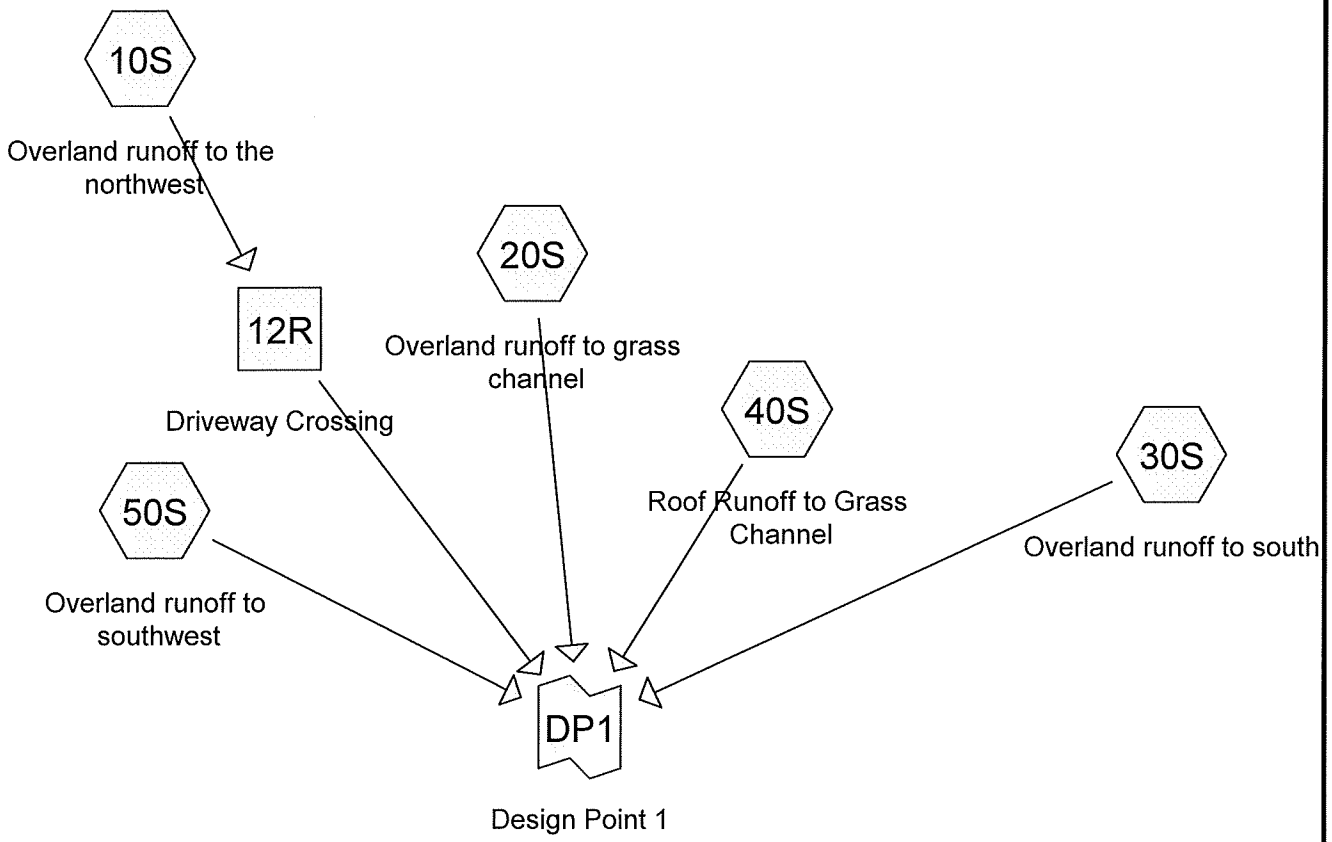
PROPOSED CONDITIONS

2 YEAR STORM



Subcat Reach Pond Link

Drainage Diagram for 357 Electric Avenue - Post development2
Prepared by {enter your company name here} 11/20/2015
HydroCAD® 7.10 s/n 000655 © 2005 HydroCAD Software Solutions LLC

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10S: Overland runoff to the northwest Runoff Area=3.210 ac Runoff Depth>1.70"
Flow Length=625' Tc=15.8 min CN=88 Runoff=5.05 cfs 0.454 af

Subcatchment 20S: Overland runoff to grass channel Runoff Area=1.410 ac Runoff Depth>2.04"
Flow Length=190' Tc=5.0 min CN=92 Runoff=3.52 cfs 0.239 af

Subcatchment 30S: Overland runoff to south Runoff Area=3.020 ac Runoff Depth>1.70"
Flow Length=521' Tc=16.2 min CN=88 Runoff=4.71 cfs 0.427 af

Subcatchment 40S: Roof Runoff to Grass Channel Runoff Area=0.380 ac Runoff Depth>2.59"
Flow Length=300' Tc=5.0 min CN=98 Runoff=1.11 cfs 0.082 af

Subcatchment 50S: Overland runoff to southwest Runoff Area=0.300 ac Runoff Depth>0.83"
Flow Length=110' Tc=5.0 min CN=74 Runoff=0.30 cfs 0.021 af

Reach 12R: Driveway Crossing Peak Depth=0.54' Max Vel=4.9 fps Inflow=5.05 cfs 0.454 af
D=15.0" n=0.013 L=100.0' S=0.0100 '/' Capacity=12.92 cfs Outflow=5.00 cfs 0.454 af

Link DP1: Design Point 1 Inflow=12.21 cfs 1.223 af
Primary=12.21 cfs 1.223 af

Total Runoff Area = 8.320 ac Runoff Volume = 1.223 af Average Runoff Depth = 1.76"

Subcatchment 10S: Overland runoff to the northwest

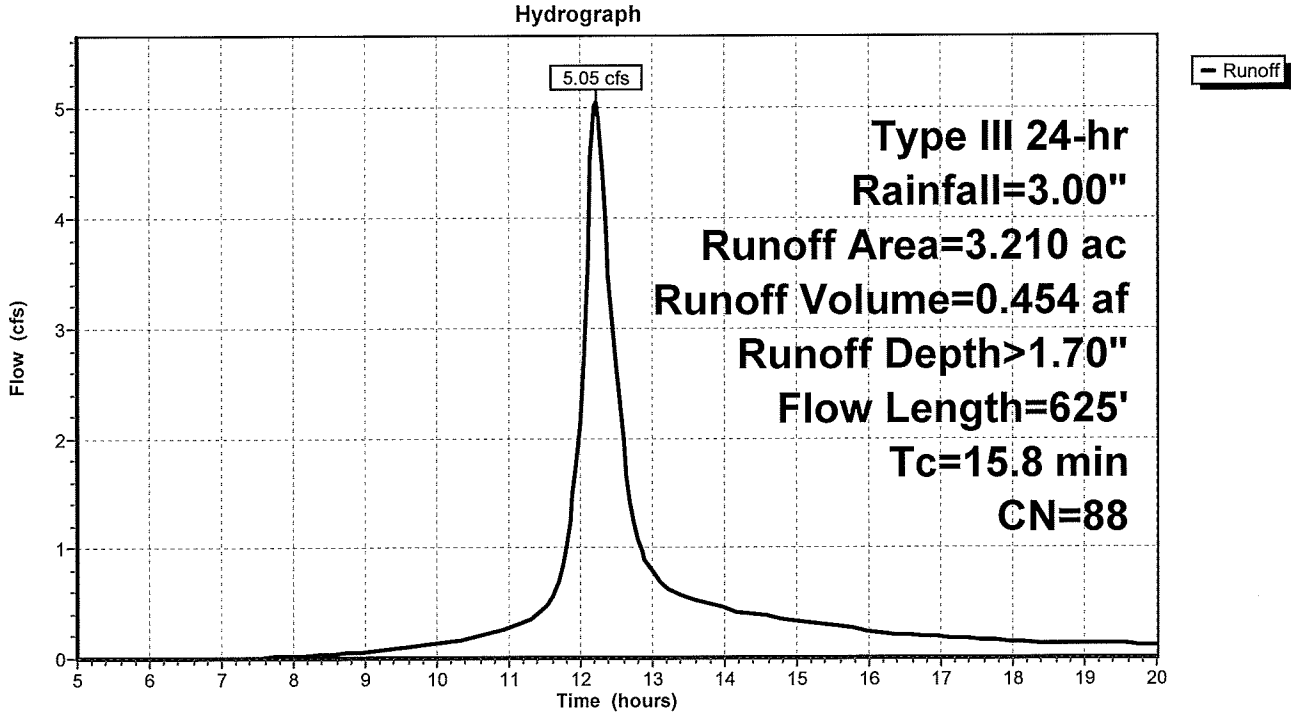
Runoff = 5.05 cfs @ 12.22 hrs, Volume= 0.454 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
1.920	98	Paved parking & roofs
0.740	74	>75% Grass cover, Good, HSG C
0.550	70	Woods, Good, HSG C
3.210	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.00"
1.9	275	0.0146	2.5		**Shallow Concentrated Flow, Path 2** Paved Kv= 20.3 fps
1.2	300	0.0133	4.0	32.08	**Channel Flow, Path 3** Area= 8.0 sf Perim= 13.6' r= 0.59' n= 0.030 Earth, grassed & winding
15.8	625	Total			

Subcatchment 10S: Overland runoff to the northwest



Hydrograph for Subcatchment 10S: Overland runoff to the northwest

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.22	0.00	0.00
6.25	0.23	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.26	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.29	0.00	0.00
7.50	0.30	0.00	0.00
7.75	0.32	0.00	0.01
8.00	0.34	0.00	0.02
8.25	0.36	0.01	0.02
8.50	0.39	0.01	0.03
8.75	0.41	0.01	0.05
9.00	0.44	0.02	0.06
9.25	0.47	0.02	0.07
9.50	0.50	0.03	0.09
9.75	0.53	0.04	0.11
10.00	0.57	0.05	0.13
10.25	0.61	0.07	0.16
10.50	0.65	0.08	0.19
10.75	0.70	0.10	0.23
11.00	0.75	0.12	0.27
11.25	0.81	0.15	0.34
11.50	0.89	0.19	0.46
11.75	1.07	0.29	0.82
12.00	1.50	0.58	**2.14**
12.25	1.93	0.91	**4.93**
12.50	2.11	1.05	2.68
12.75	2.19	1.12	1.21
13.00	2.25	1.17	0.79
13.25	2.30	1.21	0.61
13.50	2.35	1.25	0.55
13.75	2.39	1.29	0.50
14.00	2.43	1.32	0.45
14.25	2.47	1.35	0.41
14.50	2.50	1.38	0.38
14.75	2.53	1.41	0.36
15.00	2.56	1.44	0.34
15.25	2.59	1.46	0.31
15.50	2.61	1.48	0.29
15.75	2.64	1.50	0.27
16.00	2.66	1.52	0.24
16.25	2.68	1.53	0.22
16.50	2.70	1.55	0.21
16.75	2.71	1.56	0.20
17.00	2.73	1.58	0.19
17.25	2.74	1.59	0.18
17.50	2.76	1.60	0.17
17.75	2.77	1.62	0.16
18.00	2.78	1.63	0.15
18.25	2.80	1.64	0.14
18.50	2.81	1.65	0.13
18.75	2.82	1.66	0.13
19.00	2.83	1.67	0.13
19.25	2.84	1.68	0.12
19.50	2.85	1.69	0.12
19.75	2.86	1.70	0.12
20.00	**2.87**	**1.70**	0.11

Subcatchment 20S: Overland runoff to grass channel

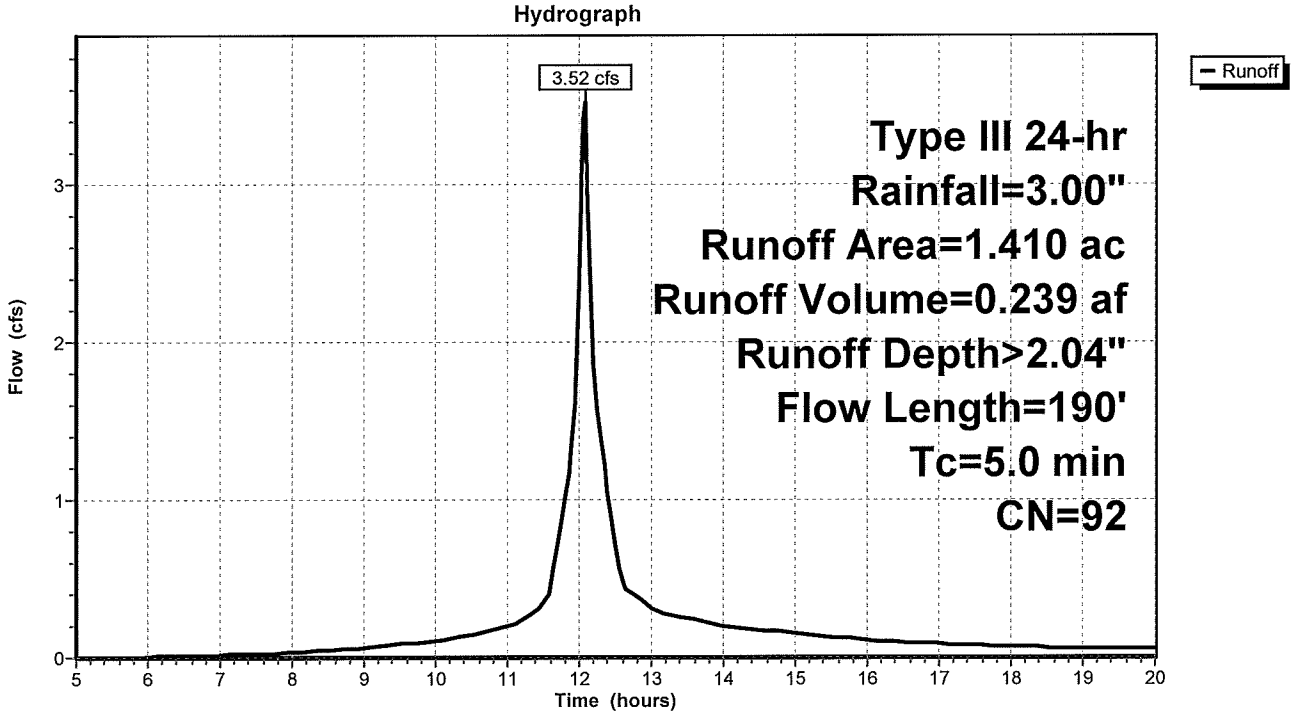
Runoff = 3.52 cfs @ 12.07 hrs, Volume= 0.239 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
1.070	98	Paved parking & roofs
0.340	74	>75% Grass cover, Good, HSG C
1.410	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	190		0.6		**Direct Entry, Path 1**

Subcatchment 20S: Overland runoff to grass channel



Hydrograph for Subcatchment 20S: Overland runoff to grass channel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.22	0.00	0.01
6.25	0.23	0.00	0.01
6.50	0.24	0.00	0.01
6.75	0.26	0.01	0.01
7.00	0.27	0.01	0.02
7.25	0.29	0.01	0.02
7.50	0.30	0.02	0.02
7.75	0.32	0.02	0.03
8.00	0.34	0.03	0.03
8.25	0.36	0.03	0.04
8.50	0.39	0.04	0.05
8.75	0.41	0.05	0.05
9.00	0.44	0.06	0.06
9.25	0.47	0.07	0.07
9.50	0.50	0.09	0.08
9.75	0.53	0.10	0.09
10.00	0.57	0.12	0.11
10.25	0.61	0.14	0.12
10.50	0.65	0.17	0.14
10.75	0.70	0.20	0.17
11.00	0.75	0.23	0.19
11.25	0.81	0.27	0.25
11.50	0.89	0.33	0.33
11.75	1.07	0.45	0.85
12.00	1.50	0.80	**2.39**
12.25	1.93	1.18	**1.57**
12.50	2.11	1.33	0.72
12.75	2.19	1.41	0.40
13.00	2.25	1.46	0.31
13.25	2.30	1.51	0.27
13.50	2.35	1.56	0.25
13.75	2.39	1.60	0.22
14.00	2.43	1.63	0.20
14.25	2.47	1.66	0.19
14.50	2.50	1.70	0.17
14.75	2.53	1.72	0.16
15.00	2.56	1.75	0.15
15.25	2.59	1.78	0.14
15.50	2.61	1.80	0.13
15.75	2.64	1.82	0.12
16.00	2.66	1.84	0.11
16.25	2.68	1.86	0.10
16.50	2.70	1.87	0.10
16.75	2.71	1.89	0.09
17.00	2.73	1.91	0.09
17.25	2.74	1.92	0.08
17.50	2.76	1.93	0.08
17.75	2.77	1.95	0.07
18.00	2.78	1.96	0.07
18.25	2.80	1.97	0.06
18.50	2.81	1.98	0.06
18.75	2.82	1.99	0.06
19.00	2.83	2.00	0.06
19.25	2.84	2.01	0.06
19.50	2.85	2.02	0.06
19.75	2.86	2.03	0.05
20.00	**2.87**	**2.04**	0.05

Subcatchment 30S: Overland runoff to south

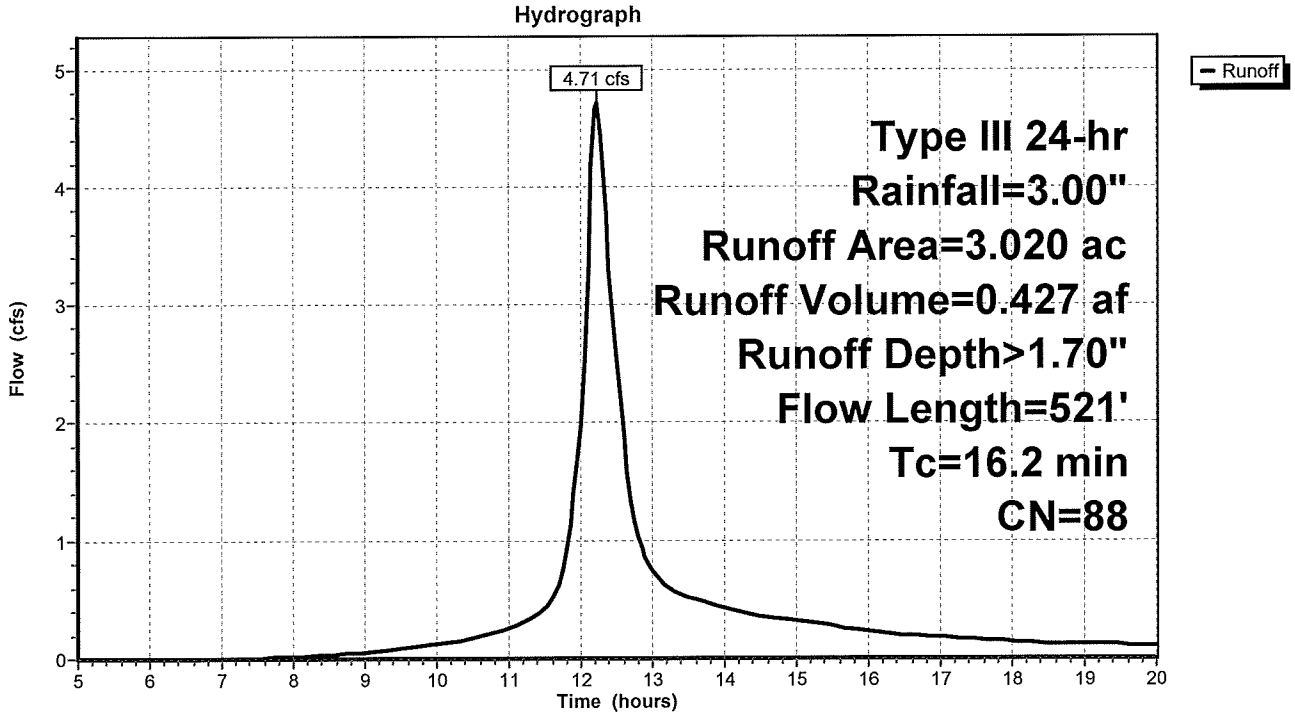
Runoff = 4.71 cfs @ 12.22 hrs, Volume= 0.427 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
1.860	98	Paved parking & roofs
0.490	74	>75% Grass cover, Good, HSG C
0.670	70	Woods, Good, HSG C
3.020	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.00"
2.7	421	0.0162	2.6		**Shallow Concentrated Flow, Path 2** Paved Kv= 20.3 fps
0.2	25	0.0600	1.7		**Shallow Concentrated Flow, Path 3** Short Grass Pasture Kv= 7.0 fps
0.6	25	0.0200	0.7		**Shallow Concentrated Flow, Path 4** Woodland Kv= 5.0 fps
16.2	521	Total			

