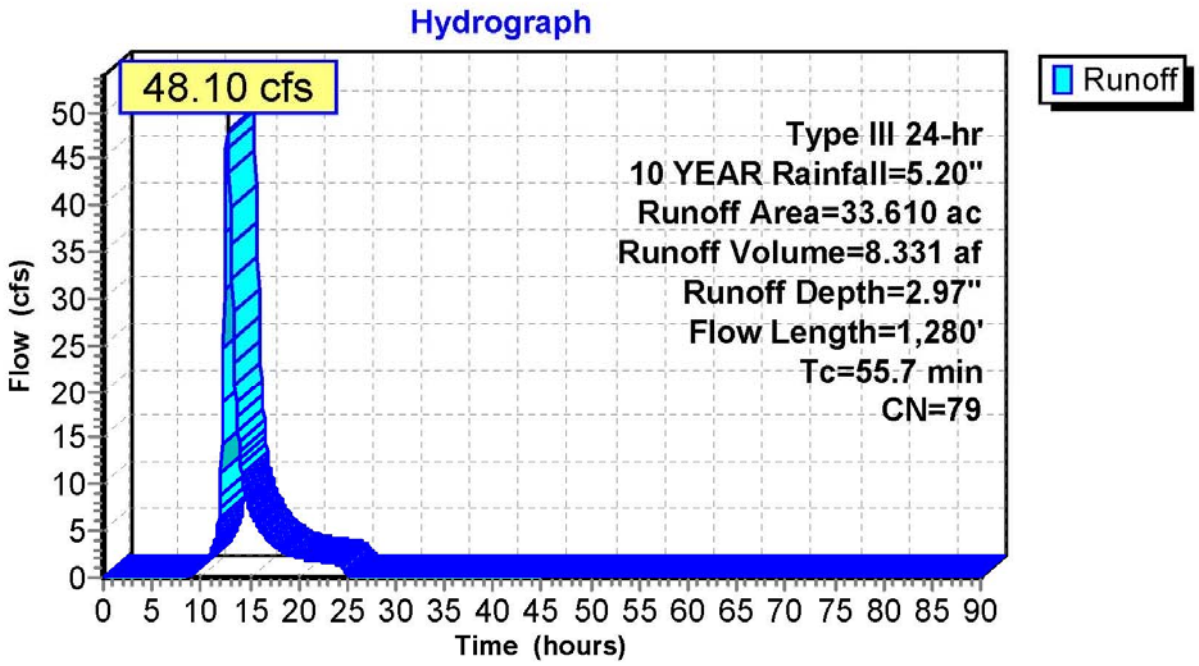
Runoff = 48.10 cfs @ 12.76 hrs, Volume= 8.331 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 10 YEAR Rainfall=5.20"

	Area (ac)	CN	Description
*	13.350	86	Urban industrial, 65% imp, HSG C
	5.100	98	Paved parking, HSG C
*	5.280	64	>75% Grass cover, Good, HSG C
	2.030	98	Paved roads w/curbs & sewers, HSG C
*	0.670	61	>75% Grass cover, Good, HSG C
*	4.240	61	>75% Grass cover, Good, HSG C
*	2.940	61	>75% Grass cover, Good, HSG C
	33.610	79	Weighted Average
	17.802		52.97% Pervious Area
	15.808		47.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
44.9	240	0.0063	0.09		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
10.8	1,040	0.0100	1.61		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
55.7	1,280	Total			

