

**CASEY & KELLER, INC.**

LAND SURVEYORS + CIVIL ENGINEERS + PLANNERS

N.J. STATE BOARD OF PROFESSIONAL ENGINEERS & LAND SURVEYORS  
CERTIFICATE OF AUTHORIZATION NO. 24GA27985400

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# **STORMWATER** **MANAGEMENT REPORT**

**FOR**

**5 Central Avenue  
9, 11, 13 Central Ave.  
Borough of Madison  
Morris County, New Jersey**

**BLOCK 1802 – LOT 3**

**CASEY & KELLER PROJECT #: 1220114**

**May 19, 2022**

  
MICHAEL LANZAFAMA, P.E. & P.L.S.  
NJ REG. # GB 30084

Preliminary & Final Site Plan  
5 Central Ave.  
Block 1802, Lot 3  
1220114

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## **STORMWATER MANAGEMENT REPORT FOR 5 Central Avenue**

### **INTRODUCTION**

The project is located at 5 Central Avenue, also known as (9,11,13 Central Ave). The subject parcel is a rectangular shaped lot. The parcel consists of 0.067 acre property which fronts on Central Avenue. The subject property is located in the Borough of Madison's CBD-1 Zone, and is also known as Block 1802, Lot 3.

### **EXISTING CONDITIONS**

The subject site currently is comprised of (2) 1-story retail buildings and a 2 story residential. All buildings are currently vacant. The cumulative area of the existing buildings is approximately 1,881 square feet with 655 square feet of impervious and the remaining 387 square feet is lawn area. Ultimately, the stormwater runoff generated by the site drains to the drainage system on Central Avenue.

### **PROPOSED DEVELOPMENT**

The project proposes a four-story, mixed-use building containing 9 residential dwellings on the second, third and fourth floor and 1,887 square feet of retail on the ground floor. The proposed building coverage will be 2,923 square feet. The proposed development would result a 387 sf increase in impervious cover.

The ground level will have retail space, a residential lobby, as well as other miscellaneous features which serve the building's proper function. The 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> floor of the proposed building would have 9 residential units.

A proposed blue roof is proposed on the roof level of the building. A blue roof controls the flow of roof drainage by increasing temporary storage and more slowly releasing rainwater by means of detention, which is considered a stormwater management practice (SMP). A blue roof serves as a post-construction stormwater control that helps to mimic pre-development drainage patterns and hydrologic processes by increasing detention at the point of rainfall.

Since this project is less than one acre of land disturbance, the project is NOT considered a "major development" by the state's stormwater regulations outlined in N.J.A.C. 7:8. The project is exempt from stormwater management but a blue roof is being proposed.

### **TOPOGRAPHY & DRAINAGE PATTERNS**

The site moderately slopes to the North with some minimal area draining to the southerly adjacent property. The stormwater roof drains discharge to Central Avenue stormwater system. The entire proposed roof will be collected and stored on the roof and discharge to the Central Avenue storm system at a rate less than existing.

### **GROUNDWATER RECHARGE**

The project site is located with the New Jersey State PA-1 Planning Area, which means areas of previous and intense development (that is, impervious cover, disturbed soils, contaminated areas, et al.) (NJAC 7:8-5.4 (2)). The municipal ordinance, as well as the State's Stormwater Management Rules require every major development to provide for maintaining 100% of the average annual pre-project groundwater recharge volume. This project is exempt from this requirement because it is in Planning Area 1 and is previously developed.

### **WATER QUALITY**

Water quality requirements are not applicable to this development since the proposed development will result in an increase of less than 0.25 acres of additional impervious area. As provided within the Township Stormwater Management Rules Water Quality standards and NJDEP (N.J.A.C.7:8-5.5) apply if there is a net increase of 0.25 acres or more of impervious surface onsite. Therefore, water quality requirements are not applicable to this development. With the reduction of bituminous pavement and increase in roof area, water quality has been provided because roof water is considered clean water.

### **HYDROLOGY & STORMWATER MANAGEMENT**

The project will result in less than 1.0 acre of total disturbance, and increase impervious coverage by less than 0.25 acres, therefore the project does not meet the definition of "Major Development" as defined in the New Jersey Stormwater Management Regulations (N.J.A.C. 7:8 et seq). Though not required, the proposed blue roof will provide detention

#### Runoff Coefficients and Times of Concentration

Accordingly, the following CN values have been employed for the various existing and proposed combinations of soil types and land cover:

Impervious Surface=	98
Roof=	98
Lawn=	74

In addition to CN values, the NRCS Methodology for estimating stormwater runoff rates and volumes also necessitates the determination of a time of concentration for each subwatershed/drainage area. The times of concentration were estimated in accordance with the criteria given in the SCS 1986 TR-55. A minimum six-minute time of concentration was employed.

A stormwater detention blue roof is proposed to control the peak rates of runoff for the two-, ten-, and 100-year storm events. The proposed blue roof system will collect runoff and with an outlet pipe discharge to Central Avenue.

The "Natural Resources Conservation Service Method," outlined in *Technical Release 55* was used for the sizing and routing of stormwater through the detention basins. The methodology being used is the SCS Runoff Curve Number (CN) method. This methodology is best referenced in the USDA-SCS, 1985. National Engineering Handbook, Section 4 - Hydrology. Washington, D.C.: USDA-SCS. The SCS runoff equation is:

$$Q = \frac{(P - I_a)^2}{(P - I_a) + S}$$

where

- Q = runoff (in)
- P = rainfall (in)
- S = Potential maximum retention after runoff begins (in)
- I<sub>a</sub> = initial abstraction (in)

Preliminary & Final Site Plan  
5 Central Ave.  
Block 1802, Lot 3  
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To achieve this methodology, Hydrocad 10.1 was used, a software that will carry out and tabulate the answers for the different storm frequencies. There would not be any increase of peak runoff from what currently exists.