Subcatchment 30S: Overland runoff to south



Hydrograph for Subcatchment 30S: Overland runoff to south

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.22	0.00	0.00
6.25	0.23	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.26	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.29	0.00	0.00
7.50	0.30	0.00	0.00
7.75	0.32	0.00	0.01
8.00	0.34	0.00	0.02
8.25	0.36	0.01	0.02
8.50	0.39	0.01	0.03
8.75	0.41	0.01	0.04
9.00	0.44	0.02	0.06
9.25	0.47	0.02	0.07
9.50	0.50	0.03	0.09
9.75	0.53	0.04	0.10
10.00	0.57	0.05	0.12
10.25	0.61	0.07	0.15
10.50	0.65	0.08	0.18
10.75	0.70	0.10	0.22
11.00	0.75	0.12	0.26
11.25	0.81	0.15	0.31
11.50	0.89	0.19	0.43
11.75	1.07	0.29	0.76
12.00	1.50	0.58	**1.98**
12.25	1.93	0.91	**4.63**
12.50	2.11	1.05	2.57
12.75	2.19	1.12	1.17
13.00	2.25	1.17	0.75
13.25	2.30	1.21	0.58
13.50	2.35	1.25	0.52
13.75	2.39	1.29	0.47
14.00	2.43	1.32	0.43
14.25	2.47	1.35	0.39
14.50	2.50	1.38	0.36
14.75	2.53	1.41	0.34
15.00	2.56	1.44	0.32
15.25	2.59	1.46	0.29
15.50	2.61	1.48	0.27
15.75	2.64	1.50	0.25
16.00	2.66	1.52	0.23
16.25	2.68	1.53	0.21
16.50	2.70	1.55	0.20
16.75	2.71	1.56	0.19
17.00	2.73	1.58	0.18
17.25	2.74	1.59	0.17
17.50	2.76	1.60	0.16
17.75	2.77	1.62	0.15
18.00	2.78	1.63	0.14
18.25	2.80	1.64	0.13
18.50	2.81	1.65	0.13
18.75	2.82	1.66	0.12
19.00	2.83	1.67	0.12
19.25	2.84	1.68	0.12
19.50	2.85	1.69	0.11
19.75	2.86	1.70	0.11
20.00	**2.87**	**1.70**	0.11

Subcatchment 40S: Roof Runoff to Grass Channel

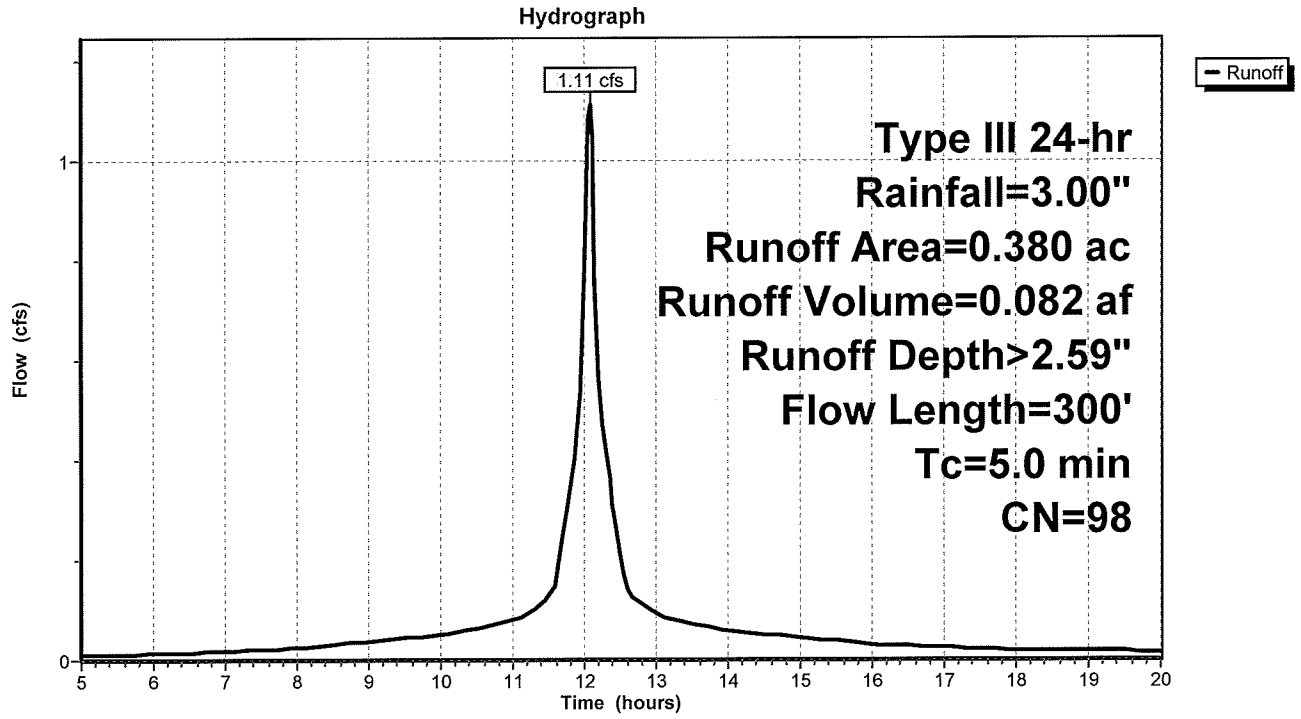
Runoff = 1.11 cfs @ 12.07 hrs, Volume= 0.082 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.380	98	Roof Runoff

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	300		1.0		**Direct Entry, Path 1**

Subcatchment 40S: Roof Runoff to Grass Channel



Hydrograph for Subcatchment 40S: Roof Runoff to Grass Channel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.17	0.05	0.01
5.25	0.18	0.06	0.01
5.50	0.19	0.06	0.01
5.75	0.20	0.07	0.01
6.00	0.22	0.08	0.01
6.25	0.23	0.09	0.01
6.50	0.24	0.10	0.02
6.75	0.26	0.11	0.02
7.00	0.27	0.12	0.02
7.25	0.29	0.14	0.02
7.50	0.30	0.15	0.02
7.75	0.32	0.16	0.02
8.00	0.34	0.18	0.02
8.25	0.36	0.20	0.03
8.50	0.39	0.22	0.03
8.75	0.41	0.24	0.03
9.00	0.44	0.26	0.04
9.25	0.47	0.29	0.04
9.50	0.50	0.32	0.04
9.75	0.53	0.35	0.05
10.00	0.57	0.38	0.05
10.25	0.61	0.42	0.06
10.50	0.65	0.46	0.06
10.75	0.70	0.50	0.07
11.00	0.75	0.55	0.08
11.25	0.81	0.61	0.10
11.50	0.89	0.69	0.12
11.75	1.07	0.85	0.30
12.00	1.50	1.28	**0.78**
12.25	1.93	1.71	**0.47**
12.50	2.11	1.88	0.21
12.75	2.19	1.96	0.12
13.00	2.25	2.02	0.09
13.25	2.30	2.07	0.08
13.50	2.35	2.12	0.07
13.75	2.39	2.17	0.06
14.00	2.43	2.20	0.06
14.25	2.47	2.24	0.05
14.50	2.50	2.27	0.05
14.75	2.53	2.30	0.05
15.00	2.56	2.33	0.04
15.25	2.59	2.36	0.04
15.50	2.61	2.38	0.04
15.75	2.64	2.41	0.03
16.00	2.66	2.43	0.03
16.25	2.68	2.45	0.03
16.50	2.70	2.46	0.03
16.75	2.71	2.48	0.03
17.00	2.73	2.50	0.02
17.25	2.74	2.51	0.02
17.50	2.76	2.53	0.02
17.75	2.77	2.54	0.02
18.00	2.78	2.55	0.02
18.25	2.80	2.57	0.02
18.50	2.81	2.58	0.02
18.75	2.82	2.59	0.02
19.00	2.83	2.60	0.02
19.25	2.84	2.61	0.02
19.50	2.85	2.62	0.02
19.75	2.86	2.63	0.02
20.00	**2.87**	**2.64**	0.02

Subcatchment 50S: Overland runoff to southwest

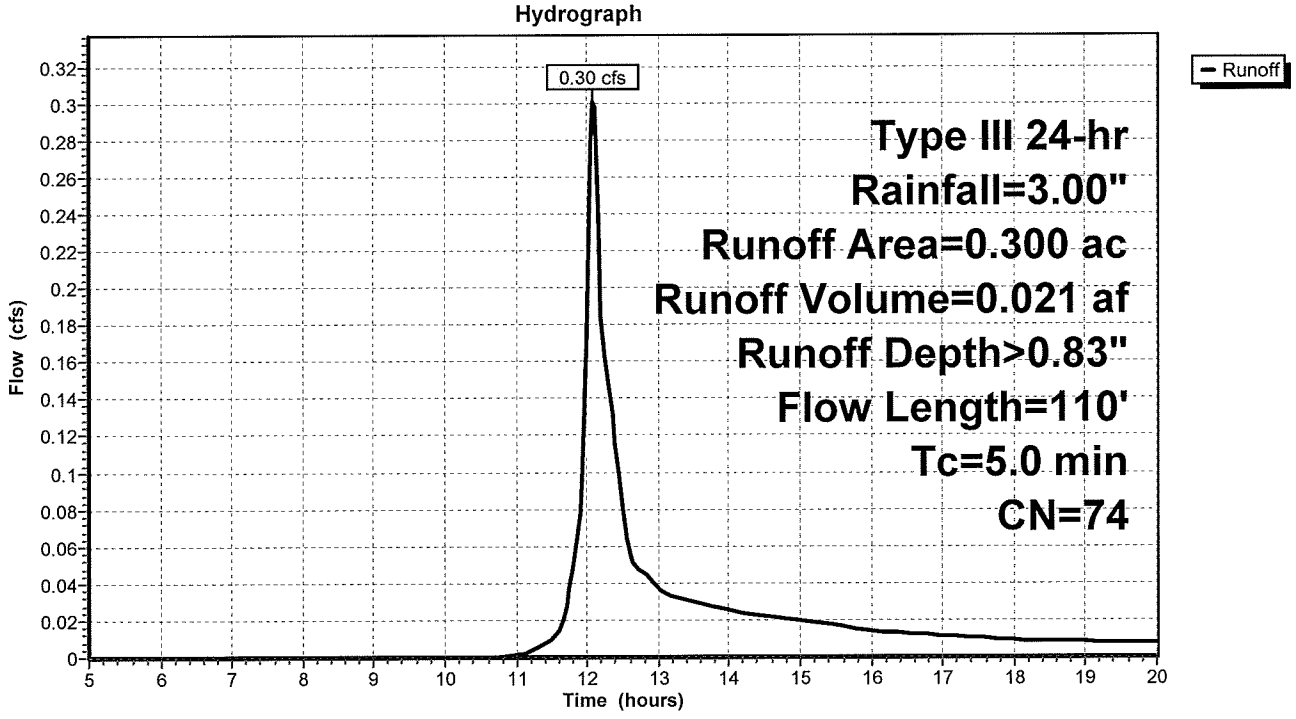
Runoff = 0.30 cfs @ 12.09 hrs, Volume= 0.021 af, Depth> 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.030	98	Paved parking & roofs
0.070	74	>75% Grass cover, Good, HSG C
0.200	70	Woods, Good, HSG C
0.300	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	110		0.4		**Direct Entry, Path 1**

Subcatchment 50S: Overland runoff to southwest



Hydrograph for Subcatchment 50S: Overland runoff to southwest

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.22	0.00	0.00
6.25	0.23	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.26	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.29	0.00	0.00
7.50	0.30	0.00	0.00
7.75	0.32	0.00	0.00
8.00	0.34	0.00	0.00
8.25	0.36	0.00	0.00
8.50	0.39	0.00	0.00
8.75	0.41	0.00	0.00
9.00	0.44	0.00	0.00
9.25	0.47	0.00	0.00
9.50	0.50	0.00	0.00
9.75	0.53	0.00	0.00
10.00	0.57	0.00	0.00
10.25	0.61	0.00	0.00
10.50	0.65	0.00	0.00
10.75	0.70	0.00	0.00
11.00	0.75	0.00	0.00
11.25	0.81	0.00	0.00
11.50	0.89	0.01	0.01
11.75	1.07	0.03	0.04
12.00	1.50	0.15	**0.17**
12.25	1.93	0.32	**0.16**
12.50	2.11	0.40	0.08
12.75	2.19	0.44	0.05
13.00	2.25	0.47	0.04
13.25	2.30	0.50	0.03
13.50	2.35	0.53	0.03
13.75	2.39	0.55	0.03
14.00	2.43	0.57	0.03
14.25	2.47	0.59	0.02
14.50	2.50	0.61	0.02
14.75	2.53	0.63	0.02
15.00	2.56	0.64	0.02
15.25	2.59	0.66	0.02
15.50	2.61	0.67	0.02
15.75	2.64	0.69	0.02
16.00	2.66	0.70	0.01
16.25	2.68	0.71	0.01
16.50	2.70	0.72	0.01
16.75	2.71	0.73	0.01
17.00	2.73	0.74	0.01
17.25	2.74	0.75	0.01
17.50	2.76	0.76	0.01
17.75	2.77	0.77	0.01
18.00	2.78	0.77	0.01
18.25	2.80	0.78	0.01
18.50	2.81	0.79	0.01
18.75	2.82	0.80	0.01
19.00	2.83	0.80	0.01
19.25	2.84	0.81	0.01
19.50	2.85	0.82	0.01
19.75	2.86	0.82	0.01
20.00	**2.87**	**0.83**	0.01

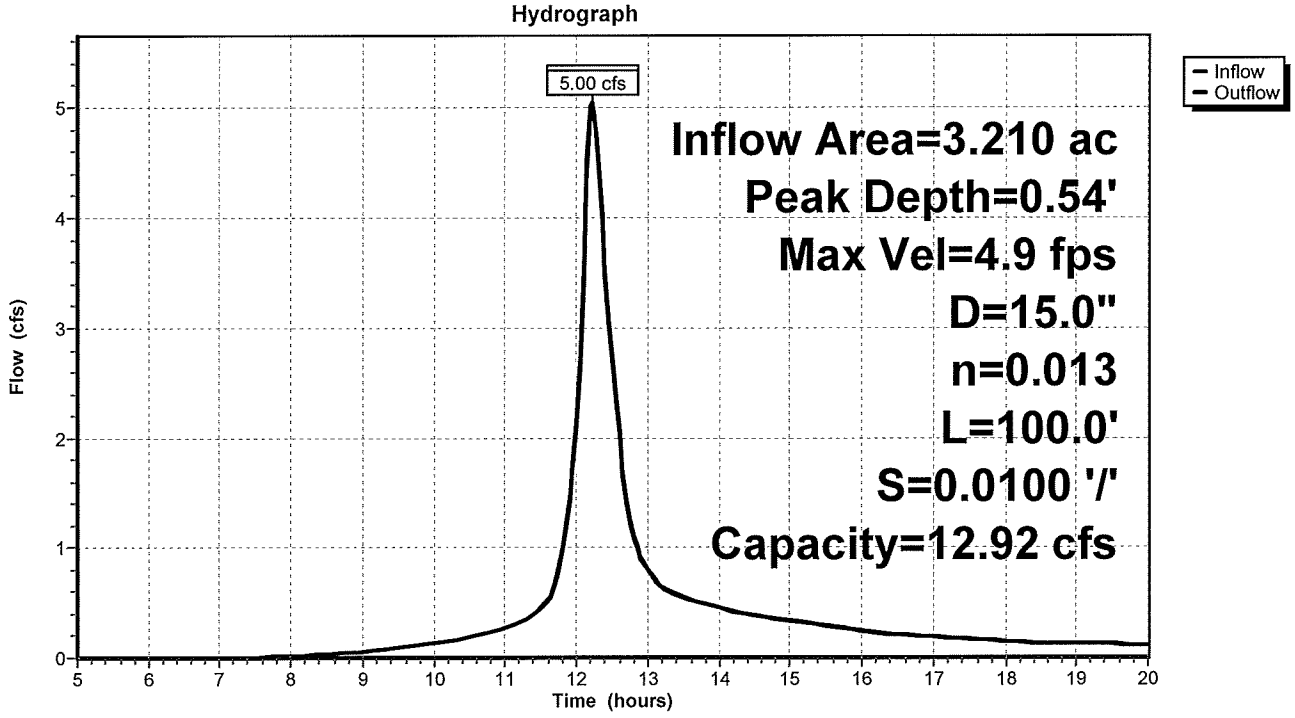
Reach 12R: Driveway Crossing

Inflow Area = 3.210 ac, Inflow Depth > 1.70"
Inflow = 5.05 cfs @ 12.22 hrs, Volume= 0.454 af
Outflow = 5.00 cfs @ 12.23 hrs, Volume= 0.454 af, Atten= 1%, Lag= 0.6 min

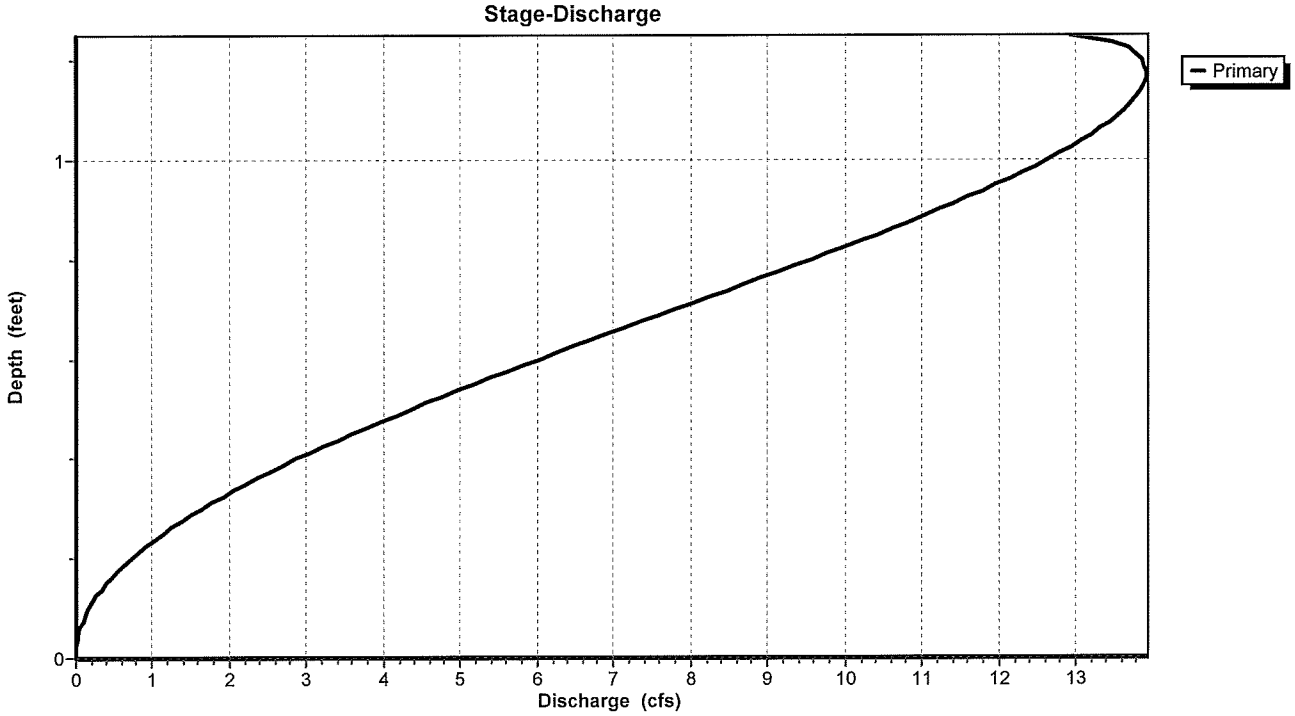
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.9 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 0.8 min

Peak Depth= 0.54' @ 12.22 hrs
Capacity at bank full= 12.92 cfs
Inlet Invert= 503.00', Outlet Invert= 502.00'
A factor of 2.00 has been applied to the supplied storage and discharge data
15.0" Diameter Pipe, n= 0.013 Corrugated PE, smooth interior
Length= 100.0' Slope= 0.0100 '/'