Subcatchment PA #3: PA #3



Summary for Subcatchment PA #3: PA #3

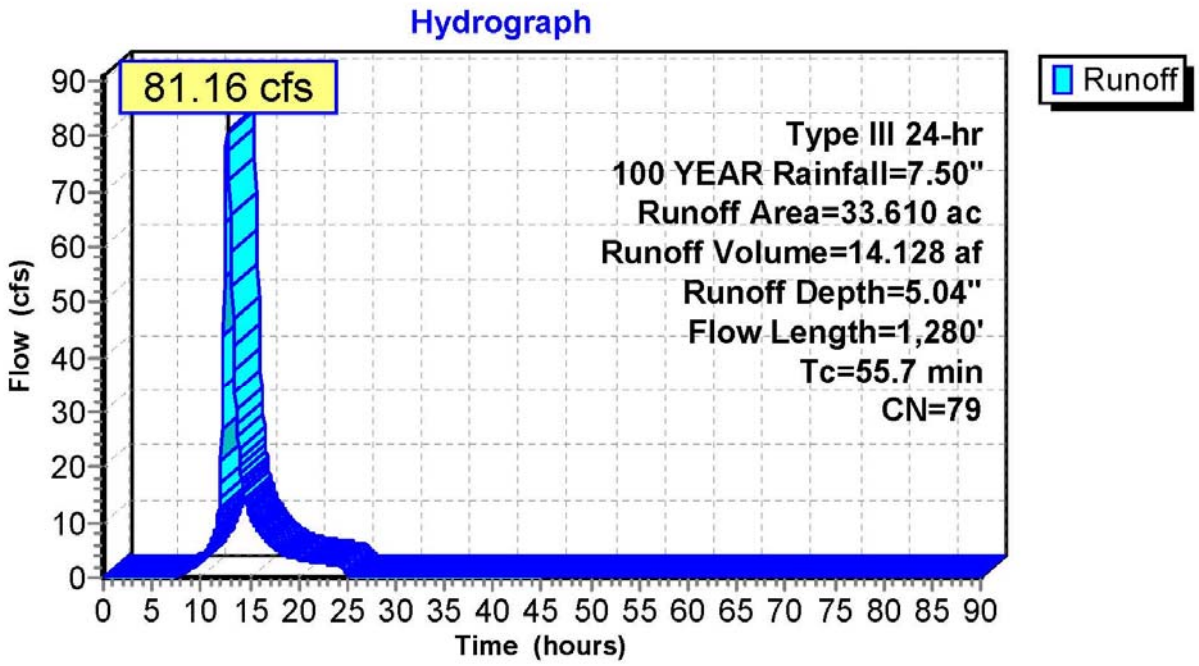
Runoff = 81.16 cfs @ 12.75 hrs, Volume= 14.128 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 100 YEAR Rainfall=7.50"

	Area (ac)	CN	Description
*	13.350	86	Urban industrial, 65% imp, HSG C
	5.100	98	Paved parking, HSG C
*	5.280	64	>75% Grass cover, Good, HSG C
	2.030	98	Paved roads w/curbs & sewers, HSG C
*	0.670	61	>75% Grass cover, Good, HSG C
*	4.240	61	>75% Grass cover, Good, HSG C
*	2.940	61	>75% Grass cover, Good, HSG C
	33.610	79	Weighted Average
	17.802		52.97% Pervious Area
	15.808		47.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
44.9	240	0.0063	0.09		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
10.8	1,040	0.0100	1.61		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
55.7	1,280	Total			

Subcatchment PA #3: PA #3



2) Routing for Basin #3

Summary for Pond Basin #3: Pond #3

Inflow Area = 33.610 ac, 47.03% Impervious, Inflow Depth = 1.41" for 2 YEAR event
Inflow = 22.41 cfs @ 12.79 hrs, Volume= 3.956 af
Outflow = 1.28 cfs @ 19.35 hrs, Volume= 3.220 af, Atten= 94%, Lag= 393.8 min
Primary = 1.28 cfs @ 19.35 hrs, Volume= 3.220 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 72.79' @ 19.35 hrs Surf.Area= 2.185 ac Storage= 3.013 af

Plug-Flow detention time= 1,744.5 min calculated for 3.217 af (81% of inflow)
Center-of-Mass det. time= 1,670.4 min (2,560.8 - 890.4)

Volume	Invert	Avail.Storage	Storage Description
#1	69.50'	13.505 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