The areas and runoff coefficients were used to tabulate the peak flows for each drainage area. These figures can be found in **Appendix A** of this report. A summary of the peak rates are summarized below:

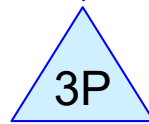
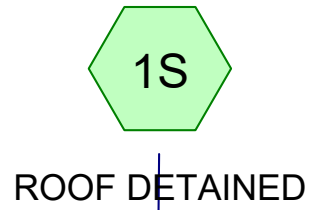
**Total site Analysis Table 1**

<b>Storm</b>	<b>Existing Peak Rate of Runoff</b>	<b>Proposed Peak Rate of Runoff</b>
2 year	0.21 cfs	0.16 cf
10 year	0.31 cfs	0.26 cfs
100 year	0.51 cfs	0.41 cfs

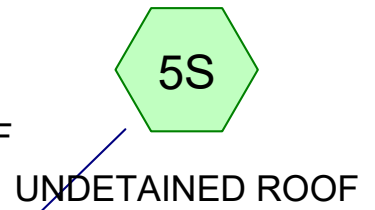
Though not required, the table shows that the proposed project would result in post-developed runoff rates considerably less than existing peak rates for the two-, ten-, and 100-year storm events. Calculations supporting our findings constitute the remainder of this report. Refer to site plans for existing and proposed conditions.

Preliminary & Final Site Plan  
5 Central Ave.  
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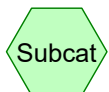
# **APPENDIX A STORMWATER CALCULATION DATA**



BLUE ROOF



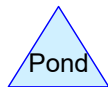
PROP



Subcat



Reach



Pond



Link

**Routing Diagram for 1220114-blue roof**

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**1220114-blue roof**

NOAA 24-hr D 2 year storm Rainfall=3.50"

Prepared by {enter your company name here}

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Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: ROOF DETAINED** Runoff Area=2,923 sf 100.00% Impervious Runoff Depth>3.08"  
Tc=6.0 min CN=98 Runoff=0.22 cfs 750 cf

**Subcatchment 2S: EXISTING** Runoff Area=2,923 sf 86.76% Impervious Runoff Depth>2.76"  
Tc=6.0 min CN=95 Runoff=0.21 cfs 671 cf

**Subcatchment 5S: UNDETAINED ROOF** Runoff Area=636 sf 100.00% Impervious Runoff Depth>3.08"  
Tc=6.0 min CN=98 Runoff=0.05 cfs 163 cf

**Pond 3P: BLUE ROOF** Peak Elev=0.07' Storage=143 cf Inflow=0.22 cfs 750 cf  
Outflow=0.13 cfs 739 cf

**Link 4L: PROP** Inflow=0.16 cfs 902 cf  
Primary=0.16 cfs 902 cf

**Total Runoff Area = 6,482 sf Runoff Volume = 1,585 cf Average Runoff Depth = 2.93"**  
**5.97% Pervious = 387 sf 94.03% Impervious = 6,095 sf**



**Summary for Subcatchment 1S: ROOF DETAINED**

Runoff = 0.22 cfs @ 12.13 hrs, Volume= 750 cf, Depth> 3.08"

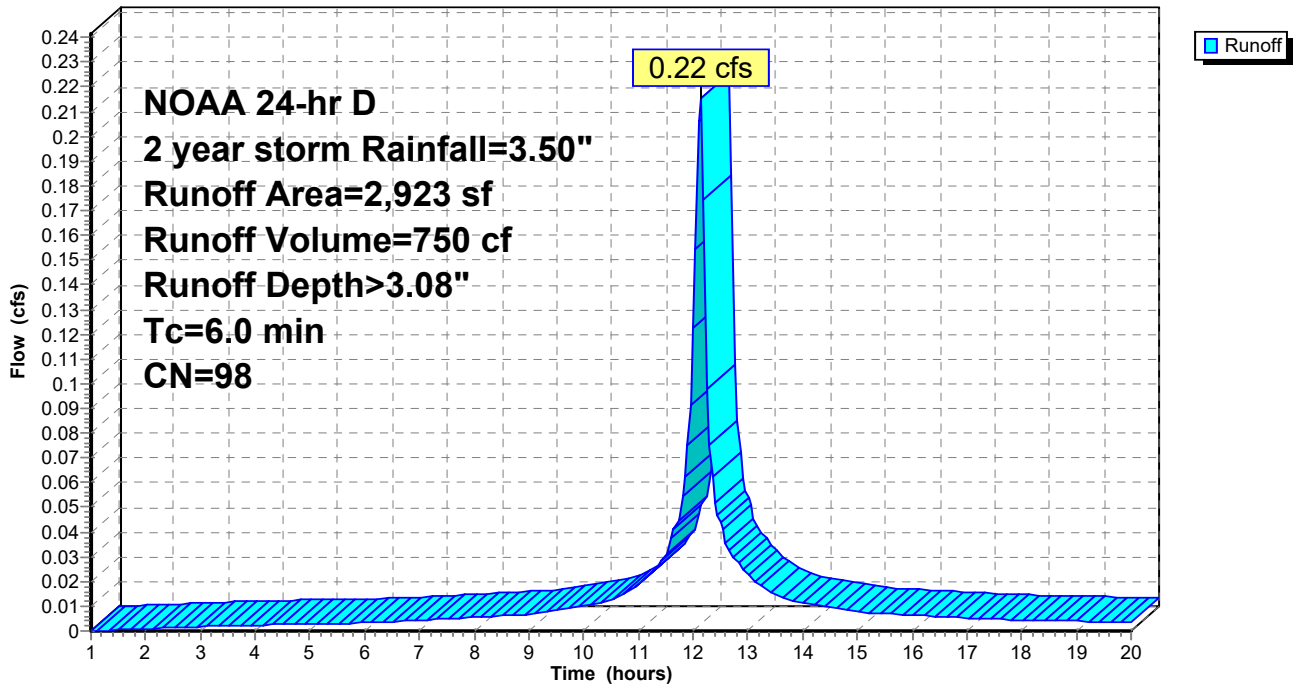
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
 NOAA 24-hr D 2 year storm Rainfall=3.50"

Area (sf)	CN	Description
* 2,923	98	
2,923		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment 1S: ROOF DETAINED**

Hydrograph



**1220114-blue roof**

NOAA 24-hr D 2 year storm Rainfall=3.50"

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**Summary for Subcatchment 2S: EXISTING**

Runoff = 0.21 cfs @ 12.13 hrs, Volume= 671 cf, Depth> 2.76"