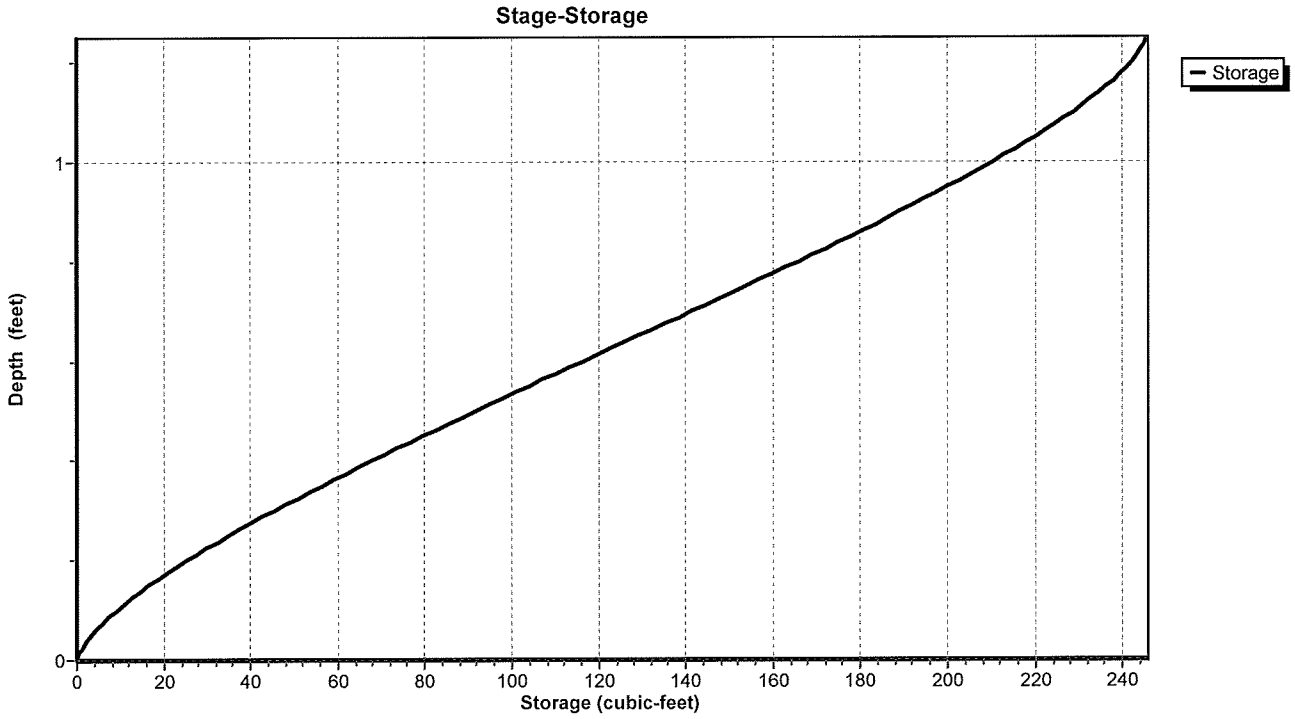
Reach 12R: Driveway Crossing



Reach 12R: Driveway Crossing



Reach 12R: Driveway Crossing



Hydrograph for Reach 12R: Driveway Crossing

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
5.00	0.00	0	503.00	0.00
5.50	0.00	0	503.00	0.00
6.00	0.00	0	503.00	0.00
6.50	0.00	0	503.00	0.00
7.00	0.00	0	503.00	0.00
7.50	0.00	1	503.02	0.00
8.00	0.02	2	503.03	0.02
8.50	0.03	3	503.05	0.03
9.00	0.06	4	503.06	0.06
9.50	0.09	6	503.07	0.09
10.00	0.13	8	503.09	0.13
10.50	0.19	10	503.11	0.19
11.00	0.27	13	503.13	0.27
11.50	0.46	18	503.16	0.45
12.00	**2.14**	**54**	**503.34**	**2.06**
12.50	**2.68**	**65**	**503.39**	**2.76**
13.00	0.79	27	503.21	0.80
13.50	0.55	21	503.18	0.55
14.00	0.45	18	503.16	0.45
14.50	0.38	16	503.15	0.38
15.00	0.34	15	503.14	0.34
15.50	0.29	13	503.13	0.29
16.00	0.24	12	503.12	0.24
16.50	0.21	11	503.11	0.21
17.00	0.19	10	503.11	0.19
17.50	0.17	9	503.10	0.17
18.00	0.15	8	503.09	0.15
18.50	0.13	8	503.09	0.13
19.00	0.13	8	503.09	0.13
19.50	0.12	7	503.09	0.12
20.00	0.11	7	503.08	0.11

Stage-Discharge for Reach 12R: Driveway Crossing

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
503.00	0.0	0.00
503.01	0.4	0.00
503.02	0.6	0.01
503.03	0.8	0.01
503.04	1.0	0.02
503.05	1.2	0.04
503.06	1.3	0.06
503.07	1.5	0.08
503.08	1.6	0.10
503.09	1.7	0.13
503.10	1.8	0.17
503.11	1.9	0.21
503.12	2.1	0.25
503.13	2.2	0.29
503.14	2.3	0.34
503.15	2.4	0.40
503.16	2.5	0.45
503.17	2.6	0.51
503.18	2.7	0.58
503.19	2.7	0.65
503.20	2.8	0.72
503.21	2.9	0.79
503.22	3.0	0.87
503.23	3.1	0.96
503.24	3.2	1.04
503.25	3.2	1.13
503.26	3.3	1.22
503.27	3.4	1.32
503.28	3.5	1.42
503.29	3.5	1.53
503.30	3.6	1.63
503.31	3.7	1.74
503.32	3.7	1.85
503.33	3.8	1.97
503.34	3.9	2.09
503.35	3.9	2.21
503.36	4.0	2.34
503.37	4.1	2.47
503.38	4.1	2.60
503.39	4.2	2.73
503.40	4.2	2.86
503.41	4.3	3.00
503.42	4.3	3.14
503.43	4.4	3.29
503.44	4.5	3.43
503.45	4.5	3.58
503.46	4.6	3.73
503.47	4.6	3.88
503.48	4.7	4.04
503.49	4.7	4.20
503.50	4.7	4.35
503.51	4.8	4.51
503.52	4.8	4.68
503.53	4.9	4.84
503.54	4.9	5.00
503.55	5.0	5.17
503.56	5.0	5.34
503.57	5.1	5.51
503.58	5.1	5.68
503.59	5.1	5.85
503.60	5.2	6.02
503.61	5.2	6.20
503.62	5.2	6.37
503.63	5.3	6.55
503.64	5.3	6.72
503.65	5.4	6.90
503.66	5.4	7.08
503.67	5.4	7.26
503.68	5.4	7.43
503.69	5.5	7.61
503.70	5.5	7.79
503.71	5.5	7.97
503.72	5.6	8.15
503.73	5.6	8.32
503.74	5.6	8.50
503.75	5.6	8.68
503.76	5.7	8.86
503.77	5.7	9.03
503.78	5.7	9.21
503.79	5.7	9.38
503.80	5.8	9.56
503.81	5.8	9.73
503.82	5.8	9.90
503.83	5.8	10.07
503.84	5.8	10.24
503.85	5.9	10.41
503.86	5.9	10.57
503.87	5.9	10.74
503.88	5.9	10.90
503.89	5.9	11.06
503.90	5.9	11.21
503.91	5.9	11.37
503.92	6.0	11.52
503.93	6.0	11.67
503.94	6.0	11.82
503.95	6.0	11.96
503.96	6.0	12.10
503.97	6.0	12.24
503.98	6.0	12.37
503.99	6.0	12.50
504.00	6.0	12.63
504.01	6.0	12.75
504.02	**6.0**	12.87
504.03	6.0	12.98
504.04	6.0	13.09
504.05	6.0	13.19
504.06	6.0	13.29
504.07	6.0	13.38
504.08	6.0	13.47
504.09	6.0	13.55
504.10	6.0	13.62
504.11	5.9	13.69
504.12	5.9	13.74
504.13	5.9	13.79
504.14	5.9	13.83
504.15	5.9	13.87
504.16	5.8	13.89
504.17	5.8	**13.90**
504.18	5.8	13.89
504.19	5.8	13.88
504.20	5.7	13.84
504.21	5.7	13.79
504.22	5.6	13.71
504.23	5.6	13.59
504.24	5.5	13.41
504.25	5.3	12.92

Stage-Area-Storage for Reach 12R: Driveway Crossing

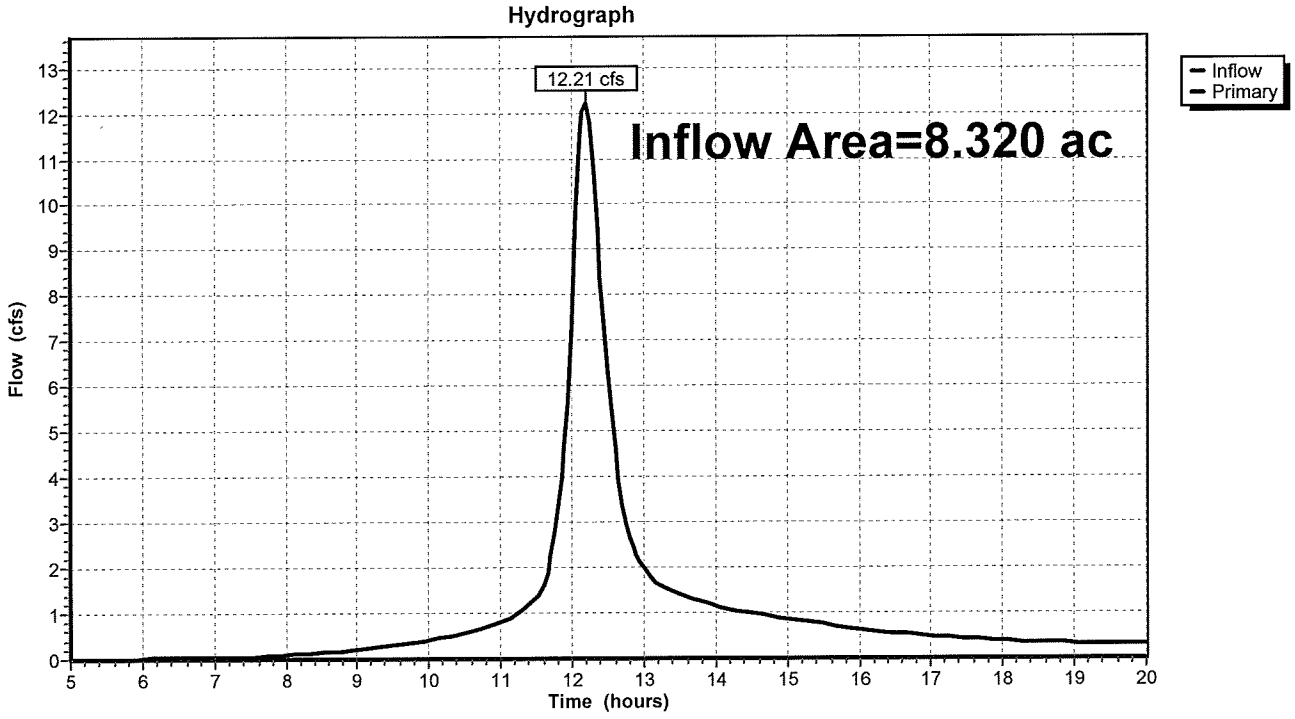
Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
503.00	0	503.51	94	504.02	214
503.01	0	503.52	97	504.03	216
503.02	1	503.53	99	504.04	218
503.03	2	503.54	102	504.05	220
503.04	2	503.55	104	504.06	222
503.05	3	503.56	106	504.07	224
503.06	4	503.57	109	504.08	225
503.07	5	503.58	111	504.09	227
503.08	7	503.59	114	504.10	229
503.09	8	503.60	116	504.11	230
503.10	9	503.61	119	504.12	232
503.11	11	503.62	121	504.13	233
503.12	12	503.63	124	504.14	235
503.13	14	503.64	126	504.15	236
503.14	15	503.65	129	504.16	238
503.15	17	503.66	131	504.17	239
503.16	18	503.67	134	504.18	240
503.17	20	503.68	136	504.19	241
503.18	22	503.69	139	504.20	242
503.19	24	503.70	141	504.21	243
503.20	25	503.71	144	504.22	244
503.21	27	503.72	146	504.23	245
503.22	29	503.73	149	504.24	245
503.23	31	503.74	151	504.25	**245**
503.24	33	503.75	154		
503.25	35	503.76	156		
503.26	37	503.77	159		
503.27	39	503.78	161		
503.28	41	503.79	163		
503.29	43	503.80	166		
503.30	45	503.81	168		
503.31	47	503.82	171		
503.32	50	503.83	173		
503.33	52	503.84	175		
503.34	54	503.85	178		
503.35	56	503.86	180		
503.36	59	503.87	182		
503.37	61	503.88	185		
503.38	63	503.89	187		
503.39	65	503.90	189		
503.40	68	503.91	191		
503.41	70	503.92	194		
503.42	72	503.93	196		
503.43	75	503.94	198		
503.44	77	503.95	200		
503.45	80	503.96	202		
503.46	82	503.97	204		
503.47	84	503.98	206		
503.48	87	503.99	208		
503.49	89	504.00	210		
503.50	92	504.01	212		

Link DP1: Design Point 1

Inflow Area = 8.320 ac, Inflow Depth > 1.76"
Inflow = 12.21 cfs @ 12.19 hrs, Volume= 1.223 af
Primary = 12.21 cfs @ 12.19 hrs, Volume= 1.223 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP1: Design Point 1



Hydrograph for Link DP1: Design Point 1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.01	**0.00**	0.01
5.25	0.01	0.00	0.01
5.50	0.01	0.00	0.01
5.75	0.02	0.00	0.02
6.00	0.02	0.00	0.02
6.25	0.02	0.00	0.02
6.50	0.03	0.00	0.03
6.75	0.03	0.00	0.03
7.00	0.03	0.00	0.03
7.25	0.04	0.00	0.04
7.50	0.05	0.00	0.05
7.75	0.07	0.00	0.07
8.00	0.09	0.00	0.09
8.25	0.11	0.00	0.11
8.50	0.14	0.00	0.14
8.75	0.17	0.00	0.17
9.00	0.21	0.00	0.21
9.25	0.26	0.00	0.26
9.50	0.30	0.00	0.30
9.75	0.36	0.00	0.36
10.00	0.41	0.00	0.41
10.25	0.48	0.00	0.48
10.50	0.58	0.00	0.58
10.75	0.68	0.00	0.68
11.00	0.80	0.00	0.80
11.25	1.00	0.00	1.00
11.50	1.35	0.00	1.35
11.75	2.74	0.00	2.74
12.00	**7.38**	0.00	**7.38**
12.25	**11.80**	0.00	**11.80**
12.50	6.34	0.00	6.34
12.75	2.98	0.00	2.98
13.00	1.99	0.00	1.99
13.25	1.58	0.00	1.58
13.50	1.41	0.00	1.41
13.75	1.29	0.00	1.29
14.00	1.16	0.00	1.16
14.25	1.06	0.00	1.06
14.50	0.99	0.00	0.99
14.75	0.93	0.00	0.93
15.00	0.87	0.00	0.87
15.25	0.81	0.00	0.81
15.50	0.75	0.00	0.75
15.75	0.69	0.00	0.69
16.00	0.62	0.00	0.62
16.25	0.57	0.00	0.57
16.50	0.54	0.00	0.54
16.75	0.51	0.00	0.51
17.00	0.49	0.00	0.49
17.25	0.46	0.00	0.46
17.50	0.43	0.00	0.43
17.75	0.41	0.00	0.41
18.00	0.38	0.00	0.38
18.25	0.36	0.00	0.36
18.50	0.35	0.00	0.35
18.75	0.34	0.00	0.34
19.00	0.33	0.00	0.33
19.25	0.32	0.00	0.32
19.50	0.31	0.00	0.31
19.75	0.31	0.00	0.31
20.00	0.30	0.00	0.30

PROPOSED CONDITIONS

10 YEAR STORM

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10S: Overland runoff to the northwest Runoff Area=3.210 ac Runoff Depth>3.00"
Flow Length=625' Tc=15.8 min CN=88 Runoff=8.77 cfs 0.803 af

Subcatchment 20S: Overland runoff to grass channel Runoff Area=1.410 ac Runoff Depth>3.41"
Flow Length=190' Tc=5.0 min CN=92 Runoff=5.73 cfs 0.400 af

Subcatchment 30S: Overland runoff to south Runoff Area=3.020 ac Runoff Depth>3.00"
Flow Length=521' Tc=16.2 min CN=88 Runoff=8.18 cfs 0.756 af

Subcatchment 40S: Roof Runoff to Grass Channel Runoff Area=0.380 ac Runoff Depth>3.96"
Flow Length=300' Tc=5.0 min CN=98 Runoff=1.68 cfs 0.125 af

Subcatchment 50S: Overland runoff to southwest Runoff Area=0.300 ac Runoff Depth>1.82"
Flow Length=110' Tc=5.0 min CN=74 Runoff=0.69 cfs 0.046 af

Reach 12R: Driveway Crossing Peak Depth=0.75' Max Vel=5.6 fps Inflow=8.77 cfs 0.803 af
D=15.0" n=0.013 L=100.0' S=0.0100 '/' Capacity=12.92 cfs Outflow=8.72 cfs 0.803 af

Link DP1: Design Point 1 Inflow=20.99 cfs 2.130 af
Primary=20.99 cfs 2.130 af

Total Runoff Area = 8.320 ac Runoff Volume = 2.130 af Average Runoff Depth = 3.07"

Subcatchment 10S: Overland runoff to the northwest

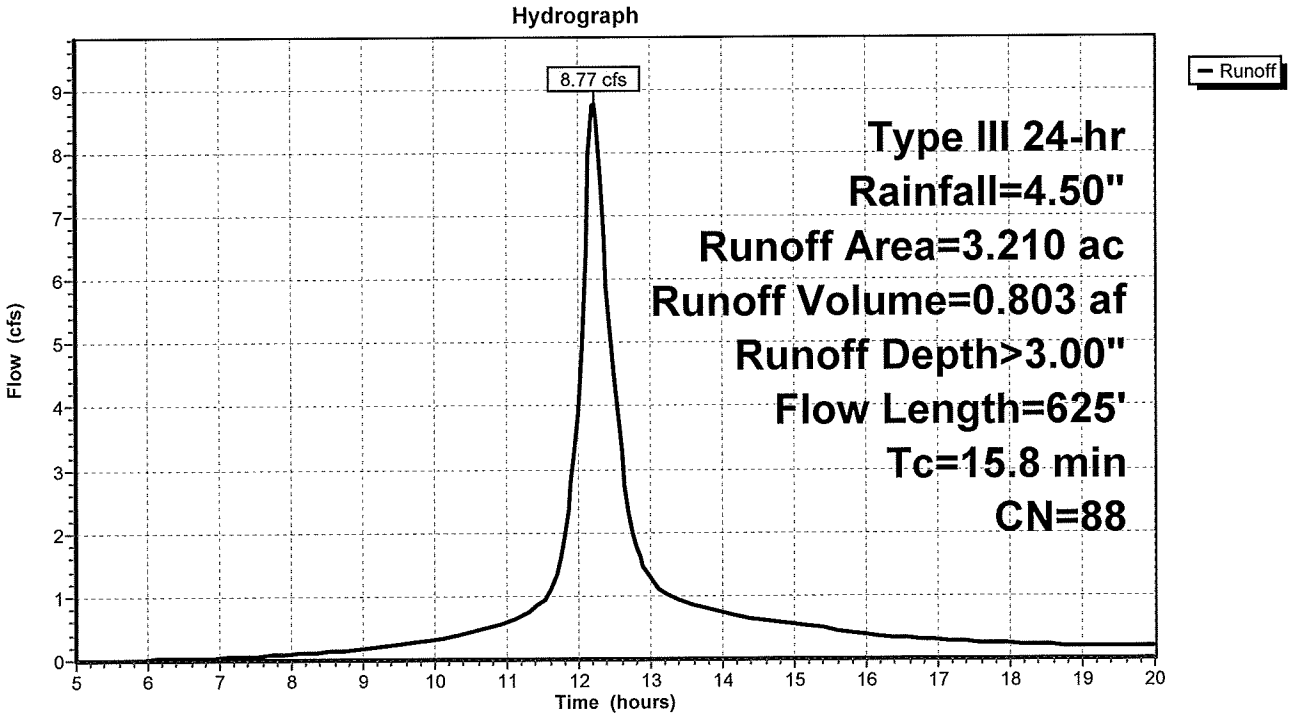
Runoff = 8.77 cfs @ 12.21 hrs, Volume= 0.803 af, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

Area (ac)	CN	Description
1.920	98	Paved parking & roofs
0.740	74	>75% Grass cover, Good, HSG C
0.550	70	Woods, Good, HSG C
3.210	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.00"
1.9	275	0.0146	2.5		**Shallow Concentrated Flow, Path 2** Paved Kv= 20.3 fps
1.2	300	0.0133	4.0	32.08	**Channel Flow, Path 3** Area= 8.0 sf Perim= 13.6' r= 0.59' n= 0.030 Earth, grassed & winding
15.8	625	Total			