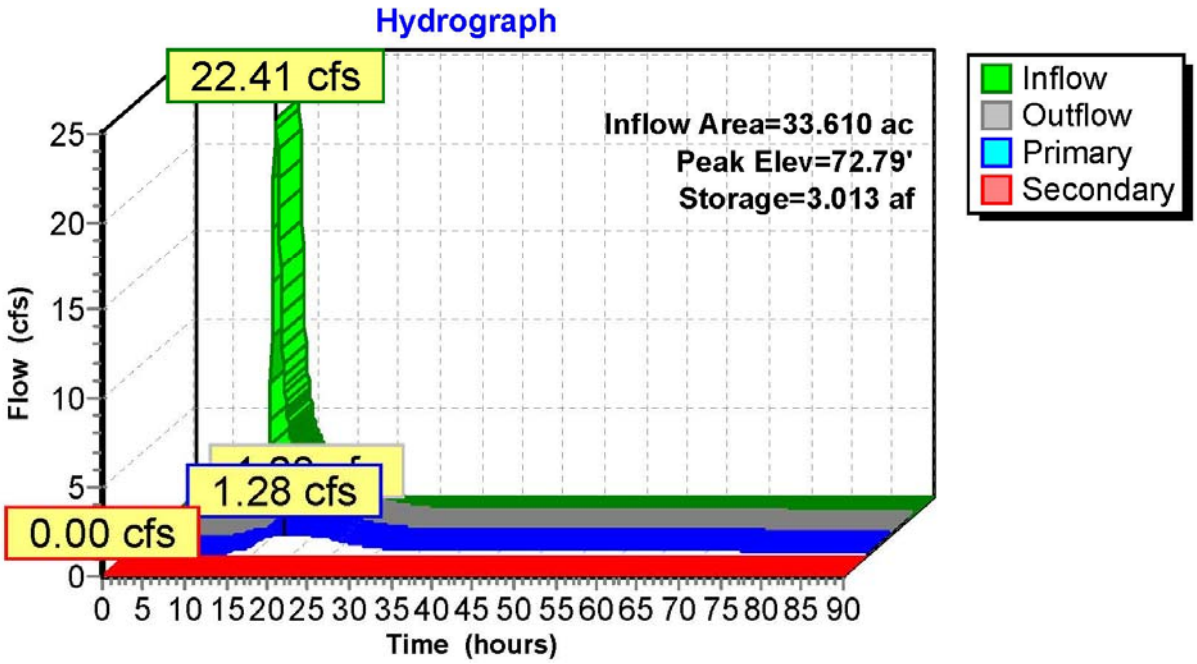
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
69.50	0.000	0.000	0.000
70.00	0.160	0.040	0.040
71.00	0.500	0.330	0.370
72.00	1.700	1.100	1.470
73.00	2.310	2.005	3.475
74.00	2.400	2.355	5.830
75.00	2.500	2.450	8.280
76.00	2.620	2.560	10.840
77.00	2.710	2.665	13.505

Device	Routing	Invert	Outlet Devices
#1	Device 3	69.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Device 3	72.50'	**20.0" W x 17.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	69.40'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.40' / 67.50' S= 0.0221 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#4	Secondary	76.00'	**120.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.28 cfs @ 19.35 hrs HW=72.79' (Free Discharge)
└**3=Culvert** (Passes 1.28 cfs of 46.85 cfs potential flow)
  └**1=Orifice/Grate** (Orifice Controls 0.42 cfs @ 8.57 fps)
  └**2=Orifice/Grate** (Orifice Controls 0.85 cfs @ 1.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=69.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #3: Pond #3



Summary for Pond Basin #3: Pond #3

Inflow Area = 33.610 ac, 47.03% Impervious, Inflow Depth = 2.97" for 10 YEAR event
Inflow = 48.10 cfs @ 12.76 hrs, Volume= 8.331 af
Outflow = 7.13 cfs @ 15.05 hrs, Volume= 7.471 af, Atten= 85%, Lag= 137.3 min
Primary = 7.13 cfs @ 15.05 hrs, Volume= 7.471 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 73.66' @ 15.05 hrs Surf.Area= 2.369 ac Storage= 5.012 af

Plug-Flow detention time= 935.0 min calculated for 7.471 af (90% of inflow)
Center-of-Mass det. time= 885.0 min (1,753.8 - 868.8)

Volume	Invert	Avail.Storage	Storage Description
#1	69.50'	13.505 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