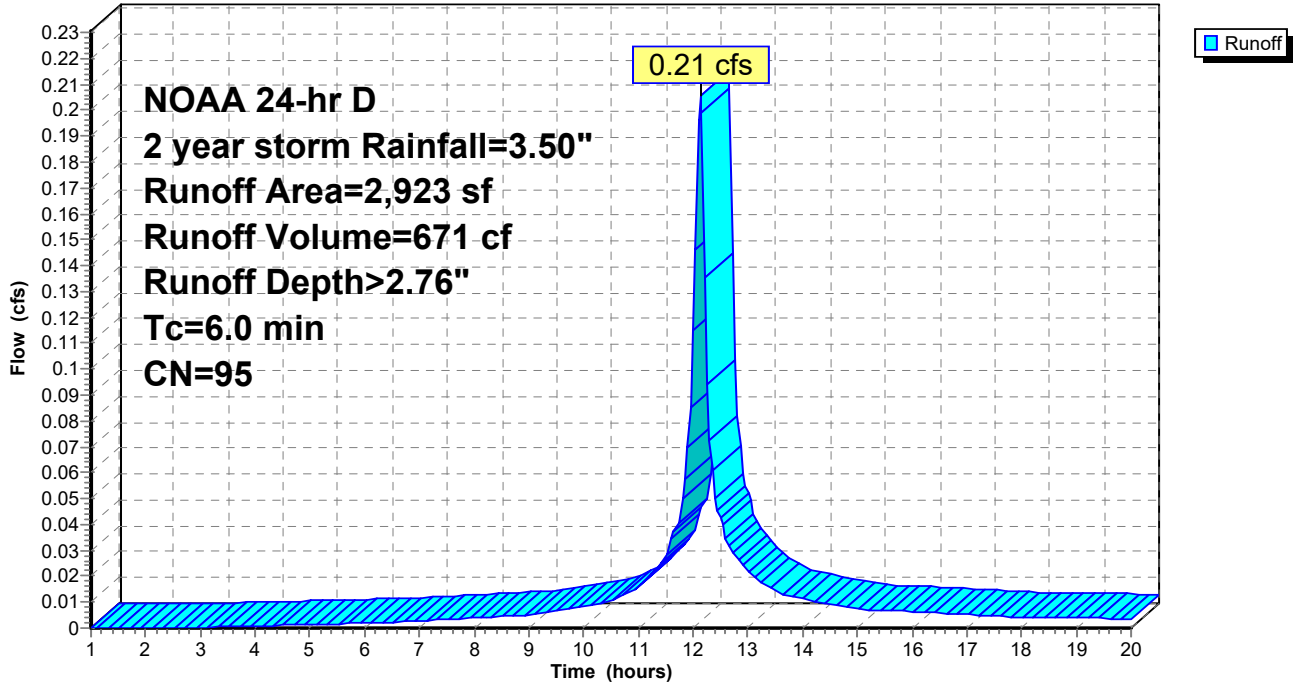
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
 NOAA 24-hr D 2 year storm Rainfall=3.50"

	Area (sf)	CN	Description
*	1,881	98	existing roof
*	655	98	impervious
*	387	74	Lawn
<hr/>			
	2,923	95	Weighted Average
	387		13.24% Pervious Area
	2,536		86.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment 2S: EXISTING**

Hydrograph



**Summary for Subcatchment 5S: UNDETAINED ROOF**

Runoff = 0.05 cfs @ 12.13 hrs, Volume= 163 cf, Depth> 3.08"

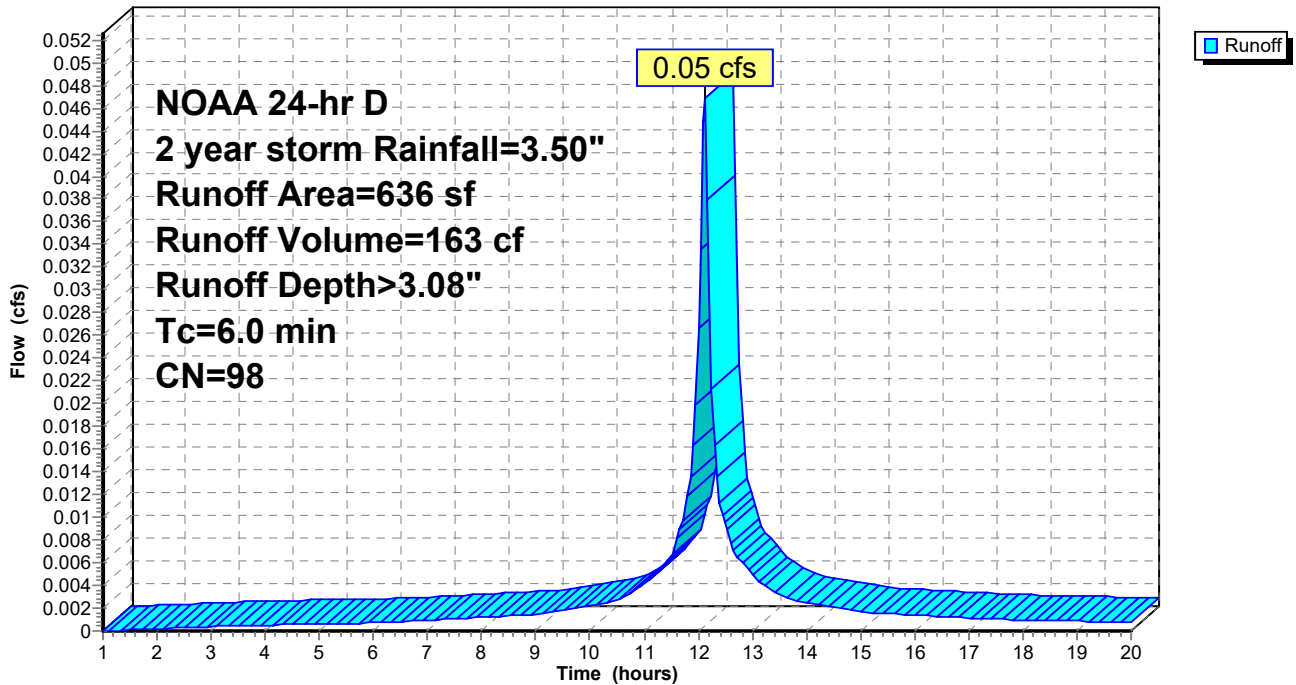
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
 NOAA 24-hr D 2 year storm Rainfall=3.50"