Subcatchment 10S: Overland runoff to the northwest



Hydrograph for Subcatchment 10S: Overland runoff to the northwest

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.26	0.00	0.00
5.25	0.27	0.00	0.00
5.50	0.29	0.00	0.00
5.75	0.31	0.00	0.01
6.00	0.32	0.00	0.01
6.25	0.34	0.00	0.02
6.50	0.36	0.01	0.02
6.75	0.38	0.01	0.03
7.00	0.41	0.01	0.04
7.25	0.43	0.02	0.05
7.50	0.46	0.02	0.06
7.75	0.48	0.03	0.08
8.00	0.51	0.04	0.09
8.25	0.54	0.04	0.11
8.50	0.58	0.06	0.13
8.75	0.62	0.07	0.15
9.00	0.66	0.08	0.18
9.25	0.70	0.10	0.21
9.50	0.75	0.12	0.25
9.75	0.80	0.15	0.28
10.00	0.85	0.17	0.32
10.25	0.91	0.20	0.37
10.50	0.97	0.24	0.43
10.75	1.05	0.28	0.50
11.00	1.13	0.33	0.58
11.25	1.22	0.39	0.69
11.50	1.34	0.47	0.92
11.75	1.60	0.65	1.59
12.00	2.25	1.17	**3.93**
12.25	2.90	1.73	**8.51**
12.50	3.16	1.96	4.49
12.75	3.28	2.07	2.00
13.00	3.37	2.16	1.29
13.25	3.45	2.23	1.00
13.50	3.53	2.29	0.89
13.75	3.59	2.35	0.81
14.00	3.65	2.41	0.73
14.25	3.70	2.45	0.66
14.50	3.75	2.50	0.62
14.75	3.80	2.54	0.58
15.00	3.84	2.58	0.54
15.25	3.88	2.62	0.50
15.50	3.92	2.66	0.47
15.75	3.96	2.69	0.43
16.00	3.99	2.72	0.39
16.25	4.02	2.74	0.35
16.50	4.04	2.77	0.33
16.75	4.07	2.79	0.32
17.00	4.09	2.82	0.30
17.25	4.12	2.84	0.28
17.50	4.14	2.86	0.27
17.75	4.16	2.88	0.25
18.00	4.18	2.89	0.23
18.25	4.19	2.91	0.22
18.50	4.21	2.93	0.21
18.75	4.23	2.94	0.21
19.00	4.24	2.96	0.20
19.25	4.26	2.97	0.20
19.50	4.28	2.99	0.19
19.75	4.29	3.00	0.19
20.00	**4.31**	**3.01**	0.18

Subcatchment 20S: Overland runoff to grass channel

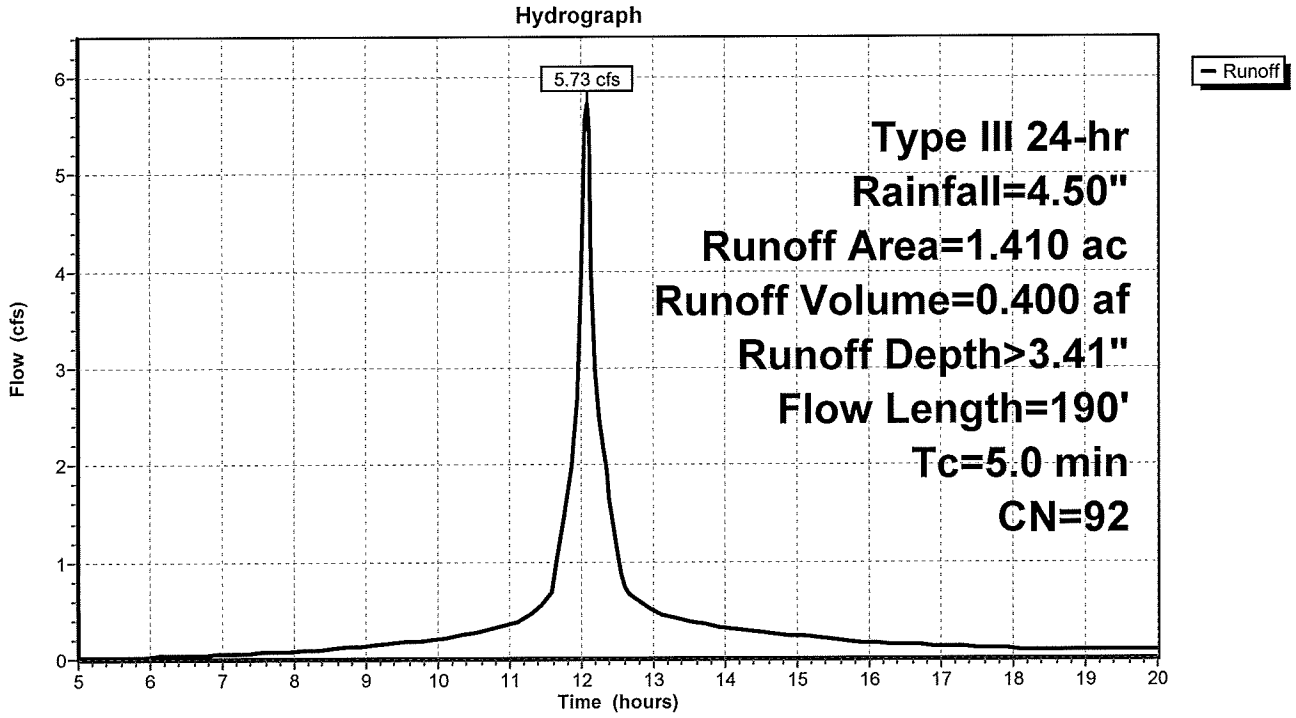
Runoff = 5.73 cfs @ 12.07 hrs, Volume= 0.400 af, Depth> 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

Area (ac)	CN	Description
1.070	98	Paved parking & roofs
0.340	74	>75% Grass cover, Good, HSG C
1.410	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	190		0.6		**Direct Entry, Path 1**

Subcatchment 20S: Overland runoff to grass channel



Hydrograph for Subcatchment 20S: Overland runoff to grass channel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.26	0.01	0.01
5.25	0.27	0.01	0.02
5.50	0.29	0.01	0.02
5.75	0.31	0.02	0.02
6.00	0.32	0.02	0.03
6.25	0.34	0.03	0.03
6.50	0.36	0.03	0.04
6.75	0.38	0.04	0.04
7.00	0.41	0.05	0.05
7.25	0.43	0.06	0.06
7.50	0.46	0.07	0.06
7.75	0.48	0.08	0.07
8.00	0.51	0.10	0.08
8.25	0.54	0.11	0.09
8.50	0.58	0.13	0.10
8.75	0.62	0.15	0.12
9.00	0.66	0.17	0.14
9.25	0.70	0.20	0.15
9.50	0.75	0.23	0.17
9.75	0.80	0.26	0.19
10.00	0.85	0.30	0.21
10.25	0.91	0.34	0.24
10.50	0.97	0.38	0.27
10.75	1.05	0.44	0.31
11.00	1.13	0.50	0.35
11.25	1.22	0.57	0.45
11.50	1.34	0.67	0.58
11.75	1.60	0.88	1.46
12.00	2.25	1.46	**3.94**
12.25	2.90	2.07	**2.50**
12.50	3.16	2.31	1.13
12.75	3.28	2.43	0.63
13.00	3.37	2.52	0.49
13.25	3.45	2.59	0.42
13.50	3.53	2.66	0.38
13.75	3.59	2.72	0.35
14.00	3.65	2.78	0.31
14.25	3.70	2.83	0.29
14.50	3.75	2.88	0.27
14.75	3.80	2.93	0.25
15.00	3.84	2.97	0.24
15.25	3.88	3.01	0.22
15.50	3.92	3.04	0.20
15.75	3.96	3.08	0.18
16.00	3.99	3.10	0.17
16.25	4.02	3.13	0.16
16.50	4.04	3.16	0.15
16.75	4.07	3.18	0.14
17.00	4.09	3.21	0.13
17.25	4.12	3.23	0.12
17.50	4.14	3.25	0.12
17.75	4.16	3.27	0.11
18.00	4.18	3.29	0.10
18.25	4.19	3.30	0.10
18.50	4.21	3.32	0.10
18.75	4.23	3.34	0.09
19.00	4.24	3.35	0.09
19.25	4.26	3.37	0.09
19.50	4.28	3.39	0.09
19.75	4.29	3.40	0.08
20.00	**4.31**	**3.41**	0.08

Subcatchment 30S: Overland runoff to south

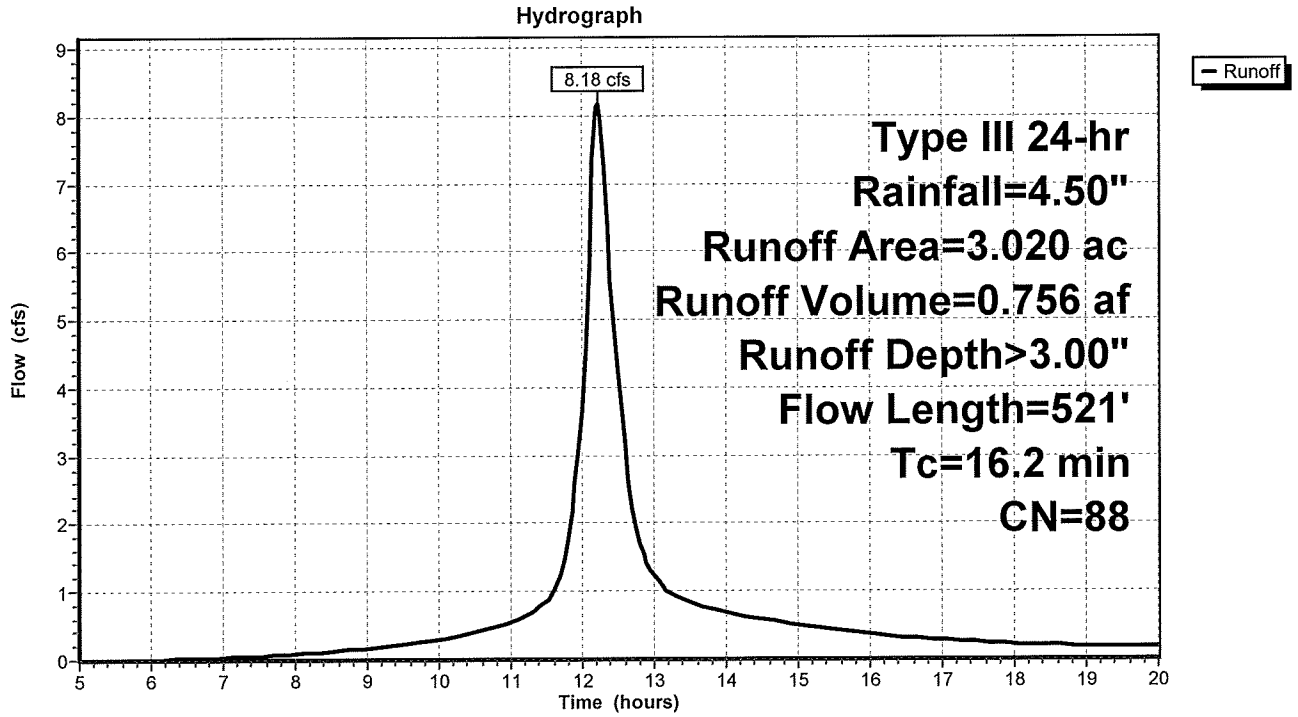
Runoff = 8.18 cfs @ 12.22 hrs, Volume= 0.756 af, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

Area (ac)	CN	Description
1.860	98	Paved parking & roofs
0.490	74	>75% Grass cover, Good, HSG C
0.670	70	Woods, Good, HSG C
3.020	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.00"
2.7	421	0.0162	2.6		**Shallow Concentrated Flow, Path 2** Paved Kv= 20.3 fps
0.2	25	0.0600	1.7		**Shallow Concentrated Flow, Path 3** Short Grass Pasture Kv= 7.0 fps
0.6	25	0.0200	0.7		**Shallow Concentrated Flow, Path 4** Woodland Kv= 5.0 fps
16.2	521	Total			

Subcatchment 30S: Overland runoff to south



Hydrograph for Subcatchment 30S: Overland runoff to south

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.26	0.00	0.00
5.25	0.27	0.00	0.00
5.50	0.29	0.00	0.00
5.75	0.31	0.00	0.00
6.00	0.32	0.00	0.01
6.25	0.34	0.00	0.02
6.50	0.36	0.01	0.02
6.75	0.38	0.01	0.03
7.00	0.41	0.01	0.04
7.25	0.43	0.02	0.05
7.50	0.46	0.02	0.06
7.75	0.48	0.03	0.07
8.00	0.51	0.04	0.09
8.25	0.54	0.04	0.10
8.50	0.58	0.06	0.12
8.75	0.62	0.07	0.14
9.00	0.66	0.08	0.17
9.25	0.70	0.10	0.20
9.50	0.75	0.12	0.23
9.75	0.80	0.15	0.27
10.00	0.85	0.17	0.30
10.25	0.91	0.20	0.34
10.50	0.97	0.24	0.40
10.75	1.05	0.28	0.47
11.00	1.13	0.33	0.54
11.25	1.22	0.39	0.65
11.50	1.34	0.47	0.86
11.75	1.60	0.65	1.47
12.00	2.25	1.17	**3.63**
12.25	2.90	1.73	**7.99**
12.50	3.16	1.96	4.30
12.75	3.28	2.07	1.93
13.00	3.37	2.16	1.23
13.25	3.45	2.23	0.95
13.50	3.53	2.29	0.84
13.75	3.59	2.35	0.76
14.00	3.65	2.41	0.69
14.25	3.70	2.45	0.62
14.50	3.75	2.50	0.58
14.75	3.80	2.54	0.55
15.00	3.84	2.58	0.51
15.25	3.88	2.62	0.47
15.50	3.92	2.66	0.44
15.75	3.96	2.69	0.40
16.00	3.99	2.72	0.37
16.25	4.02	2.74	0.33
16.50	4.04	2.77	0.32
16.75	4.07	2.79	0.30
17.00	4.09	2.82	0.28
17.25	4.12	2.84	0.27
17.50	4.14	2.86	0.25
17.75	4.16	2.88	0.24
18.00	4.18	2.89	0.22
18.25	4.19	2.91	0.21
18.50	4.21	2.93	0.20
18.75	4.23	2.94	0.20
19.00	4.24	2.96	0.19
19.25	4.26	2.97	0.19
19.50	4.28	2.99	0.18
19.75	4.29	3.00	0.18
20.00	**4.31**	**3.01**	0.17

Subcatchment 40S: Roof Runoff to Grass Channel

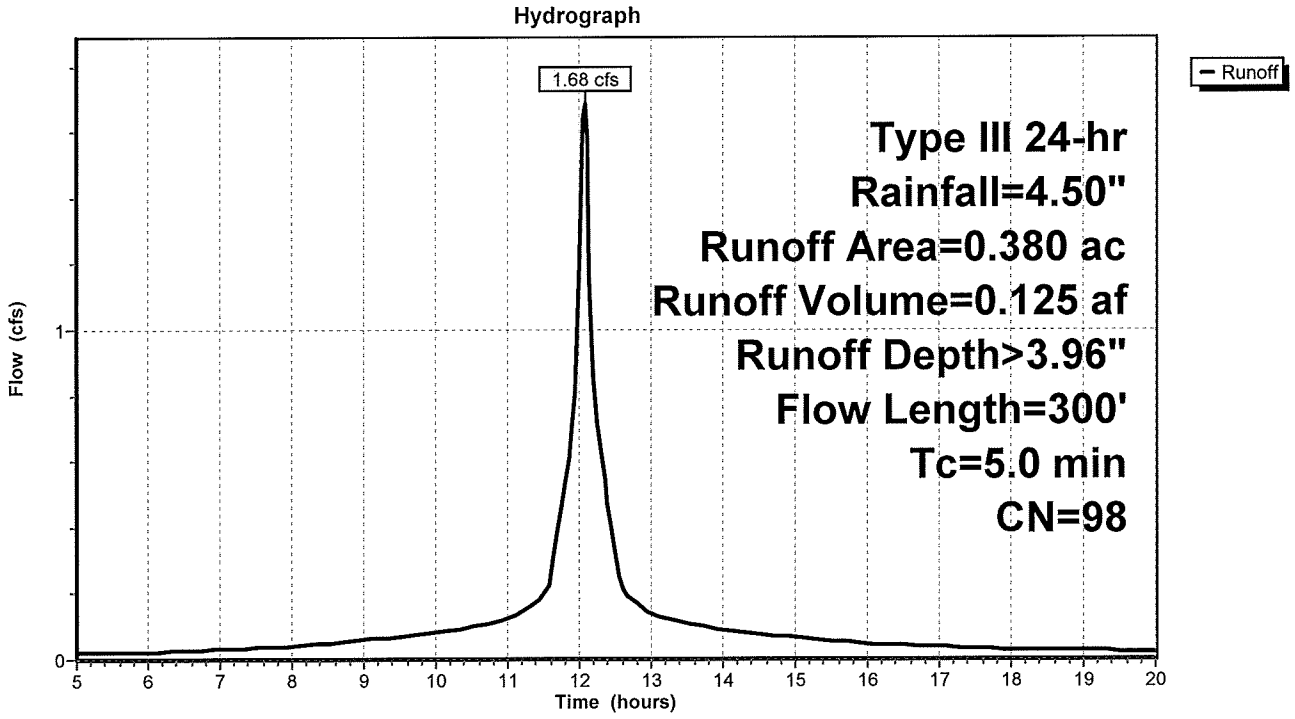
Runoff = 1.68 cfs @ 12.07 hrs, Volume= 0.125 af, Depth> 3.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

Area (ac)	CN	Description
0.380	98	Roof Runoff

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	300		1.0		**Direct Entry, Path 1**

Subcatchment 40S: Roof Runoff to Grass Channel



Hydrograph for Subcatchment 40S: Roof Runoff to Grass Channel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.26	0.11	0.02
5.25	0.27	0.12	0.02
5.50	0.29	0.14	0.02
5.75	0.31	0.15	0.02
6.00	0.32	0.16	0.02
6.25	0.34	0.18	0.02
6.50	0.36	0.20	0.03
6.75	0.38	0.22	0.03
7.00	0.41	0.24	0.03
7.25	0.43	0.26	0.03
7.50	0.46	0.28	0.04
7.75	0.48	0.30	0.04
8.00	0.51	0.33	0.04
8.25	0.54	0.36	0.04
8.50	0.58	0.39	0.05
8.75	0.62	0.42	0.05
9.00	0.66	0.46	0.06
9.25	0.70	0.50	0.06
9.50	0.75	0.55	0.07
9.75	0.80	0.60	0.07
10.00	0.85	0.65	0.08
10.25	0.91	0.70	0.09
10.50	0.97	0.77	0.10
10.75	1.05	0.84	0.11
11.00	1.13	0.91	0.12
11.25	1.22	1.01	0.15
11.50	1.34	1.12	0.19
11.75	1.60	1.38	0.46
12.00	2.25	2.02	**1.18**
12.25	2.90	2.67	**0.72**
12.50	3.16	2.93	0.32
12.75	3.28	3.05	0.18
13.00	3.37	3.14	0.14
13.25	3.45	3.22	0.12
13.50	3.53	3.29	0.11
13.75	3.59	3.36	0.10
14.00	3.65	3.42	0.09
14.25	3.70	3.47	0.08
14.50	3.75	3.52	0.08
14.75	3.80	3.57	0.07
15.00	3.84	3.61	0.07
15.25	3.88	3.65	0.06
15.50	3.92	3.69	0.06
15.75	3.96	3.72	0.05
16.00	3.99	3.75	0.05
16.25	4.02	3.78	0.04
16.50	4.04	3.81	0.04
16.75	4.07	3.83	0.04
17.00	4.09	3.86	0.04
17.25	4.12	3.88	0.03
17.50	4.14	3.90	0.03
17.75	4.16	3.92	0.03
18.00	4.18	3.94	0.03
18.25	4.19	3.96	0.03
18.50	4.21	3.98	0.03
18.75	4.23	3.99	0.03
19.00	4.24	4.01	0.03
19.25	4.26	4.03	0.02
19.50	4.28	4.04	0.02
19.75	4.29	4.06	0.02
20.00	**4.31**	**4.07**	0.02