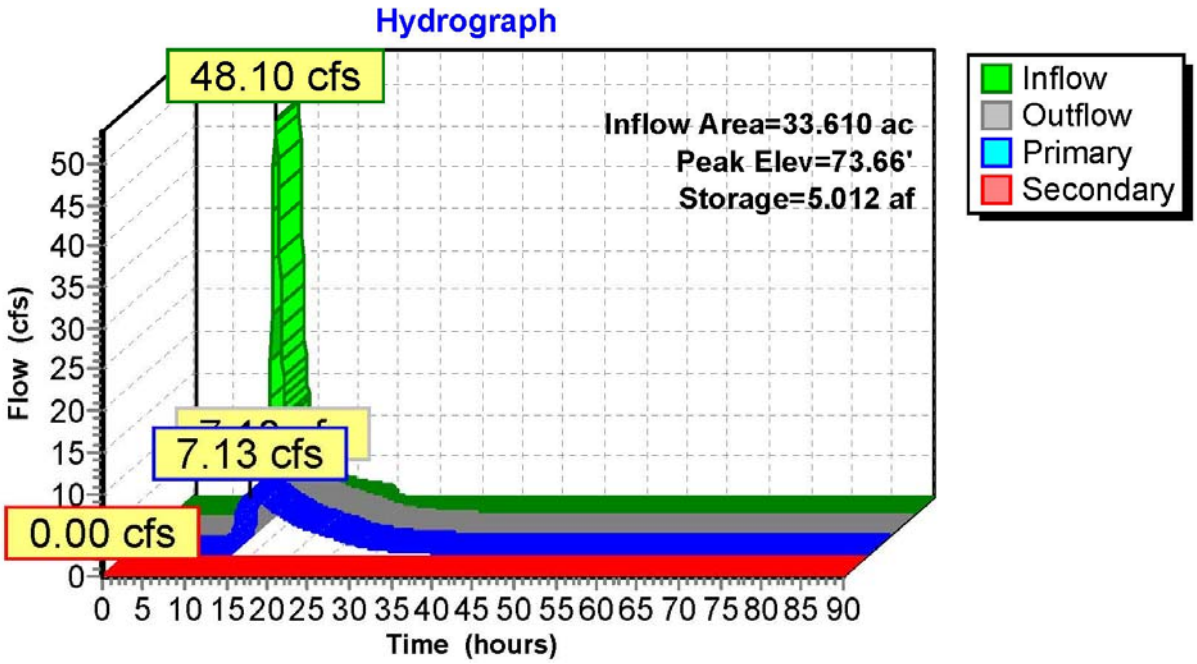
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
69.50	0.000	0.000	0.000
70.00	0.160	0.040	0.040
71.00	0.500	0.330	0.370
72.00	1.700	1.100	1.470
73.00	2.310	2.005	3.475
74.00	2.400	2.355	5.830
75.00	2.500	2.450	8.280
76.00	2.620	2.560	10.840
77.00	2.710	2.665	13.505

Device	Routing	Invert	Outlet Devices
#1	Device 3	69.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Device 3	72.50'	**20.0" W x 17.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	69.40'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.40' / 67.50' S= 0.0221 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#4	Secondary	76.00'	**120.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.13 cfs @ 15.05 hrs HW=73.66' (Free Discharge)
└**3=Culvert** (Passes 7.13 cfs of 56.51 cfs potential flow)
  └**1=Orifice/Grate** (Orifice Controls 0.47 cfs @ 9.67 fps)
  └**2=Orifice/Grate** (Orifice Controls 6.66 cfs @ 3.45 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=69.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #3: Pond #3



Summary for Pond Basin #3: Pond #3

Inflow Area = 33.610 ac, 47.03% Impervious, Inflow Depth = 5.04" for 100 YEAR event
Inflow = 81.16 cfs @ 12.75 hrs, Volume= 14.128 af
Outflow = 15.16 cfs @ 14.41 hrs, Volume= 13.212 af, Atten= 81%, Lag= 99.6 min
Primary = 15.16 cfs @ 14.41 hrs, Volume= 13.212 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Peak Elev= 74.89' @ 14.41 hrs Surf.Area= 2.489 ac Storage= 7.996 af

Plug-Flow detention time= 644.5 min calculated for 13.212 af (94% of inflow)
Center-of-Mass det. time= 609.8 min (1,463.6 - 853.8)

Volume	Invert	Avail.Storage	Storage Description
#1	69.50'	13.505 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