Area (sf)	CN	Description
* 636	98	UNDETAINED ROOF
636		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment 5S: UNDETAINED ROOF**

Hydrograph



**Summary for Pond 3P: BLUE ROOF**

Inflow Area = 2,923 sf, 100.00% Impervious, Inflow Depth > 3.08" for 2 year storm event  
 Inflow = 0.22 cfs @ 12.13 hrs, Volume= 750 cf  
 Outflow = 0.13 cfs @ 12.22 hrs, Volume= 739 cf, Atten= 40%, Lag= 5.5 min  
 Primary = 0.13 cfs @ 12.22 hrs, Volume= 739 cf

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 0.07' @ 12.22 hrs Storage= 143 cf

Plug-Flow detention time= 32.7 min calculated for 737 cf (98% of inflow)  
 Center-of-Mass det. time= 25.7 min ( 748.1 - 722.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,016 cf	<b>BLUE ROOF</b> Listed below

Elevation (feet)	Cum.Store (cubic-feet)
0.00	0
0.54	1,088
1.00	2,016

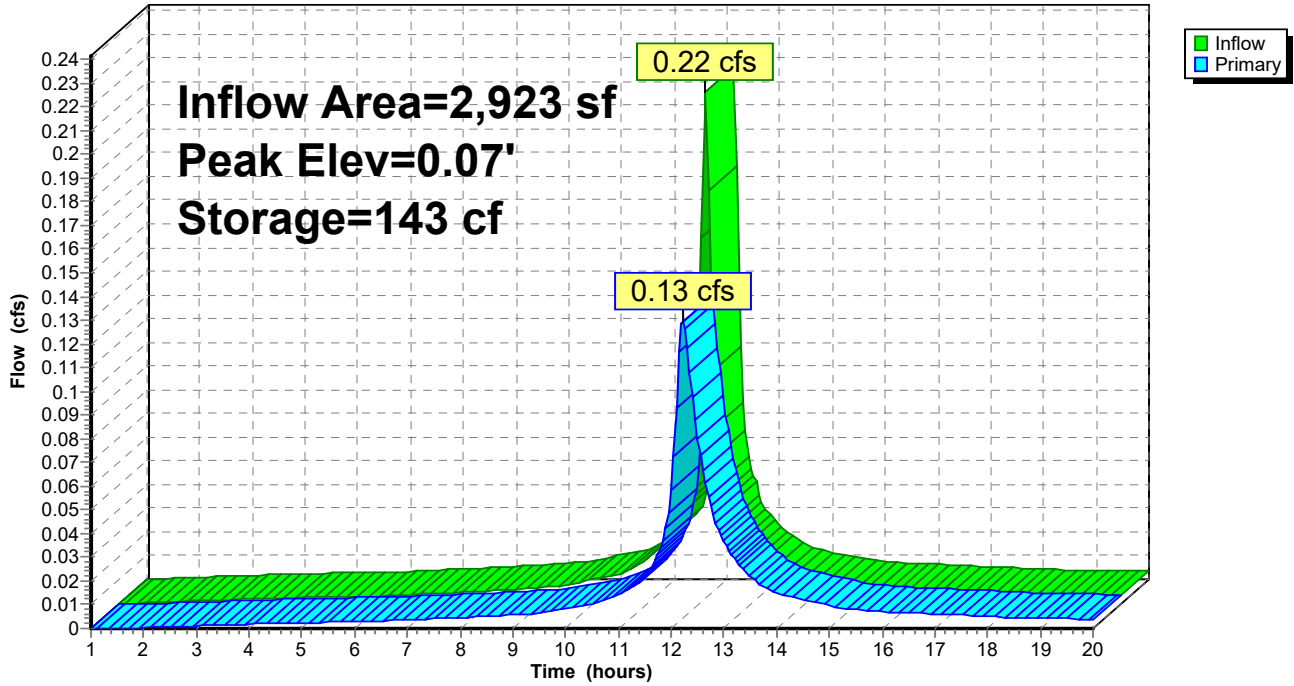
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>4.0" Horiz. Orifice/Grate X 2.00</b> C= 0.600 Limited to weir flow at low heads
#2	Primary	0.54'	<b>6.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=0.13 cfs @ 12.22 hrs HW=0.07' (Free Discharge)

- 1=Orifice/Grate (Weir Controls 0.13 cfs @ 0.87 fps)
- 2=Orifice/Grate ( Controls 0.00 cfs)