Subcatchment 50S: Overland runoff to southwest

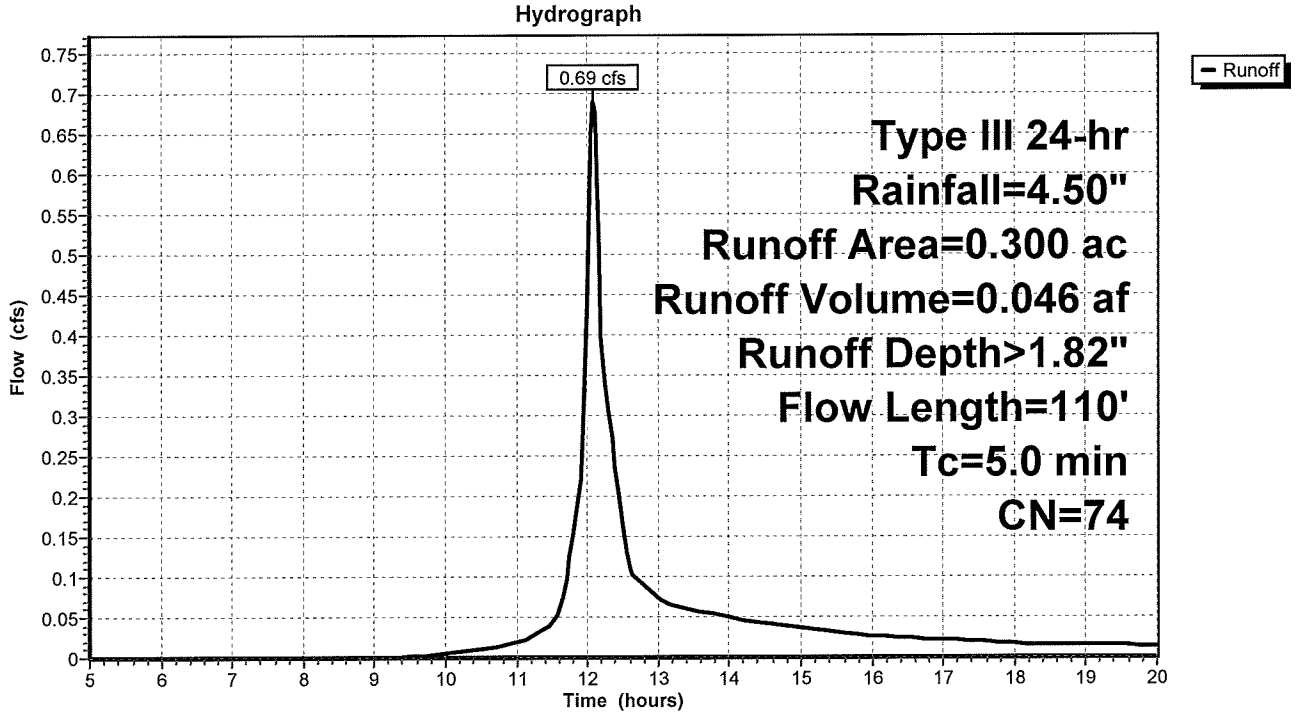
Runoff = 0.69 cfs @ 12.08 hrs, Volume= 0.046 af, Depth> 1.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

Area (ac)	CN	Description
0.030	98	Paved parking & roofs
0.070	74	>75% Grass cover, Good, HSG C
0.200	70	Woods, Good, HSG C
0.300	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	110		0.4		**Direct Entry, Path 1**

Subcatchment 50S: Overland runoff to southwest



Hydrograph for Subcatchment 50S: Overland runoff to southwest

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.26	0.00	0.00
5.25	0.27	0.00	0.00
5.50	0.29	0.00	0.00
5.75	0.31	0.00	0.00
6.00	0.32	0.00	0.00
6.25	0.34	0.00	0.00
6.50	0.36	0.00	0.00
6.75	0.38	0.00	0.00
7.00	0.41	0.00	0.00
7.25	0.43	0.00	0.00
7.50	0.46	0.00	0.00
7.75	0.48	0.00	0.00
8.00	0.51	0.00	0.00
8.25	0.54	0.00	0.00
8.50	0.58	0.00	0.00
8.75	0.62	0.00	0.00
9.00	0.66	0.00	0.00
9.25	0.70	0.00	0.00
9.50	0.75	0.00	0.00
9.75	0.80	0.00	0.00
10.00	0.85	0.01	0.00
10.25	0.91	0.01	0.01
10.50	0.97	0.02	0.01
10.75	1.05	0.03	0.01
11.00	1.13	0.05	0.02
11.25	1.22	0.07	0.03
11.50	1.34	0.10	0.04
11.75	1.60	0.18	0.12
12.00	2.25	0.47	**0.43**
12.25	2.90	0.85	**0.34**
12.50	3.16	1.01	0.16
12.75	3.28	1.09	0.09
13.00	3.37	1.15	0.07
13.25	3.45	1.21	0.06
13.50	3.53	1.26	0.06
13.75	3.59	1.30	0.05
14.00	3.65	1.34	0.05
14.25	3.70	1.38	0.05
14.50	3.75	1.42	0.04
14.75	3.80	1.45	0.04
15.00	3.84	1.48	0.04
15.25	3.88	1.51	0.03
15.50	3.92	1.54	0.03
15.75	3.96	1.56	0.03
16.00	3.99	1.59	0.03
16.25	4.02	1.61	0.03
16.50	4.04	1.63	0.02
16.75	4.07	1.65	0.02
17.00	4.09	1.66	0.02
17.25	4.12	1.68	0.02
17.50	4.14	1.70	0.02
17.75	4.16	1.71	0.02
18.00	4.18	1.73	0.02
18.25	4.19	1.74	0.02
18.50	4.21	1.75	0.02
18.75	4.23	1.77	0.02
19.00	4.24	1.78	0.01
19.25	4.26	1.79	0.01
19.50	4.28	1.80	0.01
19.75	4.29	1.81	0.01
20.00	**4.31**	**1.82**	0.01

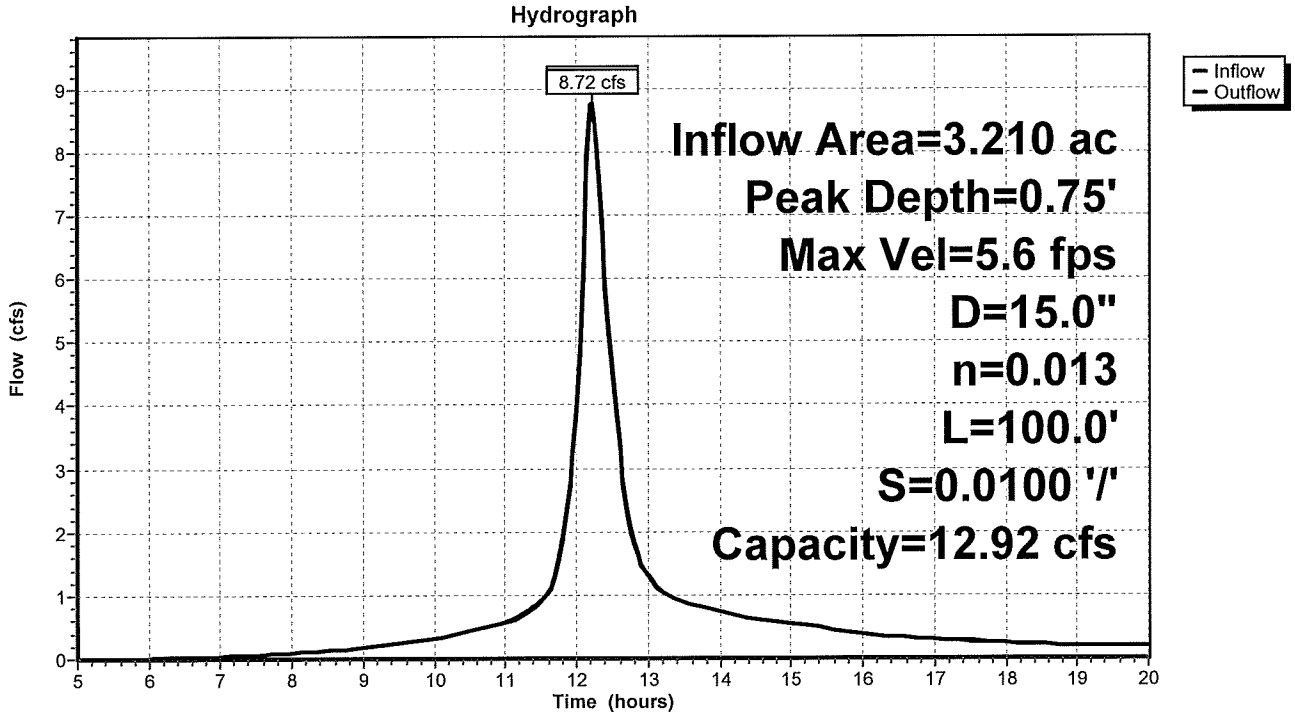
Reach 12R: Driveway Crossing

Inflow Area = 3.210 ac, Inflow Depth > 3.00"
Inflow = 8.77 cfs @ 12.21 hrs, Volume= 0.803 af
Outflow = 8.72 cfs @ 12.22 hrs, Volume= 0.803 af, Atten= 1%, Lag= 0.5 min

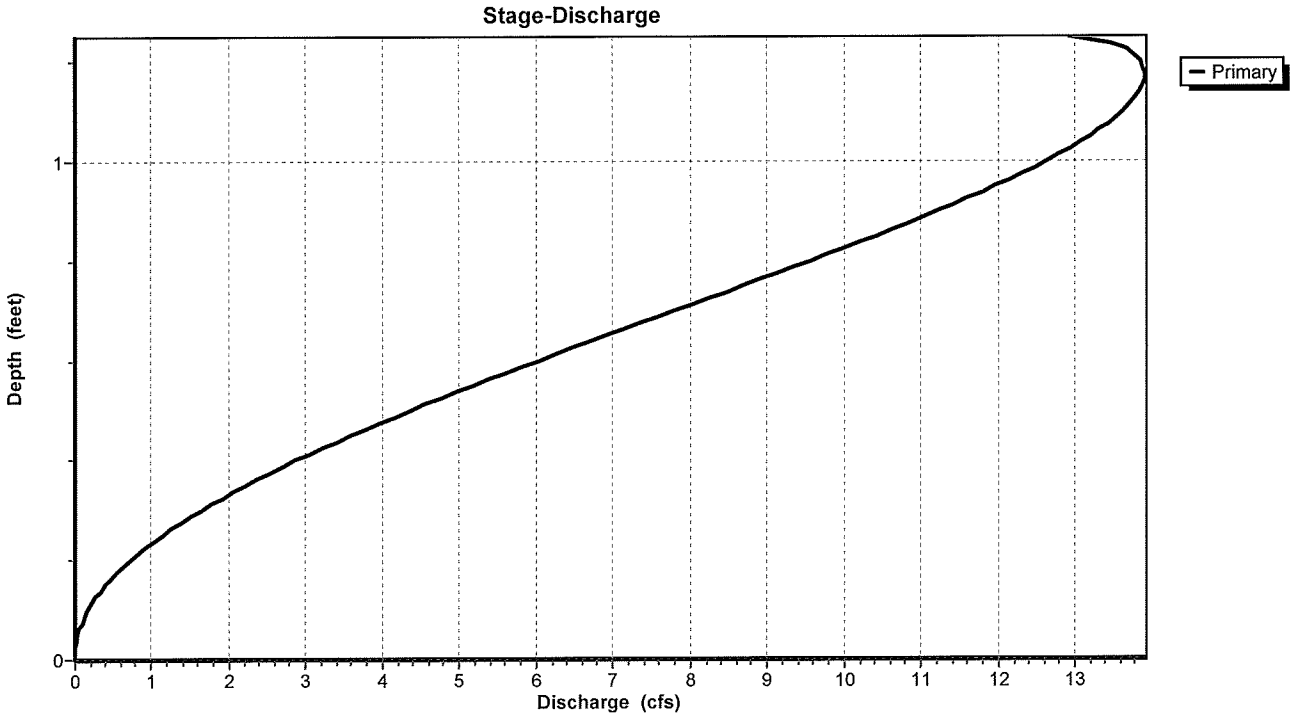
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.6 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.75' @ 12.22 hrs
Capacity at bank full= 12.92 cfs
Inlet Invert= 503.00', Outlet Invert= 502.00'
A factor of 2.00 has been applied to the supplied storage and discharge data
15.0" Diameter Pipe, n= 0.013 Corrugated PE, smooth interior
Length= 100.0' Slope= 0.0100 '/'

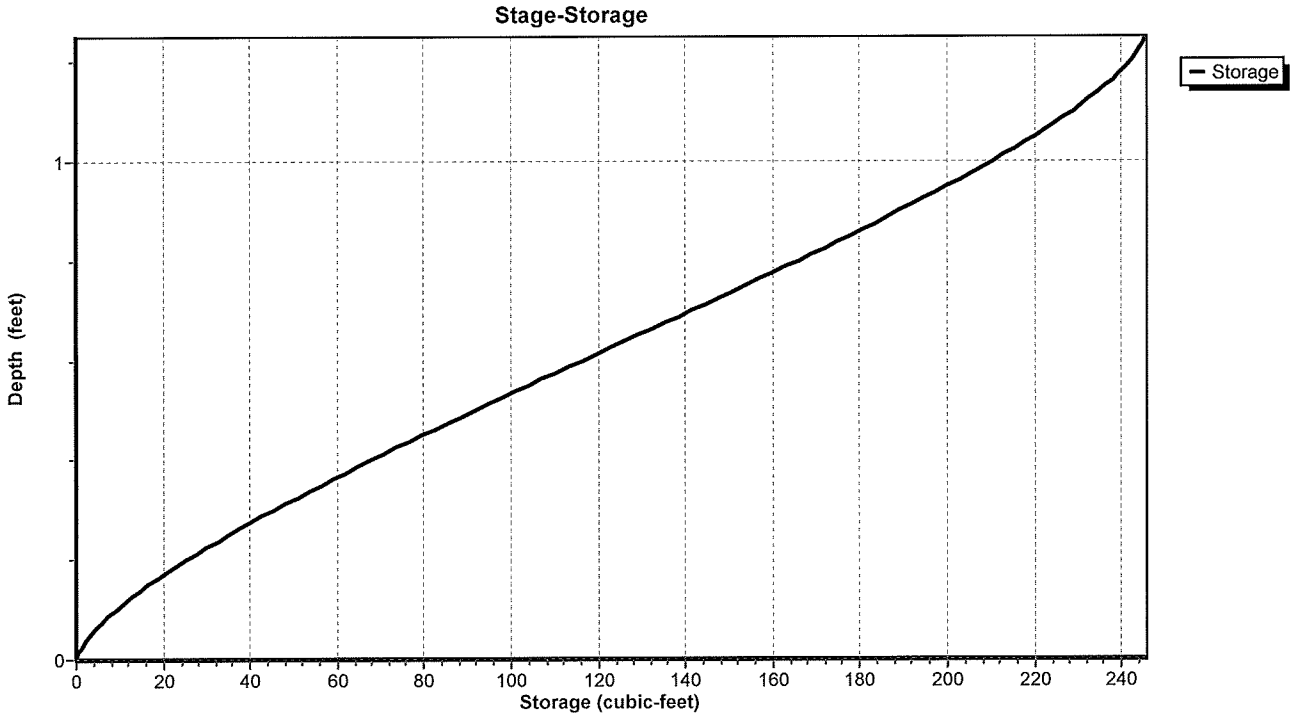
Reach 12R: Driveway Crossing



Reach 12R: Driveway Crossing



Reach 12R: Driveway Crossing



Hydrograph for Reach 12R: Driveway Crossing

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
5.00	0.00	0	503.00	0.00
5.50	0.00	0	503.00	0.00
6.00	0.01	1	503.03	0.01
6.50	0.02	2	503.04	0.02
7.00	0.04	3	503.05	0.04
7.50	0.06	5	503.06	0.06
8.00	0.09	6	503.07	0.09
8.50	0.13	8	503.09	0.13
9.00	0.18	10	503.10	0.18
9.50	0.25	12	503.12	0.25
10.00	0.32	14	503.14	0.32
10.50	0.43	18	503.16	0.43
11.00	0.58	22	503.18	0.58
11.50	0.92	30	503.23	0.91
12.00	**3.93**	**84**	**503.47**	**3.81**
12.50	**4.49**	**95**	**503.51**	**4.61**
13.00	1.29	39	503.27	1.31
13.50	0.89	30	503.22	0.89
14.00	0.73	26	503.20	0.73
14.50	0.62	23	503.19	0.62
15.00	0.54	21	503.17	0.54
15.50	0.47	19	503.16	0.47
16.00	0.39	17	503.15	0.39
16.50	0.33	15	503.14	0.34
17.00	0.30	14	503.13	0.30
17.50	0.27	13	503.12	0.27
18.00	0.23	12	503.12	0.23
18.50	0.21	11	503.11	0.21
19.00	0.20	10	503.11	0.20
19.50	0.19	10	503.11	0.19
20.00	0.18	10	503.10	0.18

Stage-Discharge for Reach 12R: Driveway Crossing

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
503.00	0.0	0.00
503.01	0.4	0.00
503.02	0.6	0.01
503.03	0.8	0.01
503.04	1.0	0.02
503.05	1.2	0.04
503.06	1.3	0.06
503.07	1.5	0.08
503.08	1.6	0.10
503.09	1.7	0.13
503.10	1.8	0.17
503.11	1.9	0.21
503.12	2.1	0.25
503.13	2.2	0.29
503.14	2.3	0.34
503.15	2.4	0.40
503.16	2.5	0.45
503.17	2.6	0.51
503.18	2.7	0.58
503.19	2.7	0.65
503.20	2.8	0.72
503.21	2.9	0.79
503.22	3.0	0.87
503.23	3.1	0.96
503.24	3.2	1.04
503.25	3.2	1.13
503.26	3.3	1.22
503.27	3.4	1.32
503.28	3.5	1.42
503.29	3.5	1.53
503.30	3.6	1.63
503.31	3.7	1.74
503.32	3.7	1.85
503.33	3.8	1.97
503.34	3.9	2.09
503.35	3.9	2.21
503.36	4.0	2.34
503.37	4.1	2.47
503.38	4.1	2.60
503.39	4.2	2.73
503.40	4.2	2.86
503.41	4.3	3.00
503.42	4.3	3.14
503.43	4.4	3.29
503.44	4.5	3.43
503.45	4.5	3.58
503.46	4.6	3.73
503.47	4.6	3.88
503.48	4.7	4.04
503.49	4.7	4.20
503.50	4.7	4.35
503.51	4.8	4.51
503.52	4.8	4.68
503.53	4.9	4.84
503.54	4.9	5.00
503.55	5.0	5.17
503.56	5.0	5.34
503.57	5.1	5.51
503.58	5.1	5.68
503.59	5.1	5.85
503.60	5.2	6.02
503.61	5.2	6.20
503.62	5.2	6.37
503.63	5.3	6.55
503.64	5.3	6.72
503.65	5.4	6.90
503.66	5.4	7.08
503.67	5.4	7.26
503.68	5.4	7.43
503.69	5.5	7.61
503.70	5.5	7.79
503.71	5.5	7.97
503.72	5.6	8.15
503.73	5.6	8.32
503.74	5.6	8.50
503.75	5.6	8.68
503.76	5.7	8.86
503.77	5.7	9.03
503.78	5.7	9.21
503.79	5.7	9.38
503.80	5.8	9.56
503.81	5.8	9.73
503.82	5.8	9.90
503.83	5.8	10.07
503.84	5.8	10.24
503.85	5.9	10.41
503.86	5.9	10.57
503.87	5.9	10.74
503.88	5.9	10.90
503.89	5.9	11.06
503.90	5.9	11.21
503.91	5.9	11.37
503.92	6.0	11.52
503.93	6.0	11.67
503.94	6.0	11.82
503.95	6.0	11.96
503.96	6.0	12.10
503.97	6.0	12.24
503.98	6.0	12.37
503.99	6.0	12.50
504.00	6.0	12.63
504.01	6.0	12.75
504.02	**6.0**	12.87
504.03	6.0	12.98
504.04	6.0	13.09
504.05	6.0	13.19
504.06	6.0	13.29
504.07	6.0	13.38
504.08	6.0	13.47
504.09	6.0	13.55
504.10	6.0	13.62
504.11	5.9	13.69
504.12	5.9	13.74
504.13	5.9	13.79
504.14	5.9	13.83
504.15	5.9	13.87
504.16	5.8	13.89
504.17	5.8	**13.90**
504.18	5.8	13.89
504.19	5.8	13.88
504.20	5.7	13.84
504.21	5.7	13.79
504.22	5.6	13.71
504.23	5.6	13.59
504.24	5.5	13.41
504.25	5.3	12.92