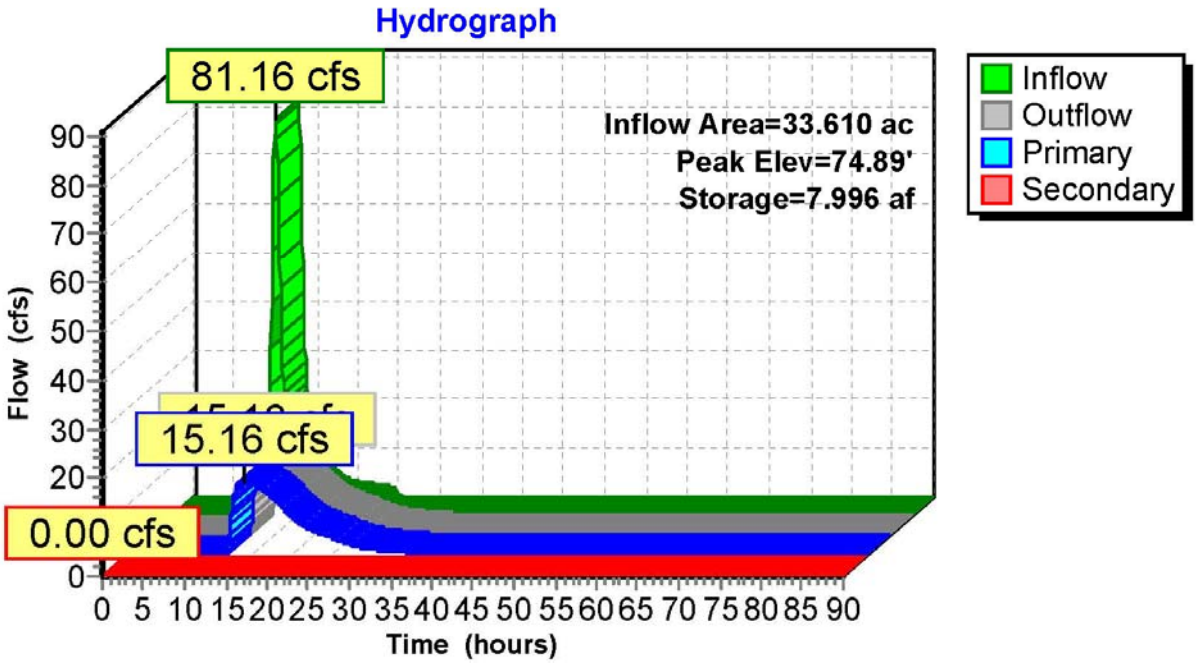
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
69.50	0.000	0.000	0.000
70.00	0.160	0.040	0.040
71.00	0.500	0.330	0.370
72.00	1.700	1.100	1.470
73.00	2.310	2.005	3.475
74.00	2.400	2.355	5.830
75.00	2.500	2.450	8.280
76.00	2.620	2.560	10.840
77.00	2.710	2.665	13.505

Device	Routing	Invert	Outlet Devices
#1	Device 3	69.50'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Device 3	72.50'	**20.0" W x 17.0" H Vert. Orifice/Grate** C= 0.600
#3	Primary	69.40'	**36.0" Round Culvert** L= 86.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.40' / 67.50' S= 0.0221 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#4	Secondary	76.00'	**120.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=15.16 cfs @ 14.41 hrs HW=74.89' (Free Discharge)
└**3=Culvert** (Passes 15.16 cfs of 67.95 cfs potential flow)
  ├**1=Orifice/Grate** (Orifice Controls 0.54 cfs @ 11.04 fps)
  └**2=Orifice/Grate** (Orifice Controls 14.61 cfs @ 6.19 fps)