### Pond 3P: BLUE ROOF

Hydrograph



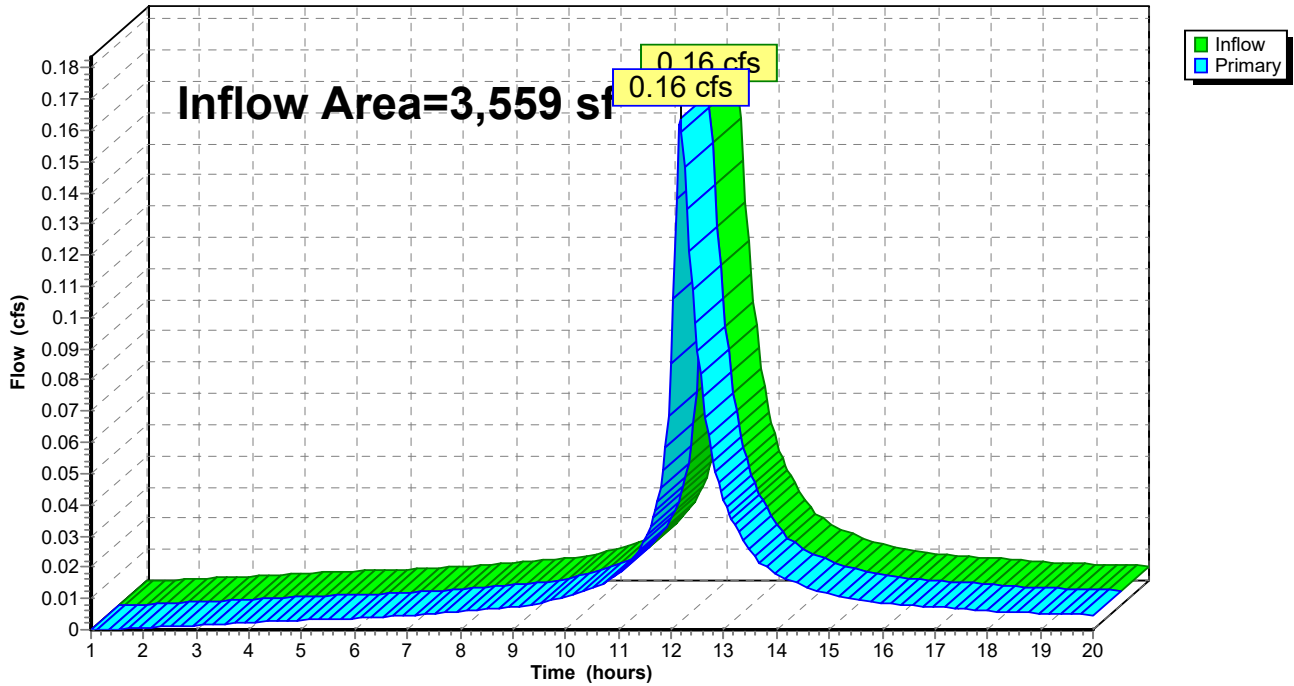
### Summary for Link 4L: PROP

Inflow Area = 3,559 sf, 100.00% Impervious, Inflow Depth > 3.04" for 2 year storm event  
 Inflow = 0.16 cfs @ 12.17 hrs, Volume= 902 cf  
 Primary = 0.16 cfs @ 12.17 hrs, Volume= 902 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

### Link 4L: PROP

Hydrograph



**1220114-blue roof**

NOAA 24-hr D 10 year storm Rainfall=5.20"

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Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: ROOF DETAINED** Runoff Area=2,923 sf 100.00% Impervious Runoff Depth>4.68"  
Tc=6.0 min CN=98 Runoff=0.32 cfs 1,141 cf

**Subcatchment 2S: EXISTING** Runoff Area=2,923 sf 86.76% Impervious Runoff Depth>4.34"  
Tc=6.0 min CN=95 Runoff=0.31 cfs 1,058 cf

**Subcatchment 5S: UNDETAINED ROOF** Runoff Area=636 sf 100.00% Impervious Runoff Depth>4.68"  
Tc=6.0 min CN=98 Runoff=0.07 cfs 248 cf

**Pond 3P: BLUE ROOF** Peak Elev=0.10' Storage=195 cf Inflow=0.32 cfs 1,141 cf  
Outflow=0.21 cfs 1,124 cf

**Link 4L: PROP** Inflow=0.26 cfs 1,372 cf  
Primary=0.26 cfs 1,372 cf

**Total Runoff Area = 6,482 sf Runoff Volume = 2,447 cf Average Runoff Depth = 4.53"**  
**5.97% Pervious = 387 sf 94.03% Impervious = 6,095 sf**

### Summary for Subcatchment 1S: ROOF DETAINED

Runoff = 0.32 cfs @ 12.13 hrs, Volume= 1,141 cf, Depth> 4.68"

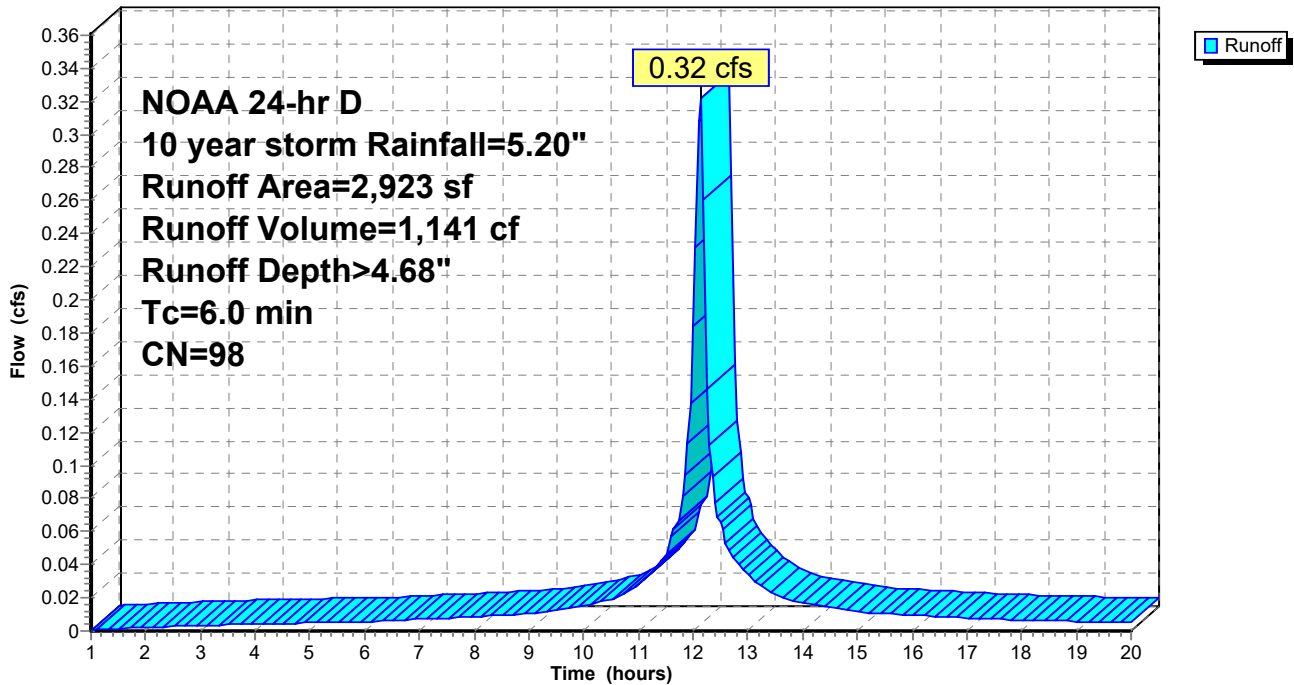
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
NOAA 24-hr D 10 year storm Rainfall=5.20"

Area (sf)	CN	Description
* 2,923	98	
2,923		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment 1S: ROOF DETAINED

Hydrograph





**Summary for Subcatchment 2S: EXISTING**

Runoff = 0.31 cfs @ 12.13 hrs, Volume= 1,058 cf, Depth> 4.34"