Stage-Area-Storage for Reach 12R: Driveway Crossing

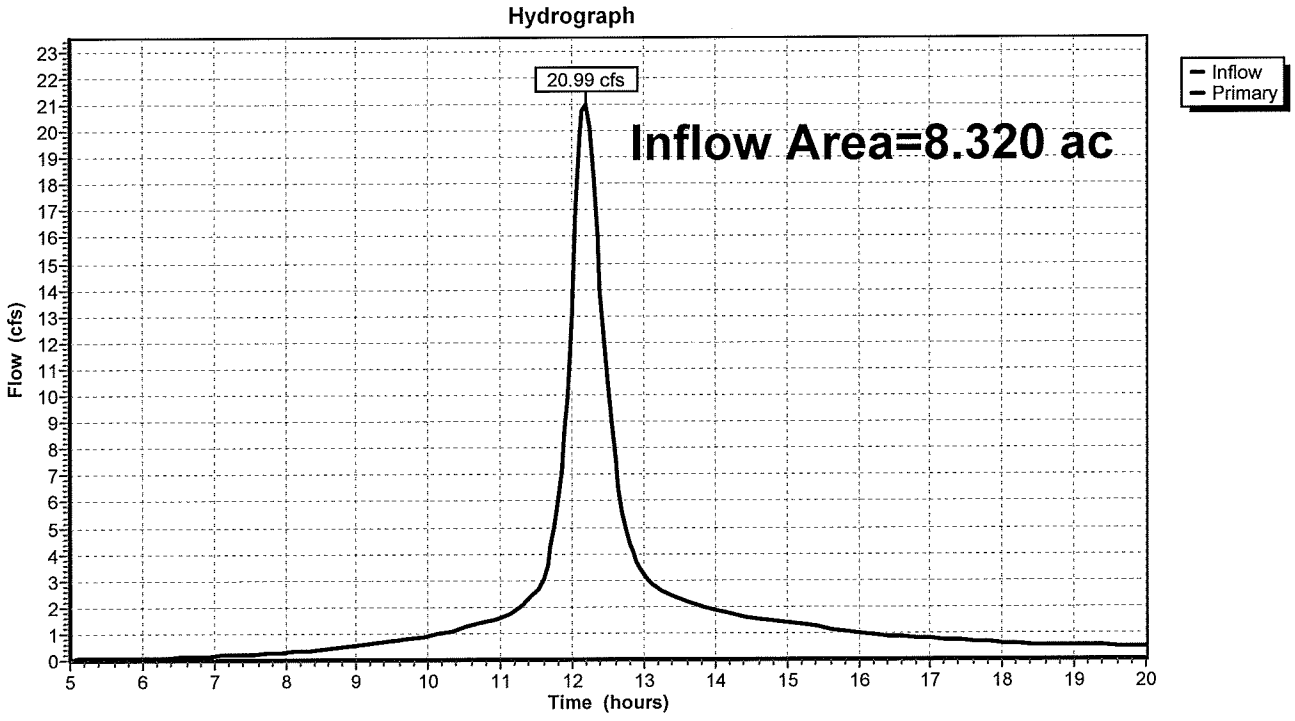
Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
503.00	0	503.51	94	504.02	214
503.01	0	503.52	97	504.03	216
503.02	1	503.53	99	504.04	218
503.03	2	503.54	102	504.05	220
503.04	2	503.55	104	504.06	222
503.05	3	503.56	106	504.07	224
503.06	4	503.57	109	504.08	225
503.07	5	503.58	111	504.09	227
503.08	7	503.59	114	504.10	229
503.09	8	503.60	116	504.11	230
503.10	9	503.61	119	504.12	232
503.11	11	503.62	121	504.13	233
503.12	12	503.63	124	504.14	235
503.13	14	503.64	126	504.15	236
503.14	15	503.65	129	504.16	238
503.15	17	503.66	131	504.17	239
503.16	18	503.67	134	504.18	240
503.17	20	503.68	136	504.19	241
503.18	22	503.69	139	504.20	242
503.19	24	503.70	141	504.21	243
503.20	25	503.71	144	504.22	244
503.21	27	503.72	146	504.23	245
503.22	29	503.73	149	504.24	245
503.23	31	503.74	151	504.25	**245**
503.24	33	503.75	154		
503.25	35	503.76	156		
503.26	37	503.77	159		
503.27	39	503.78	161		
503.28	41	503.79	163		
503.29	43	503.80	166		
503.30	45	503.81	168		
503.31	47	503.82	171		
503.32	50	503.83	173		
503.33	52	503.84	175		
503.34	54	503.85	178		
503.35	56	503.86	180		
503.36	59	503.87	182		
503.37	61	503.88	185		
503.38	63	503.89	187		
503.39	65	503.90	189		
503.40	68	503.91	191		
503.41	70	503.92	194		
503.42	72	503.93	196		
503.43	75	503.94	198		
503.44	77	503.95	200		
503.45	80	503.96	202		
503.46	82	503.97	204		
503.47	84	503.98	206		
503.48	87	503.99	208		
503.49	89	504.00	210		
503.50	92	504.01	212		

Link DP1: Design Point 1

Inflow Area = 8.320 ac, Inflow Depth > 3.07"
Inflow = 20.99 cfs @ 12.19 hrs, Volume= 2.130 af
Primary = 20.99 cfs @ 12.19 hrs, Volume= 2.130 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP1: Design Point 1



Hydrograph for Link DP1: Design Point 1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.03	**0.00**	0.03
5.25	0.04	0.00	0.04
5.50	0.04	0.00	0.04
5.75	0.05	0.00	0.05
6.00	0.07	0.00	0.07
6.25	0.09	0.00	0.09
6.50	0.11	0.00	0.11
6.75	0.13	0.00	0.13
7.00	0.16	0.00	0.16
7.25	0.19	0.00	0.19
7.50	0.22	0.00	0.22
7.75	0.26	0.00	0.26
8.00	0.29	0.00	0.29
8.25	0.34	0.00	0.34
8.50	0.40	0.00	0.40
8.75	0.47	0.00	0.47
9.00	0.55	0.00	0.55
9.25	0.63	0.00	0.63
9.50	0.72	0.00	0.72
9.75	0.81	0.00	0.81
10.00	0.92	0.00	0.92
10.25	1.04	0.00	1.04
10.50	1.21	0.00	1.21
10.75	1.40	0.00	1.40
11.00	1.61	0.00	1.61
11.25	1.96	0.00	1.96
11.50	2.58	0.00	2.58
11.75	5.05	0.00	5.05
12.00	**12.99**	0.00	**12.99**
12.25	**20.12**	0.00	**20.12**
12.50	10.53	0.00	10.53
12.75	4.89	0.00	4.89
13.00	3.24	0.00	3.24
13.25	2.56	0.00	2.56
13.50	2.28	0.00	2.28
13.75	2.08	0.00	2.08
14.00	1.87	0.00	1.87
14.25	1.70	0.00	1.70
14.50	1.59	0.00	1.59
14.75	1.49	0.00	1.49
15.00	1.39	0.00	1.39
15.25	1.30	0.00	1.30
15.50	1.20	0.00	1.20
15.75	1.10	0.00	1.10
16.00	1.00	0.00	1.00
16.25	0.91	0.00	0.91
16.50	0.86	0.00	0.86
16.75	0.82	0.00	0.82
17.00	0.78	0.00	0.78
17.25	0.73	0.00	0.73
17.50	0.69	0.00	0.69
17.75	0.65	0.00	0.65
18.00	0.60	0.00	0.60
18.25	0.57	0.00	0.57
18.50	0.55	0.00	0.55
18.75	0.54	0.00	0.54
19.00	0.52	0.00	0.52
19.25	0.51	0.00	0.51
19.50	0.50	0.00	0.50
19.75	0.48	0.00	0.48
20.00	0.47	0.00	0.47

PROPOSED CONDITIONS

25 YEAR STORM

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10S: Overland runoff to the northwest Runoff Area=3.210 ac Runoff Depth>3.72"
Flow Length=625' Tc=15.8 min CN=88 Runoff=10.76 cfs 0.996 af

Subcatchment 20S: Overland runoff to grass channel Runoff Area=1.410 ac Runoff Depth>4.14"
Flow Length=190' Tc=5.0 min CN=92 Runoff=6.89 cfs 0.487 af

Subcatchment 30S: Overland runoff to south Runoff Area=3.020 ac Runoff Depth>3.72"
Flow Length=521' Tc=16.2 min CN=88 Runoff=10.03 cfs 0.937 af

Subcatchment 40S: Roof Runoff to Grass Channel Runoff Area=0.380 ac Runoff Depth>4.69"
Flow Length=300' Tc=5.0 min CN=98 Runoff=1.98 cfs 0.149 af

Subcatchment 50S: Overland runoff to southwest Runoff Area=0.300 ac Runoff Depth>2.42"
Flow Length=110' Tc=5.0 min CN=74 Runoff=0.92 cfs 0.060 af

Reach 12R: Driveway Crossing Peak Depth=0.87' Max Vel=5.9 fps Inflow=10.76 cfs 0.996 af
D=15.0" n=0.013 L=100.0' S=0.0100 '/' Capacity=12.92 cfs Outflow=10.70 cfs 0.995 af

Link DP1: Design Point 1 Inflow=25.70 cfs 2.628 af
Primary=25.70 cfs 2.628 af

Total Runoff Area = 8.320 ac Runoff Volume = 2.628 af Average Runoff Depth = 3.79"

Subcatchment 10S: Overland runoff to the northwest

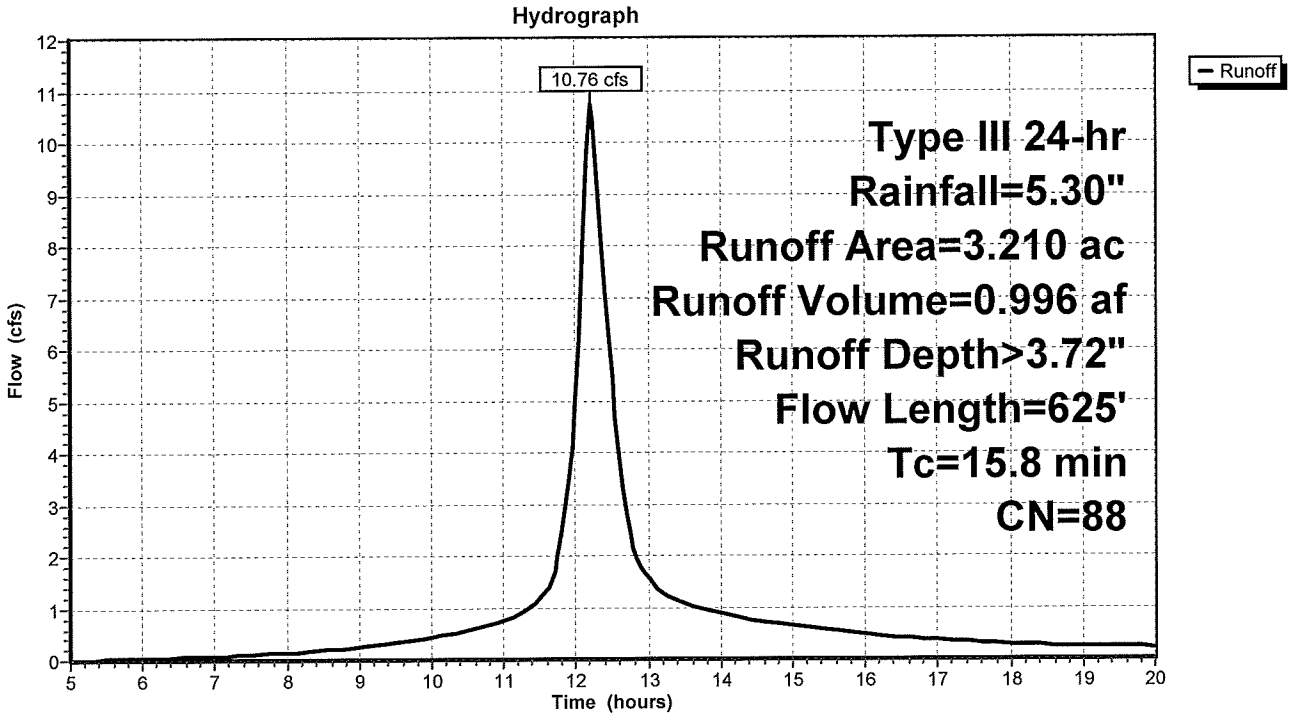
Runoff = 10.76 cfs @ 12.21 hrs, Volume= 0.996 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

Area (ac)	CN	Description
1.920	98	Paved parking & roofs
0.740	74	>75% Grass cover, Good, HSG C
0.550	70	Woods, Good, HSG C
3.210	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.00"
1.9	275	0.0146	2.5		**Shallow Concentrated Flow, Path 2** Paved Kv= 20.3 fps
1.2	300	0.0133	4.0	32.08	**Channel Flow, Path 3** Area= 8.0 sf Perim= 13.6' r= 0.59' n= 0.030 Earth, grassed & winding
15.8	625	Total			

Subcatchment 10S: Overland runoff to the northwest



Hydrograph for Subcatchment 10S: Overland runoff to the northwest

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.30	0.00	0.00
5.25	0.32	0.00	0.01
5.50	0.34	0.00	0.02
5.75	0.36	0.01	0.02
6.00	0.38	0.01	0.03
6.25	0.40	0.01	0.04
6.50	0.43	0.02	0.05
6.75	0.45	0.02	0.06
7.00	0.48	0.03	0.07
7.25	0.51	0.03	0.09
7.50	0.54	0.04	0.10
7.75	0.57	0.05	0.12
8.00	0.60	0.06	0.14
8.25	0.64	0.08	0.16
8.50	0.68	0.09	0.19
8.75	0.72	0.11	0.22
9.00	0.77	0.13	0.26
9.25	0.82	0.16	0.30
9.50	0.88	0.19	0.34
9.75	0.94	0.22	0.39
10.00	1.00	0.25	0.44
10.25	1.07	0.29	0.49
10.50	1.15	0.34	0.57
10.75	1.23	0.40	0.66
11.00	1.32	0.46	0.76
11.25	1.44	0.54	0.90
11.50	1.58	0.64	1.18
11.75	1.88	0.87	2.02
12.00	2.65	1.51	**4.91**
12.25	3.42	2.19	**10.42**
12.50	3.72	2.47	5.45
12.75	3.86	2.60	2.42
13.00	3.97	2.71	1.56
13.25	4.07	2.79	1.21
13.50	4.15	2.87	1.07
13.75	4.23	2.94	0.97
14.00	4.30	3.01	0.88
14.25	4.36	3.07	0.79
14.50	4.42	3.12	0.74
14.75	4.48	3.17	0.70
15.00	4.53	3.22	0.65
15.25	4.58	3.27	0.60
15.50	4.62	3.31	0.56
15.75	4.66	3.35	0.51
16.00	4.70	3.38	0.47
16.25	4.73	3.41	0.43
16.50	4.76	3.44	0.40
16.75	4.79	3.47	0.38
17.00	4.82	3.50	0.36
17.25	4.85	3.52	0.34
17.50	4.87	3.55	0.32
17.75	4.90	3.57	0.30
18.00	4.92	3.59	0.28
18.25	4.94	3.61	0.26
18.50	4.96	3.63	0.25
18.75	4.98	3.65	0.25
19.00	5.00	3.67	0.24
19.25	5.02	3.69	0.24
19.50	5.04	3.70	0.23
19.75	5.05	3.72	0.22
20.00	**5.07**	**3.74**	0.22

Subcatchment 20S: Overland runoff to grass channel

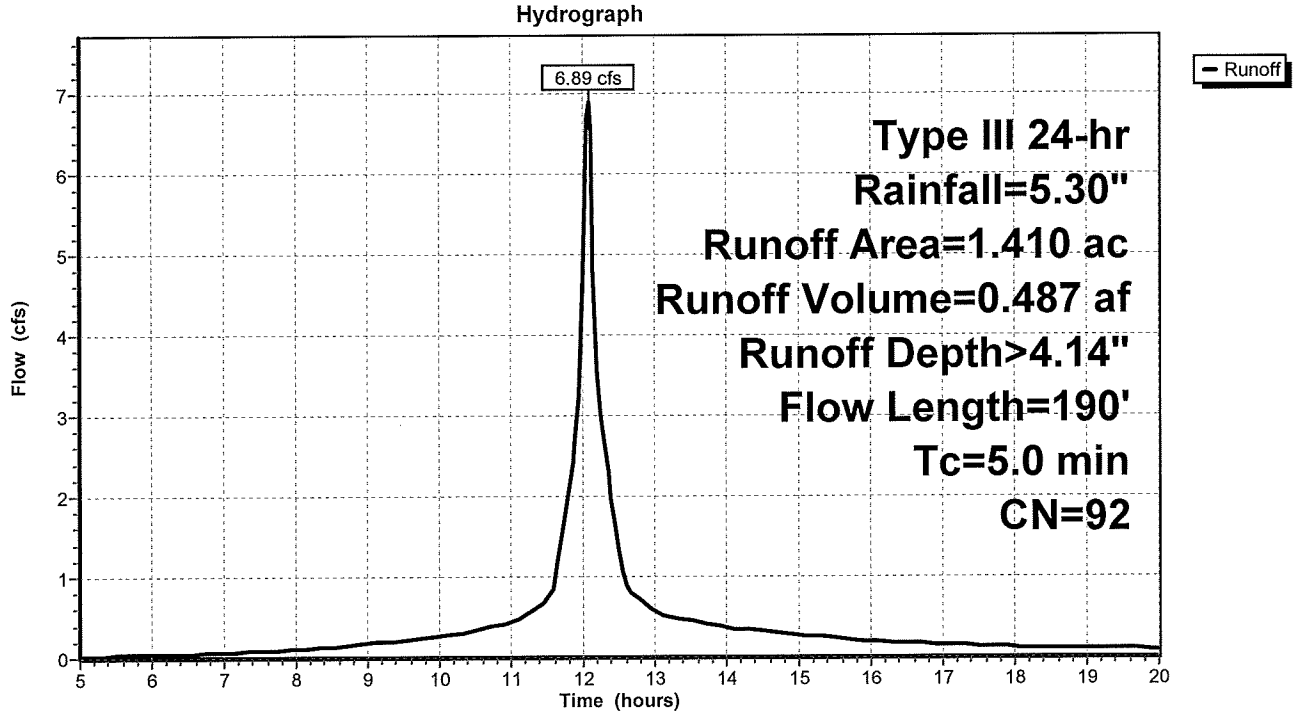
Runoff = 6.89 cfs @ 12.07 hrs, Volume= 0.487 af, Depth> 4.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

Area (ac)	CN	Description
1.070	98	Paved parking & roofs
0.340	74	>75% Grass cover, Good, HSG C
1.410	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	190		0.6		**Direct Entry, Path 1**

Subcatchment 20S: Overland runoff to grass channel



Hydrograph for Subcatchment 20S: Overland runoff to grass channel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.30	0.02	0.02
5.25	0.32	0.02	0.03
5.50	0.34	0.03	0.03
5.75	0.36	0.03	0.04
6.00	0.38	0.04	0.04
6.25	0.40	0.05	0.05
6.50	0.43	0.06	0.05
6.75	0.45	0.07	0.06
7.00	0.48	0.08	0.07
7.25	0.51	0.09	0.08
7.50	0.54	0.11	0.09
7.75	0.57	0.12	0.10
8.00	0.60	0.14	0.11
8.25	0.64	0.16	0.12
8.50	0.68	0.19	0.14
8.75	0.72	0.21	0.16
9.00	0.77	0.24	0.18
9.25	0.82	0.28	0.20
9.50	0.88	0.32	0.22
9.75	0.94	0.36	0.24
10.00	1.00	0.40	0.27
10.25	1.07	0.46	0.30
10.50	1.15	0.51	0.34
10.75	1.23	0.58	0.39
11.00	1.32	0.66	0.43
11.25	1.44	0.75	0.55
11.50	1.58	0.87	0.71
11.75	1.88	1.13	1.79
12.00	2.65	1.83	**4.76**
12.25	3.42	2.56	**2.99**
12.50	3.72	2.85	1.35
12.75	3.86	2.99	0.75
13.00	3.97	3.09	0.58
13.25	4.07	3.18	0.50
13.50	4.15	3.27	0.46
13.75	4.23	3.34	0.41
14.00	4.30	3.41	0.37
14.25	4.36	3.47	0.34
14.50	4.42	3.52	0.32
14.75	4.48	3.58	0.30
15.00	4.53	3.63	0.28
15.25	4.58	3.68	0.26
15.50	4.62	3.72	0.24
15.75	4.66	3.76	0.22
16.00	4.70	3.79	0.20
16.25	4.73	3.83	0.18
16.50	4.76	3.86	0.18
16.75	4.79	3.89	0.17
17.00	4.82	3.91	0.16
17.25	4.85	3.94	0.15
17.50	4.87	3.97	0.14
17.75	4.90	3.99	0.13
18.00	4.92	4.01	0.12
18.25	4.94	4.03	0.12
18.50	4.96	4.05	0.11
18.75	4.98	4.07	0.11
19.00	5.00	4.09	0.11
19.25	5.02	4.11	0.10
19.50	5.04	4.13	0.10
19.75	5.05	4.14	0.10
20.00	**5.07**	**4.16**	0.10