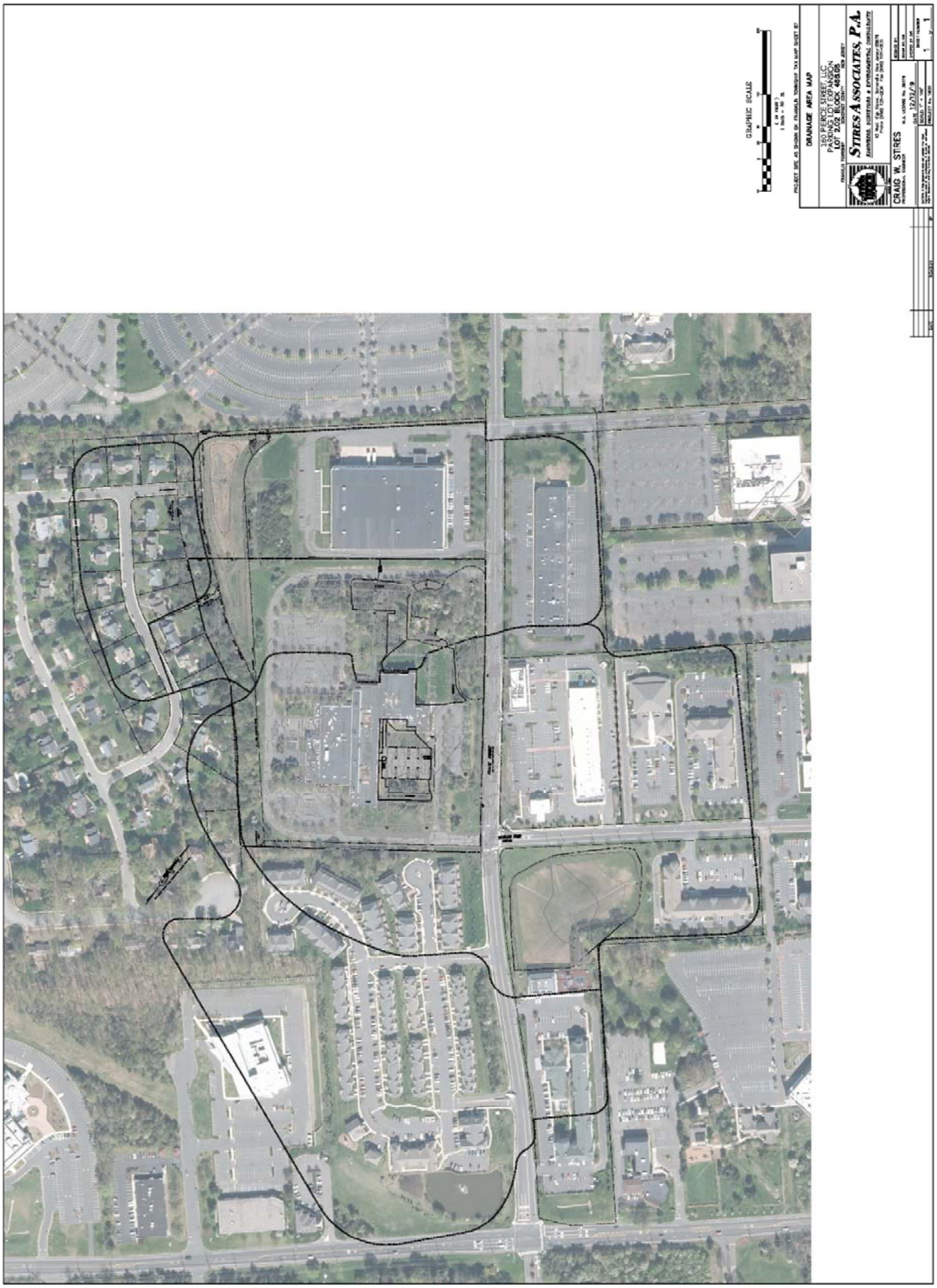
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=69.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Basin #3: Pond #3



6. 150 Pierce Street, LLC - June, 2020

i. Post Development Peak Flow Conditions (Basin #1)