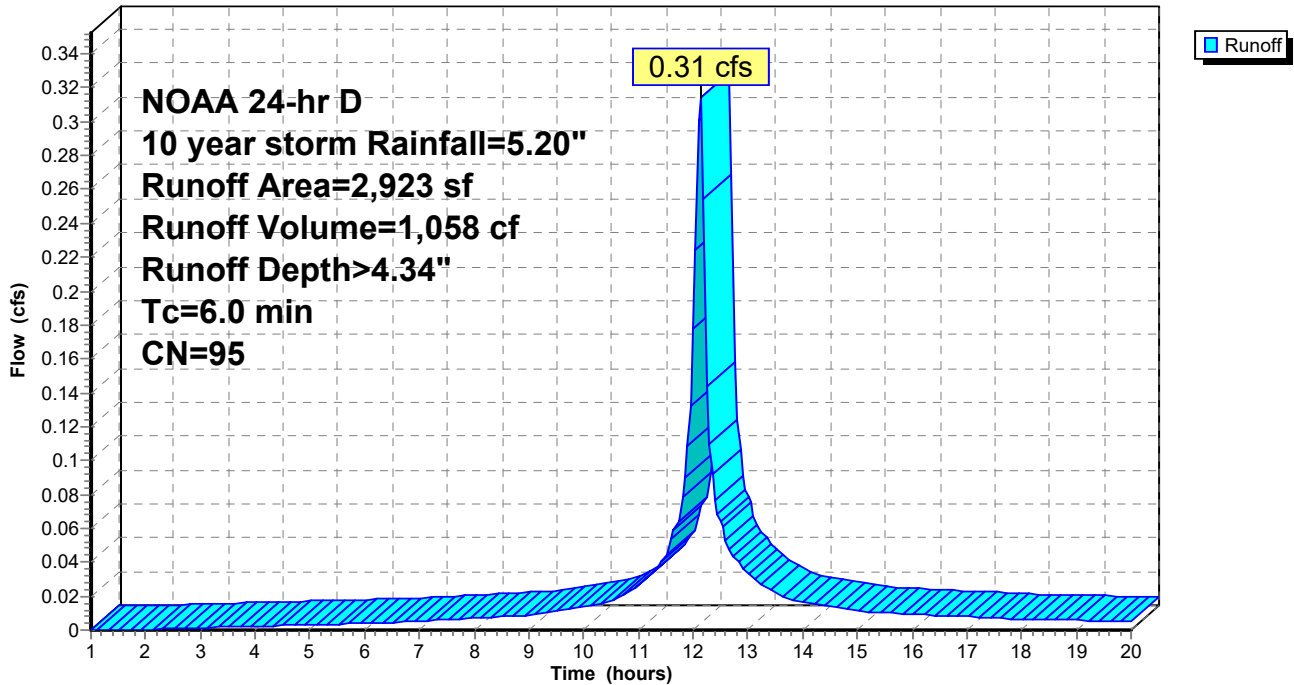
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
 NOAA 24-hr D 10 year storm Rainfall=5.20"

	Area (sf)	CN	Description
*	1,881	98	existing roof
*	655	98	impervious
*	387	74	Lawn
<hr/>			
	2,923	95	Weighted Average
	387		13.24% Pervious Area
	2,536		86.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment 2S: EXISTING**

Hydrograph



**Summary for Subcatchment 5S: UNDETAINED ROOF**

Runoff = 0.07 cfs @ 12.13 hrs, Volume= 248 cf, Depth> 4.68"

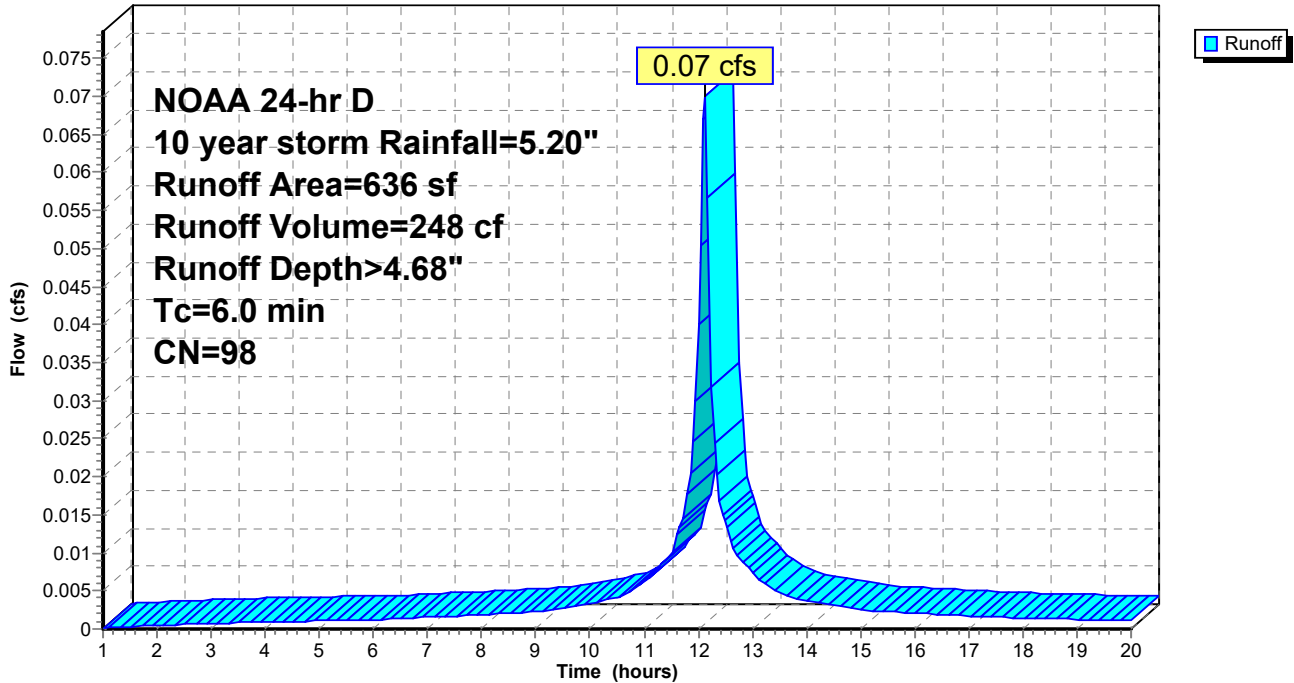
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
 NOAA 24-hr D 10 year storm Rainfall=5.20"