Subcatchment 30S: Overland runoff to south

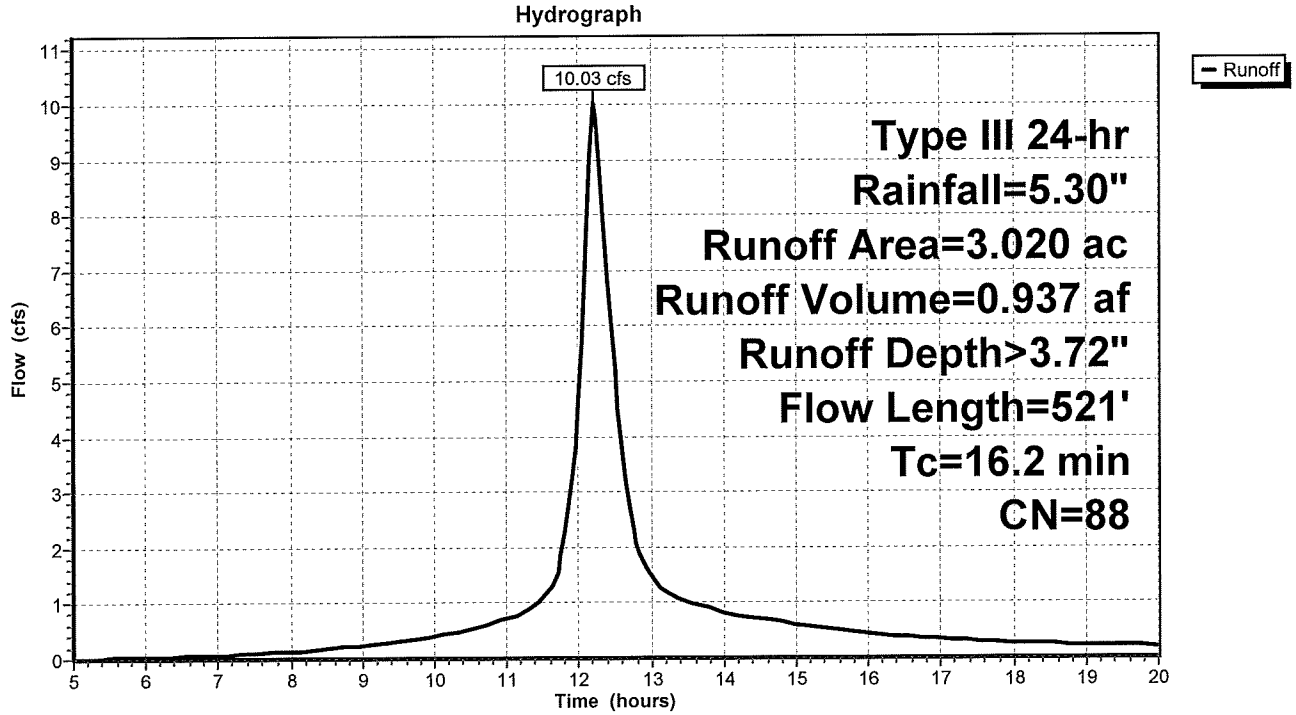
Runoff = 10.03 cfs @ 12.22 hrs, Volume= 0.937 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

Area (ac)	CN	Description
1.860	98	Paved parking & roofs
0.490	74	>75% Grass cover, Good, HSG C
0.670	70	Woods, Good, HSG C
3.020	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.00"
2.7	421	0.0162	2.6		**Shallow Concentrated Flow, Path 2** Paved Kv= 20.3 fps
0.2	25	0.0600	1.7		**Shallow Concentrated Flow, Path 3** Short Grass Pasture Kv= 7.0 fps
0.6	25	0.0200	0.7		**Shallow Concentrated Flow, Path 4** Woodland Kv= 5.0 fps
16.2	521	Total			

Subcatchment 30S: Overland runoff to south



Hydrograph for Subcatchment 30S: Overland runoff to south

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.30	0.00	0.00
5.25	0.32	0.00	0.01
5.50	0.34	0.00	0.02
5.75	0.36	0.01	0.02
6.00	0.38	0.01	0.03
6.25	0.40	0.01	0.04
6.50	0.43	0.02	0.05
6.75	0.45	0.02	0.06
7.00	0.48	0.03	0.07
7.25	0.51	0.03	0.08
7.50	0.54	0.04	0.10
7.75	0.57	0.05	0.11
8.00	0.60	0.06	0.13
8.25	0.64	0.08	0.15
8.50	0.68	0.09	0.18
8.75	0.72	0.11	0.21
9.00	0.77	0.13	0.24
9.25	0.82	0.16	0.28
9.50	0.88	0.19	0.32
9.75	0.94	0.22	0.36
10.00	1.00	0.25	0.41
10.25	1.07	0.29	0.46
10.50	1.15	0.34	0.54
10.75	1.23	0.40	0.62
11.00	1.32	0.46	0.71
11.25	1.44	0.54	0.84
11.50	1.58	0.64	1.10
11.75	1.88	0.87	1.86
12.00	2.65	1.51	**4.54**
12.25	3.42	2.19	**9.79**
12.50	3.72	2.47	5.22
12.75	3.86	2.60	2.33
13.00	3.97	2.71	1.48
13.25	4.07	2.79	1.14
13.50	4.15	2.87	1.01
13.75	4.23	2.94	0.92
14.00	4.30	3.01	0.83
14.25	4.36	3.07	0.75
14.50	4.42	3.12	0.70
14.75	4.48	3.17	0.66
15.00	4.53	3.22	0.61
15.25	4.58	3.27	0.57
15.50	4.62	3.31	0.53
15.75	4.66	3.35	0.48
16.00	4.70	3.38	0.44
16.25	4.73	3.41	0.40
16.50	4.76	3.44	0.38
16.75	4.79	3.47	0.36
17.00	4.82	3.50	0.34
17.25	4.85	3.52	0.32
17.50	4.87	3.55	0.30
17.75	4.90	3.57	0.28
18.00	4.92	3.59	0.26
18.25	4.94	3.61	0.25
18.50	4.96	3.63	0.24
18.75	4.98	3.65	0.23
19.00	5.00	3.67	0.23
19.25	5.02	3.69	0.22
19.50	5.04	3.70	0.22
19.75	5.05	3.72	0.21
20.00	**5.07**	**3.74**	0.21

Subcatchment 40S: Roof Runoff to Grass Channel

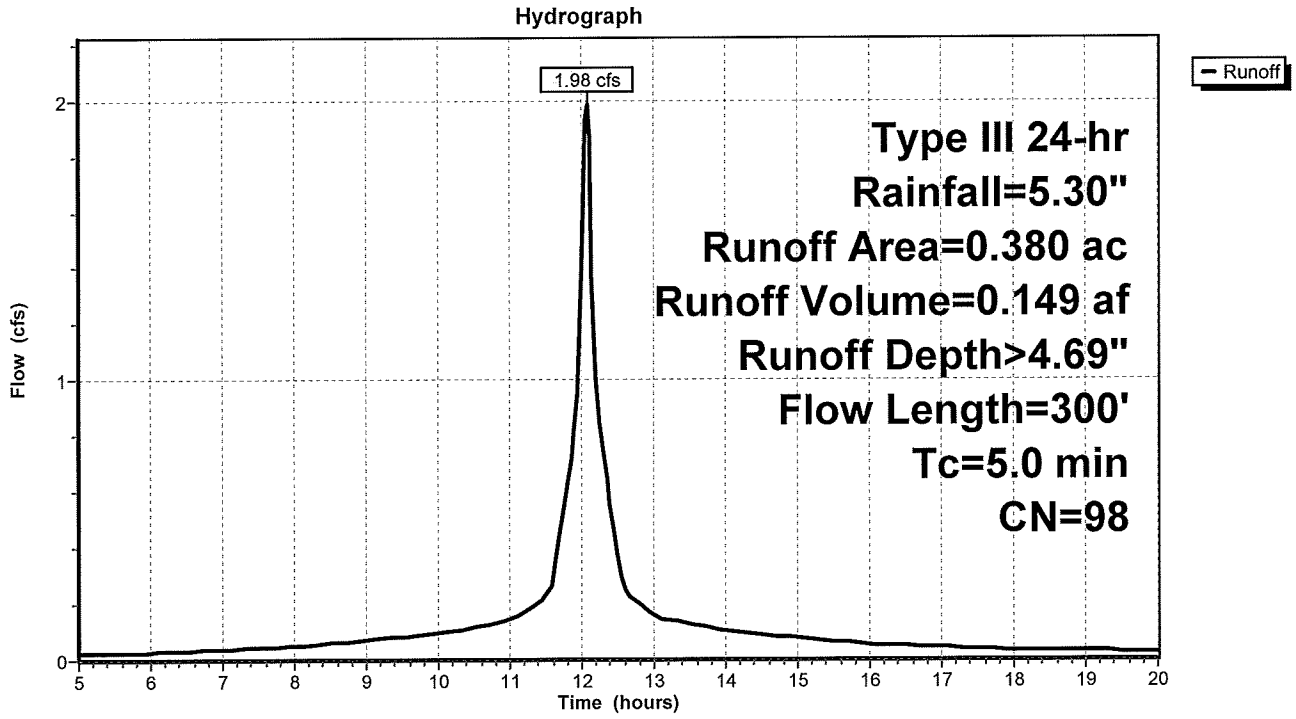
Runoff = 1.98 cfs @ 12.07 hrs, Volume= 0.149 af, Depth> 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

Area (ac)	CN	Description
0.380	98	Roof Runoff

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	300		1.0		**Direct Entry, Path 1**

Subcatchment 40S: Roof Runoff to Grass Channel



Hydrograph for Subcatchment 40S: Roof Runoff to Grass Channel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.30	0.15	0.02
5.25	0.32	0.16	0.02
5.50	0.34	0.18	0.03
5.75	0.36	0.20	0.03
6.00	0.38	0.21	0.03
6.25	0.40	0.23	0.03
6.50	0.43	0.25	0.03
6.75	0.45	0.28	0.03
7.00	0.48	0.30	0.04
7.25	0.51	0.33	0.04
7.50	0.54	0.35	0.04
7.75	0.57	0.38	0.05
8.00	0.60	0.41	0.05
8.25	0.64	0.45	0.05
8.50	0.68	0.49	0.06
8.75	0.72	0.53	0.06
9.00	0.77	0.57	0.07
9.25	0.82	0.62	0.08
9.50	0.88	0.67	0.08
9.75	0.94	0.73	0.09
10.00	1.00	0.79	0.09
10.25	1.07	0.86	0.10
10.50	1.15	0.93	0.12
10.75	1.23	1.02	0.13
11.00	1.32	1.11	0.14
11.25	1.44	1.22	0.18
11.50	1.58	1.36	0.22
11.75	1.88	1.66	0.54
12.00	2.65	2.42	**1.39**
12.25	3.42	3.18	**0.84**
12.50	3.72	3.49	0.38
12.75	3.86	3.63	0.21
13.00	3.97	3.74	0.16
13.25	4.07	3.83	0.14
13.50	4.15	3.92	0.13
13.75	4.23	3.99	0.12
14.00	4.30	4.06	0.10
14.25	4.36	4.13	0.10
14.50	4.42	4.18	0.09
14.75	4.48	4.24	0.08
15.00	4.53	4.29	0.08
15.25	4.58	4.34	0.07
15.50	4.62	4.38	0.07
15.75	4.66	4.42	0.06
16.00	4.70	4.46	0.05
16.25	4.73	4.49	0.05
16.50	4.76	4.52	0.05
16.75	4.79	4.56	0.05
17.00	4.82	4.58	0.04
17.25	4.85	4.61	0.04
17.50	4.87	4.64	0.04
17.75	4.90	4.66	0.04
18.00	4.92	4.68	0.03
18.25	4.94	4.70	0.03
18.50	4.96	4.72	0.03
18.75	4.98	4.74	0.03
19.00	5.00	4.76	0.03
19.25	5.02	4.78	0.03
19.50	5.04	4.80	0.03
19.75	5.05	4.82	0.03
20.00	**5.07**	**4.84**	0.03

Subcatchment 50S: Overland runoff to southwest

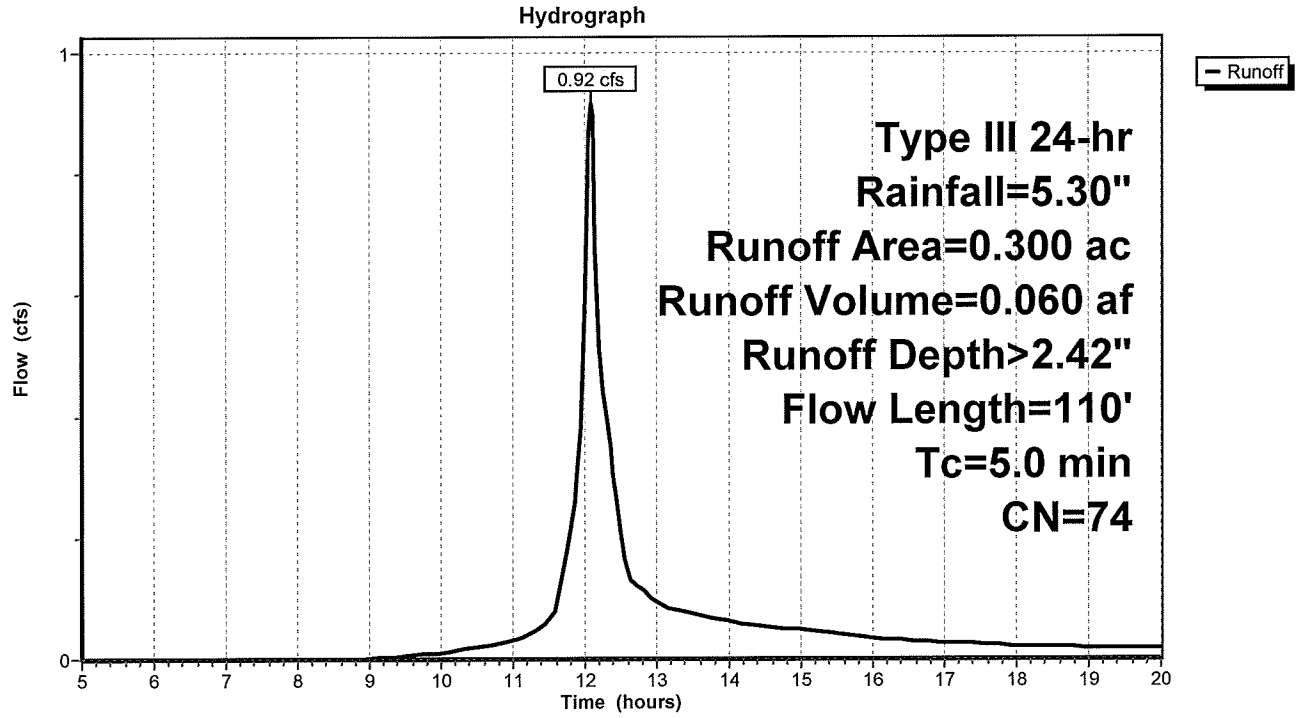
Runoff = 0.92 cfs @ 12.08 hrs, Volume= 0.060 af, Depth> 2.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

Area (ac)	CN	Description
0.030	98	Paved parking & roofs
0.070	74	>75% Grass cover, Good, HSG C
0.200	70	Woods, Good, HSG C
0.300	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	110		0.4		**Direct Entry, Path 1**

Subcatchment 50S: Overland runoff to southwest



Hydrograph for Subcatchment 50S: Overland runoff to southwest

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.30	0.00	0.00
5.25	0.32	0.00	0.00
5.50	0.34	0.00	0.00
5.75	0.36	0.00	0.00
6.00	0.38	0.00	0.00
6.25	0.40	0.00	0.00
6.50	0.43	0.00	0.00
6.75	0.45	0.00	0.00
7.00	0.48	0.00	0.00
7.25	0.51	0.00	0.00
7.50	0.54	0.00	0.00
7.75	0.57	0.00	0.00
8.00	0.60	0.00	0.00
8.25	0.64	0.00	0.00
8.50	0.68	0.00	0.00
8.75	0.72	0.00	0.00
9.00	0.77	0.00	0.00
9.25	0.82	0.00	0.00
9.50	0.88	0.01	0.01
9.75	0.94	0.01	0.01
10.00	1.00	0.02	0.01
10.25	1.07	0.03	0.01
10.50	1.15	0.05	0.02
10.75	1.23	0.07	0.02
11.00	1.32	0.09	0.03
11.25	1.44	0.13	0.04
11.50	1.58	0.18	0.06
11.75	1.88	0.30	0.18
12.00	2.65	0.69	**0.59**
12.25	3.42	1.18	**0.44**
12.50	3.72	1.39	0.21
12.75	3.86	1.50	0.12
13.00	3.97	1.58	0.09
13.25	4.07	1.65	0.08
13.50	4.15	1.71	0.07
13.75	4.23	1.77	0.07
14.00	4.30	1.82	0.06
14.25	4.36	1.87	0.06
14.50	4.42	1.91	0.05
14.75	4.48	1.95	0.05
15.00	4.53	1.99	0.05
15.25	4.58	2.03	0.04
15.50	4.62	2.06	0.04
15.75	4.66	2.10	0.04
16.00	4.70	2.12	0.03
16.25	4.73	2.15	0.03
16.50	4.76	2.18	0.03
16.75	4.79	2.20	0.03
17.00	4.82	2.22	0.03
17.25	4.85	2.24	0.03
17.50	4.87	2.26	0.02
17.75	4.90	2.28	0.02
18.00	4.92	2.30	0.02
18.25	4.94	2.32	0.02
18.50	4.96	2.33	0.02
18.75	4.98	2.35	0.02
19.00	5.00	2.36	0.02
19.25	5.02	2.38	0.02
19.50	5.04	2.39	0.02
19.75	5.05	2.41	0.02
20.00	**5.07**	**2.42**	0.02

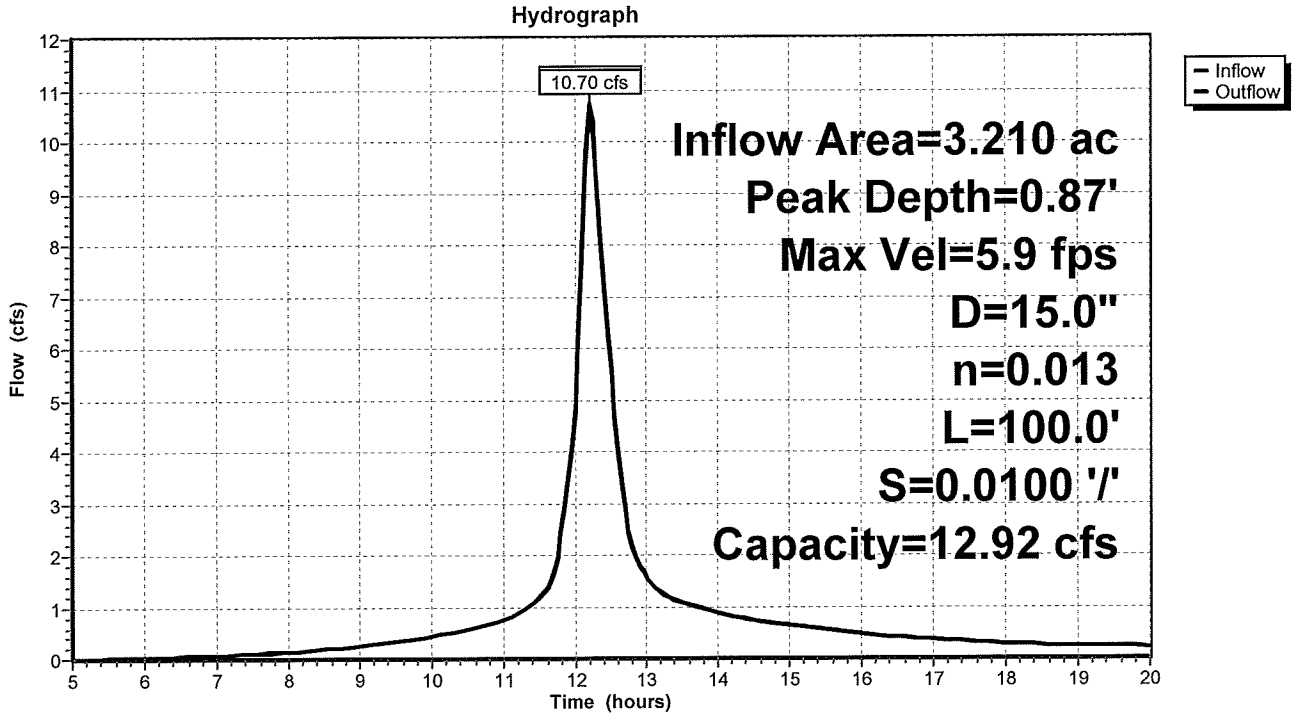
Reach 12R: Driveway Crossing

Inflow Area = 3.210 ac, Inflow Depth > 3.72"
Inflow = 10.76 cfs @ 12.21 hrs, Volume= 0.996 af
Outflow = 10.70 cfs @ 12.22 hrs, Volume= 0.995 af, Atten= 1%, Lag= 0.5 min