GRAPHIC SCALE
DRAINAGE AREA MAP
STIRES ASSOCIATES, P.A.
CRAIG W. STIRES

1) Drainage Area #1

Summary for Subcatchment PA #1: PA #1

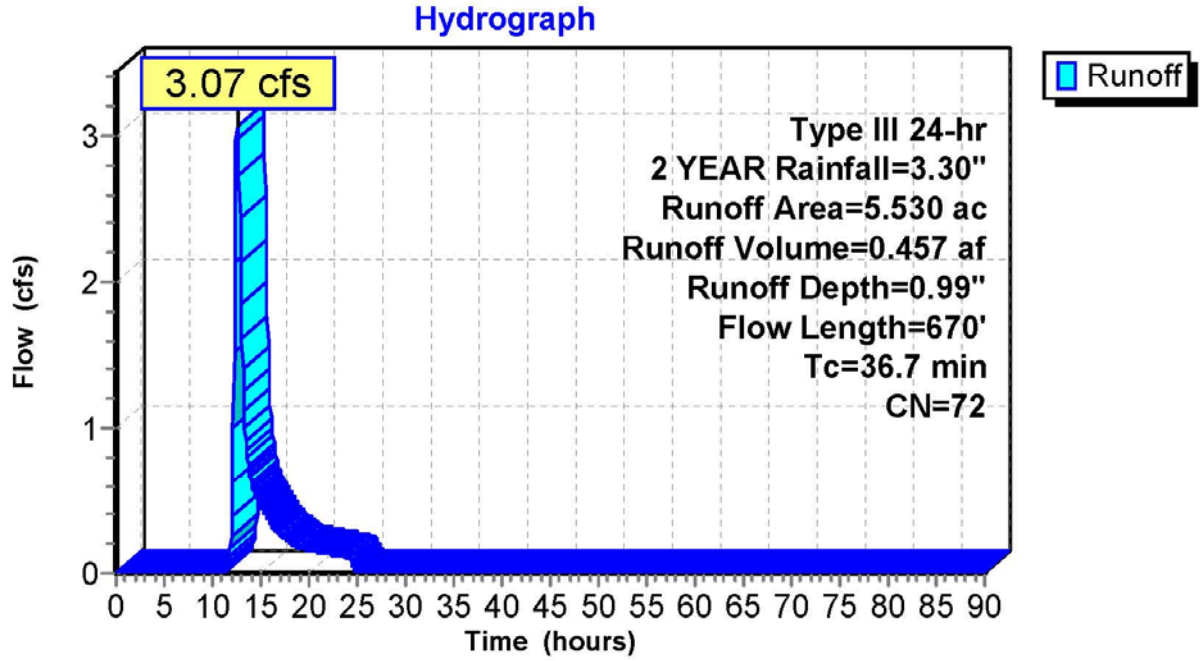
Runoff = 3.07 cfs @ 12.56 hrs, Volume= 0.457 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 2 YEAR Rainfall=3.30"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



Summary for Subcatchment PA #1: PA #1

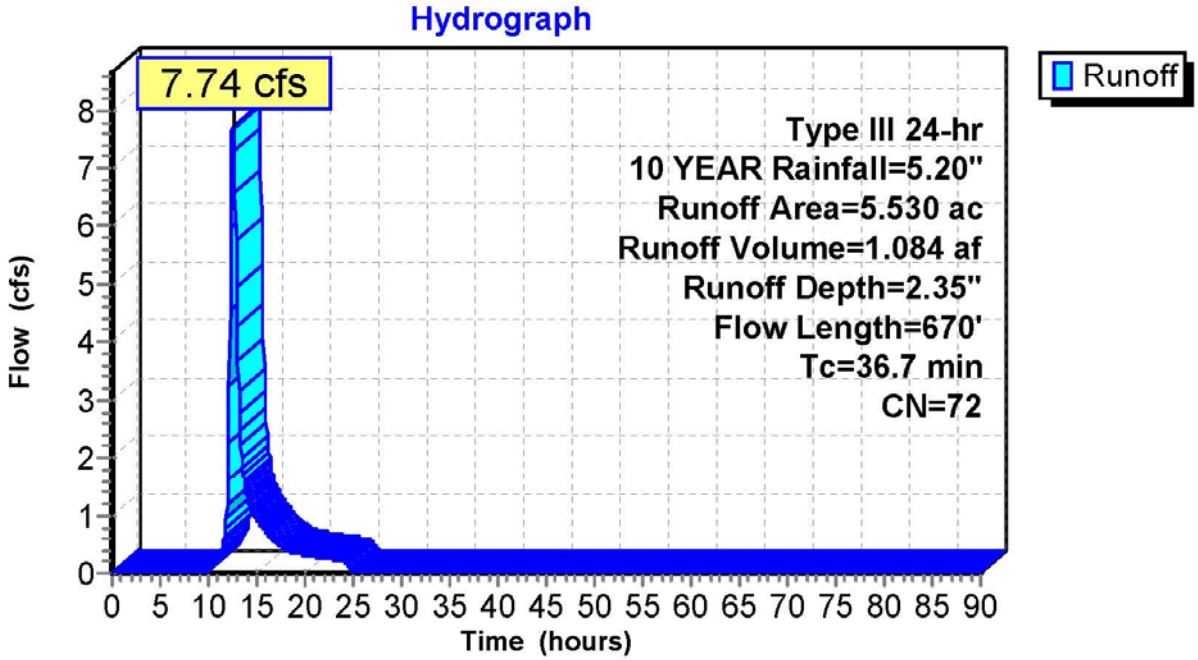
Runoff = 7.74 cfs @ 12.53 hrs, Volume= 1.084 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 10 YEAR Rainfall=5.20"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