Area (sf)	CN	Description
* 636	98	UNDETAINED ROOF
636		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment 5S: UNDETAINED ROOF**

Hydrograph



**Summary for Pond 3P: BLUE ROOF**

Inflow Area = 2,923 sf, 100.00% Impervious, Inflow Depth > 4.68" for 10 year storm event  
 Inflow = 0.32 cfs @ 12.13 hrs, Volume= 1,141 cf  
 Outflow = 0.21 cfs @ 12.21 hrs, Volume= 1,124 cf, Atten= 36%, Lag= 5.1 min  
 Primary = 0.21 cfs @ 12.21 hrs, Volume= 1,124 cf

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 0.10' @ 12.21 hrs Storage= 195 cf

Plug-Flow detention time= 29.6 min calculated for 1,121 cf (98% of inflow)  
 Center-of-Mass det. time= 22.7 min ( 737.7 - 715.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,016 cf	<b>BLUE ROOF</b> Listed below

Elevation (feet)	Cum.Store (cubic-feet)
0.00	0
0.54	1,088
1.00	2,016

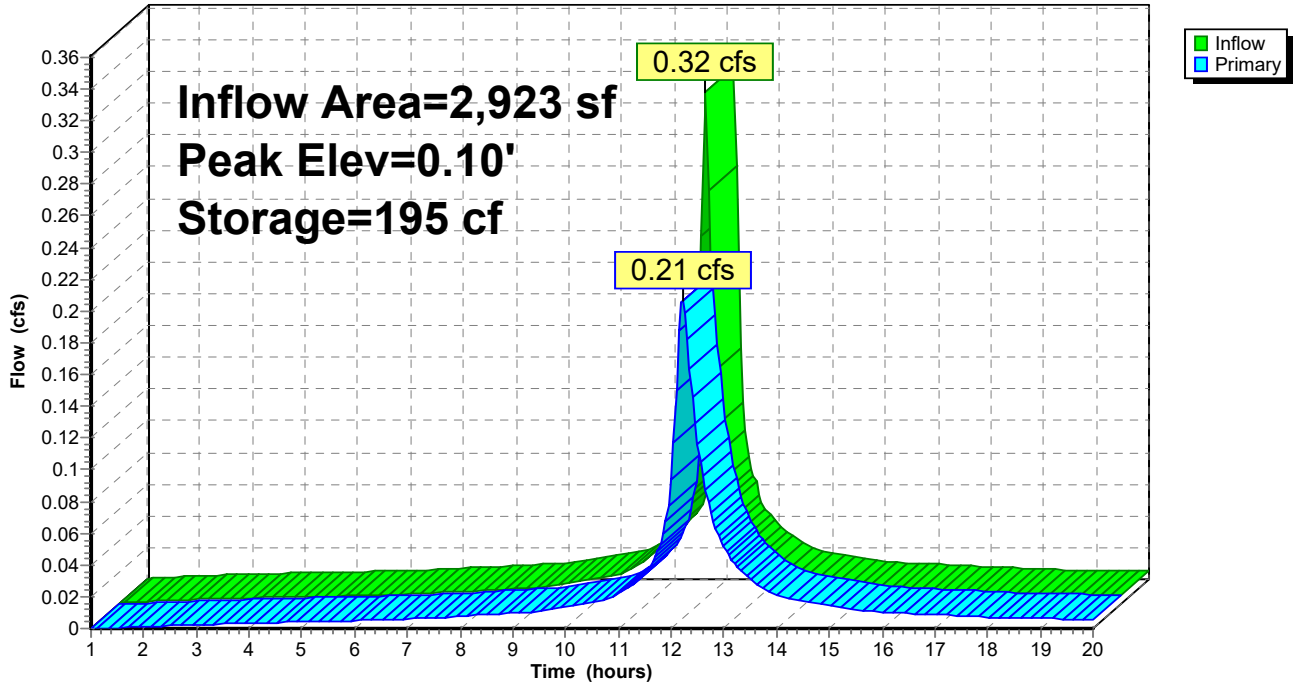
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>4.0" Horiz. Orifice/Grate X 2.00</b> C= 0.600 Limited to weir flow at low heads
#2	Primary	0.54'	<b>6.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=0.20 cfs @ 12.21 hrs HW=0.10' (Free Discharge)

- 1=Orifice/Grate (Weir Controls 0.20 cfs @ 1.01 fps)
- 2=Orifice/Grate ( Controls 0.00 cfs)