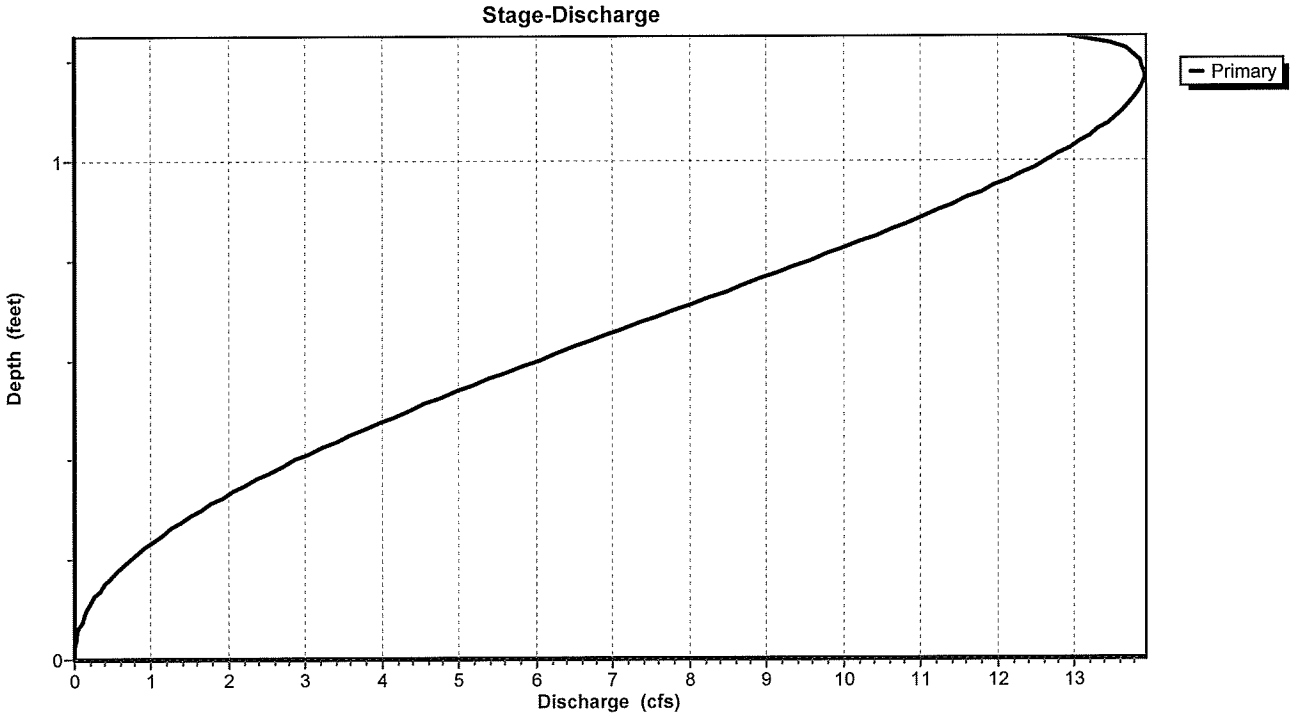
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.87' @ 12.22 hrs
Capacity at bank full= 12.92 cfs
Inlet Invert= 503.00', Outlet Invert= 502.00'
A factor of 2.00 has been applied to the supplied storage and discharge data
15.0" Diameter Pipe, n= 0.013 Corrugated PE, smooth interior
Length= 100.0' Slope= 0.0100 '/'

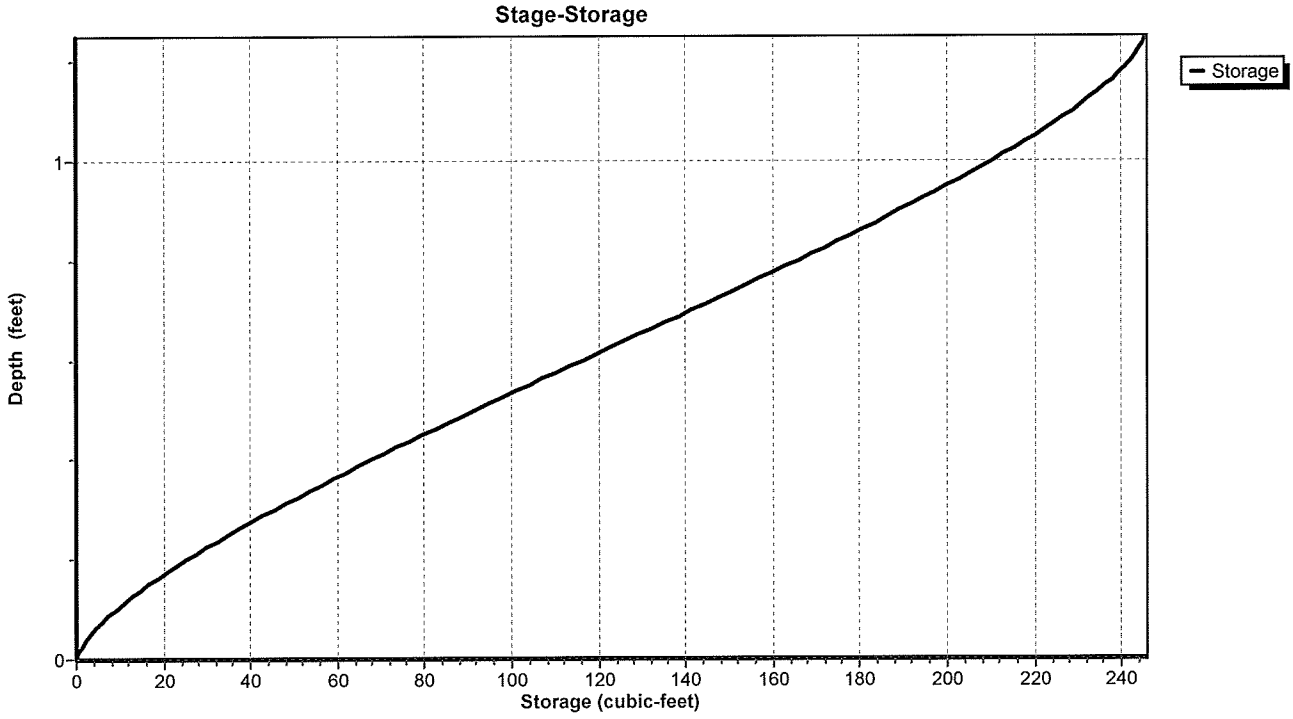
Reach 12R: Driveway Crossing



Reach 12R: Driveway Crossing



Reach 12R: Driveway Crossing



Hydrograph for Reach 12R: Driveway Crossing

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
5.00	0.00	0	503.00	0.00
5.50	0.02	2	503.03	0.02
6.00	0.03	3	503.04	0.03
6.50	0.05	4	503.06	0.05
7.00	0.07	5	503.07	0.07
7.50	0.10	7	503.08	0.10
8.00	0.14	8	503.09	0.14
8.50	0.19	10	503.11	0.19
9.00	0.26	12	503.12	0.26
9.50	0.34	15	503.14	0.34
10.00	0.44	18	503.16	0.43
10.50	0.57	22	503.18	0.57
11.00	0.76	26	503.20	0.75
11.50	1.18	36	503.25	1.17
12.00	**4.91**	**99**	**503.53**	**4.76**
12.50	**5.45**	**109**	**503.57**	**5.59**
13.00	1.56	44	503.29	1.58
13.50	1.07	34	503.24	1.08
14.00	0.88	29	503.22	0.88
14.50	0.74	26	503.20	0.74
15.00	0.65	24	503.19	0.65
15.50	0.56	21	503.18	0.56
16.00	0.47	19	503.16	0.47
16.50	0.40	17	503.15	0.40
17.00	0.36	16	503.14	0.36
17.50	0.32	14	503.14	0.32
18.00	0.28	13	503.13	0.28
18.50	0.25	12	503.12	0.25
19.00	0.24	12	503.12	0.24
19.50	0.23	11	503.12	0.23
20.00	0.22	11	503.11	0.22

Stage-Discharge for Reach 12R: Driveway Crossing

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
503.00	0.0	0.00
503.01	0.4	0.00
503.02	0.6	0.01
503.03	0.8	0.01
503.04	1.0	0.02
503.05	1.2	0.04
503.06	1.3	0.06
503.07	1.5	0.08
503.08	1.6	0.10
503.09	1.7	0.13
503.10	1.8	0.17
503.11	1.9	0.21
503.12	2.1	0.25
503.13	2.2	0.29
503.14	2.3	0.34
503.15	2.4	0.40
503.16	2.5	0.45
503.17	2.6	0.51
503.18	2.7	0.58
503.19	2.7	0.65
503.20	2.8	0.72
503.21	2.9	0.79
503.22	3.0	0.87
503.23	3.1	0.96
503.24	3.2	1.04
503.25	3.2	1.13
503.26	3.3	1.22
503.27	3.4	1.32
503.28	3.5	1.42
503.29	3.5	1.53
503.30	3.6	1.63
503.31	3.7	1.74
503.32	3.7	1.85
503.33	3.8	1.97
503.34	3.9	2.09
503.35	3.9	2.21
503.36	4.0	2.34
503.37	4.1	2.47
503.38	4.1	2.60
503.39	4.2	2.73
503.40	4.2	2.86
503.41	4.3	3.00
503.42	4.3	3.14
503.43	4.4	3.29
503.44	4.5	3.43
503.45	4.5	3.58
503.46	4.6	3.73
503.47	4.6	3.88
503.48	4.7	4.04
503.49	4.7	4.20
503.50	4.7	4.35
503.51	4.8	4.51
503.52	4.8	4.68
503.53	4.9	4.84
503.54	4.9	5.00
503.55	5.0	5.17
503.56	5.0	5.34
503.57	5.1	5.51
503.58	5.1	5.68
503.59	5.1	5.85
503.60	5.2	6.02
503.61	5.2	6.20
503.62	5.2	6.37
503.63	5.3	6.55
503.64	5.3	6.72
503.65	5.4	6.90
503.66	5.4	7.08
503.67	5.4	7.26
503.68	5.4	7.43
503.69	5.5	7.61
503.70	5.5	7.79
503.71	5.5	7.97
503.72	5.6	8.15
503.73	5.6	8.32
503.74	5.6	8.50
503.75	5.6	8.68
503.76	5.7	8.86
503.77	5.7	9.03
503.78	5.7	9.21
503.79	5.7	9.38
503.80	5.8	9.56
503.81	5.8	9.73
503.82	5.8	9.90
503.83	5.8	10.07
503.84	5.8	10.24
503.85	5.9	10.41
503.86	5.9	10.57
503.87	5.9	10.74
503.88	5.9	10.90
503.89	5.9	11.06
503.90	5.9	11.21
503.91	5.9	11.37
503.92	6.0	11.52
503.93	6.0	11.67
503.94	6.0	11.82
503.95	6.0	11.96
503.96	6.0	12.10
503.97	6.0	12.24
503.98	6.0	12.37
503.99	6.0	12.50
504.00	6.0	12.63
504.01	6.0	12.75
504.02	**6.0**	12.87
504.03	6.0	12.98
504.04	6.0	13.09
504.05	6.0	13.19
504.06	6.0	13.29
504.07	6.0	13.38
504.08	6.0	13.47
504.09	6.0	13.55
504.10	6.0	13.62
504.11	5.9	13.69
504.12	5.9	13.74
504.13	5.9	13.79
504.14	5.9	13.83
504.15	5.9	13.87
504.16	5.8	13.89
504.17	5.8	**13.90**
504.18	5.8	13.89
504.19	5.8	13.88
504.20	5.7	13.84
504.21	5.7	13.79
504.22	5.6	13.71
504.23	5.6	13.59
504.24	5.5	13.41
504.25	5.3	12.92

Stage-Area-Storage for Reach 12R: Driveway Crossing

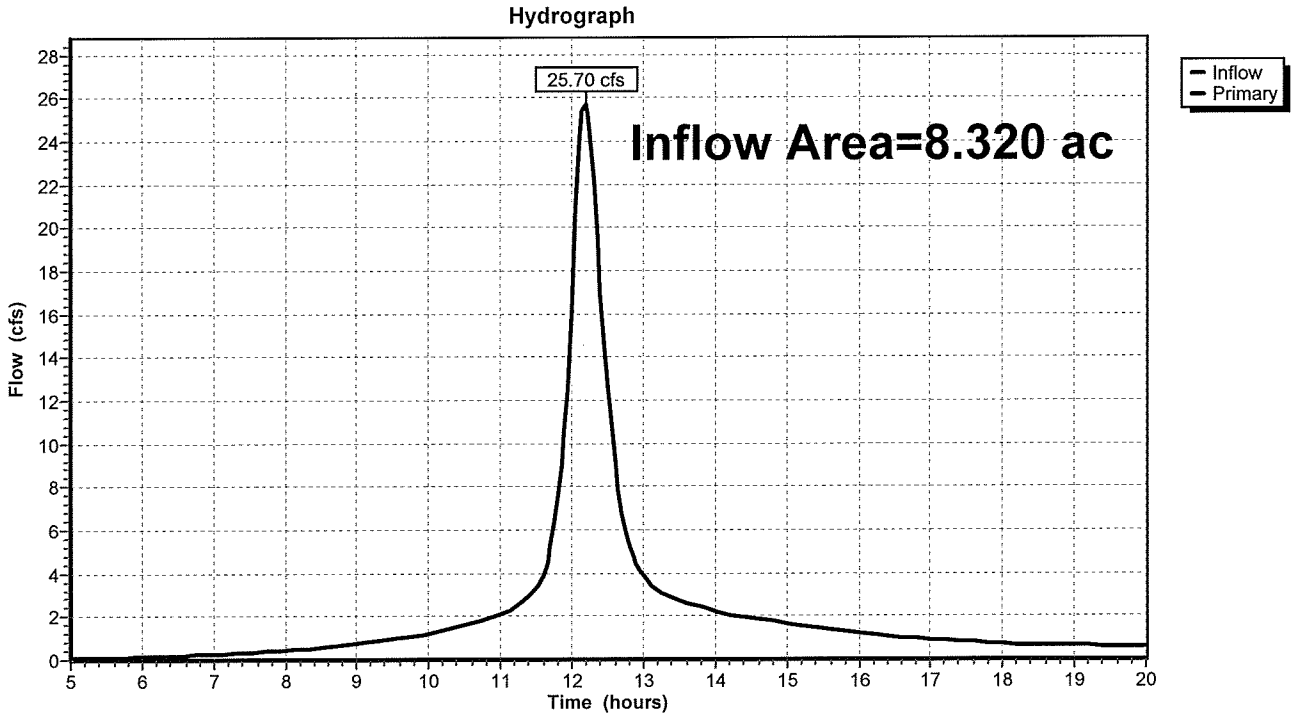
Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
503.00	0	503.51	94	504.02	214
503.01	0	503.52	97	504.03	216
503.02	1	503.53	99	504.04	218
503.03	2	503.54	102	504.05	220
503.04	2	503.55	104	504.06	222
503.05	3	503.56	106	504.07	224
503.06	4	503.57	109	504.08	225
503.07	5	503.58	111	504.09	227
503.08	7	503.59	114	504.10	229
503.09	8	503.60	116	504.11	230
503.10	9	503.61	119	504.12	232
503.11	11	503.62	121	504.13	233
503.12	12	503.63	124	504.14	235
503.13	14	503.64	126	504.15	236
503.14	15	503.65	129	504.16	238
503.15	17	503.66	131	504.17	239
503.16	18	503.67	134	504.18	240
503.17	20	503.68	136	504.19	241
503.18	22	503.69	139	504.20	242
503.19	24	503.70	141	504.21	243
503.20	25	503.71	144	504.22	244
503.21	27	503.72	146	504.23	245
503.22	29	503.73	149	504.24	245
503.23	31	503.74	151	504.25	**245**
503.24	33	503.75	154		
503.25	35	503.76	156		
503.26	37	503.77	159		
503.27	39	503.78	161		
503.28	41	503.79	163		
503.29	43	503.80	166		
503.30	45	503.81	168		
503.31	47	503.82	171		
503.32	50	503.83	173		
503.33	52	503.84	175		
503.34	54	503.85	178		
503.35	56	503.86	180		
503.36	59	503.87	182		
503.37	61	503.88	185		
503.38	63	503.89	187		
503.39	65	503.90	189		
503.40	68	503.91	191		
503.41	70	503.92	194		
503.42	72	503.93	196		
503.43	75	503.94	198		
503.44	77	503.95	200		
503.45	80	503.96	202		
503.46	82	503.97	204		
503.47	84	503.98	206		
503.48	87	503.99	208		
503.49	89	504.00	210		
503.50	92	504.01	212		

Link DP1: Design Point 1

Inflow Area = 8.320 ac, Inflow Depth > 3.79"
Inflow = 25.70 cfs @ 12.18 hrs, Volume= 2.628 af
Primary = 25.70 cfs @ 12.18 hrs, Volume= 2.628 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP1: Design Point 1



Hydrograph for Link DP1: Design Point 1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.05	**0.00**	0.05
5.25	0.07	0.00	0.07
5.50	0.09	0.00	0.09
5.75	0.11	0.00	0.11
6.00	0.13	0.00	0.13
6.25	0.15	0.00	0.15
6.50	0.18	0.00	0.18
6.75	0.21	0.00	0.21
7.00	0.25	0.00	0.25
7.25	0.29	0.00	0.29
7.50	0.33	0.00	0.33
7.75	0.38	0.00	0.38
8.00	0.42	0.00	0.42
8.25	0.48	0.00	0.48
8.50	0.56	0.00	0.56
8.75	0.65	0.00	0.65
9.00	0.75	0.00	0.75
9.25	0.86	0.00	0.86
9.50	0.97	0.00	0.97
9.75	1.09	0.00	1.09
10.00	1.21	0.00	1.21
10.25	1.37	0.00	1.37
10.50	1.58	0.00	1.58
10.75	1.82	0.00	1.82
11.00	2.07	0.00	2.07
11.25	2.50	0.00	2.50
11.50	3.27	0.00	3.27
11.75	6.32	0.00	6.32
12.00	**16.03**	0.00	**16.03**
12.25	**24.57**	0.00	**24.57**
12.50	12.75	0.00	12.75
12.75	5.89	0.00	5.89
13.00	3.90	0.00	3.90
13.25	3.08	0.00	3.08
13.50	2.75	0.00	2.75
13.75	2.49	0.00	2.49
14.00	2.25	0.00	2.25
14.25	2.04	0.00	2.04
14.50	1.91	0.00	1.91
14.75	1.79	0.00	1.79
15.00	1.67	0.00	1.67
15.25	1.55	0.00	1.55
15.50	1.43	0.00	1.43
15.75	1.31	0.00	1.31
16.00	1.19	0.00	1.19
16.25	1.09	0.00	1.09
16.50	1.03	0.00	1.03
16.75	0.98	0.00	0.98
17.00	0.93	0.00	0.93
17.25	0.88	0.00	0.88
17.50	0.82	0.00	0.82
17.75	0.77	0.00	0.77
18.00	0.72	0.00	0.72
18.25	0.68	0.00	0.68
18.50	0.66	0.00	0.66
18.75	0.64	0.00	0.64
19.00	0.63	0.00	0.63
19.25	0.61	0.00	0.61
19.50	0.59	0.00	0.59
19.75	0.58	0.00	0.58
20.00	0.56	0.00	0.56