Summary for Subcatchment PA #1: PA #1

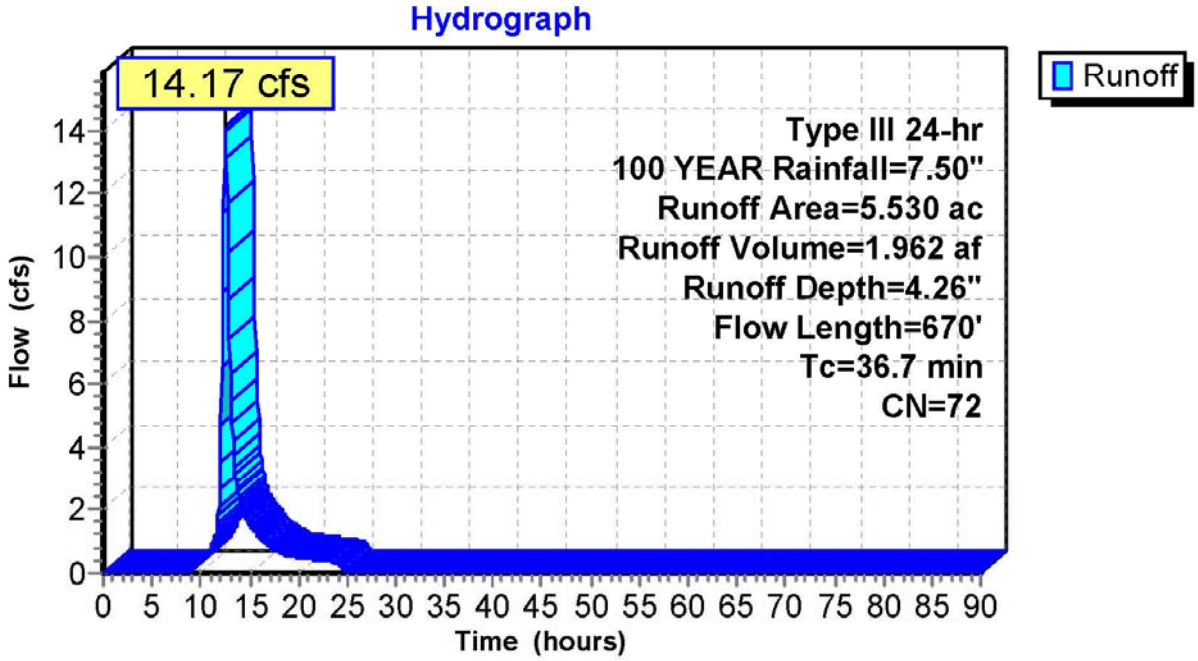
Runoff = 14.17 cfs @ 12.51 hrs, Volume= 1.962 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.08 hrs
Type III 24-hr 100 YEAR Rainfall=7.50"

	Area (ac)	CN	Description
	3.600	72	1/3 acre lots, 30% imp, HSG B
*	0.710	90	Paved roads w/open ditches, 50% imp, HSG C
*	1.220	60	Brush, Good, HSG C
	5.530	72	Weighted Average
	4.095		74.05% Pervious Area
	1.435		25.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.8	300	0.0200	0.15		**Sheet Flow, Segment #1** Grass: Dense n= 0.240 P2= 3.30"
2.9	370	0.0170	2.10		**Shallow Concentrated Flow, Segment #2** Unpaved Kv= 16.1 fps
36.7	670	Total			

Subcatchment PA #1: PA #1



2) Drainage Area #2