### Pond 3P: BLUE ROOF

Hydrograph



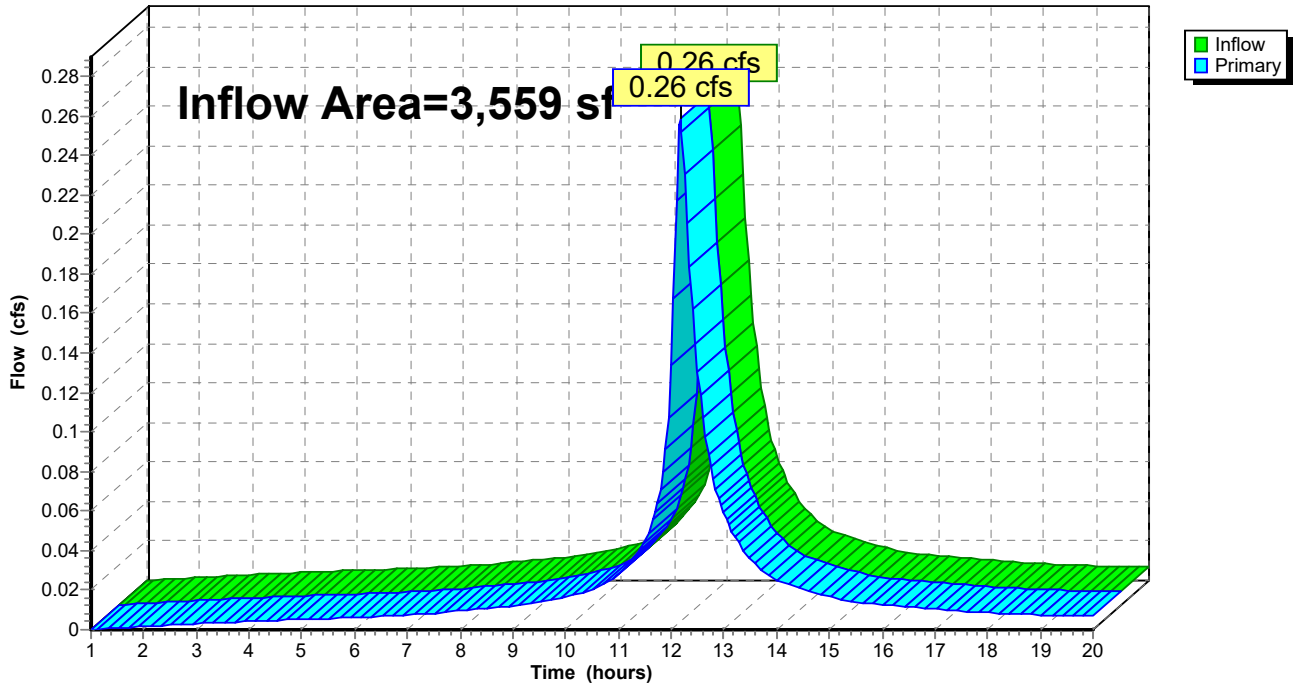
### Summary for Link 4L: PROP

Inflow Area = 3,559 sf, 100.00% Impervious, Inflow Depth > 4.63" for 10 year storm event  
Inflow = 0.26 cfs @ 12.17 hrs, Volume= 1,372 cf  
Primary = 0.26 cfs @ 12.17 hrs, Volume= 1,372 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

### Link 4L: PROP

Hydrograph



**1220114-blue roof**

NOAA 24-hr D 100 year storm Rainfall=8.30"

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Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: ROOF DETAINED** Runoff Area=2,923 sf 100.00% Impervious Runoff Depth>7.61"  
Tc=6.0 min CN=98 Runoff=0.52 cfs 1,853 cf

**Subcatchment 2S: EXISTING** Runoff Area=2,923 sf 86.76% Impervious Runoff Depth>7.26"  
Tc=6.0 min CN=95 Runoff=0.51 cfs 1,768 cf

**Subcatchment 5S: UNDETAINED ROOF** Runoff Area=636 sf 100.00% Impervious Runoff Depth>7.61"  
Tc=6.0 min CN=98 Runoff=0.11 cfs 403 cf

**Pond 3P: BLUE ROOF** Peak Elev=0.14' Storage=286 cf Inflow=0.52 cfs 1,853 cf  
Outflow=0.32 cfs 1,830 cf

**Link 4L: PROP** Inflow=0.41 cfs 2,233 cf  
Primary=0.41 cfs 2,233 cf

**Total Runoff Area = 6,482 sf Runoff Volume = 4,025 cf Average Runoff Depth = 7.45"**  
**5.97% Pervious = 387 sf 94.03% Impervious = 6,095 sf**

**Summary for Subcatchment 1S: ROOF DETAINED**

Runoff = 0.52 cfs @ 12.13 hrs, Volume= 1,853 cf, Depth> 7.61"

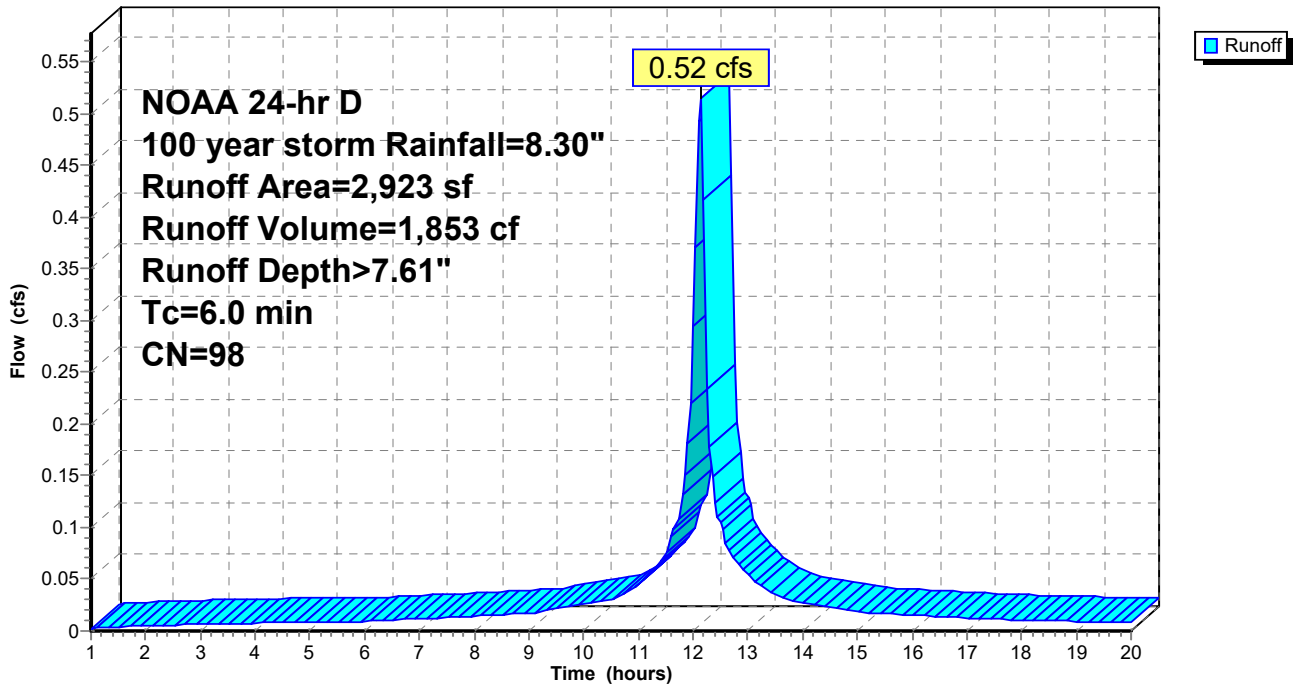
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
 NOAA 24-hr D 100 year storm Rainfall=8.30"

Area (sf)	CN	Description
* 2,923	98	
2,923		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment 1S: ROOF DETAINED**

Hydrograph



**Summary for Subcatchment 2S: EXISTING**

Runoff = 0.51 cfs @ 12.13 hrs, Volume= 1,768 cf, Depth> 7.26"

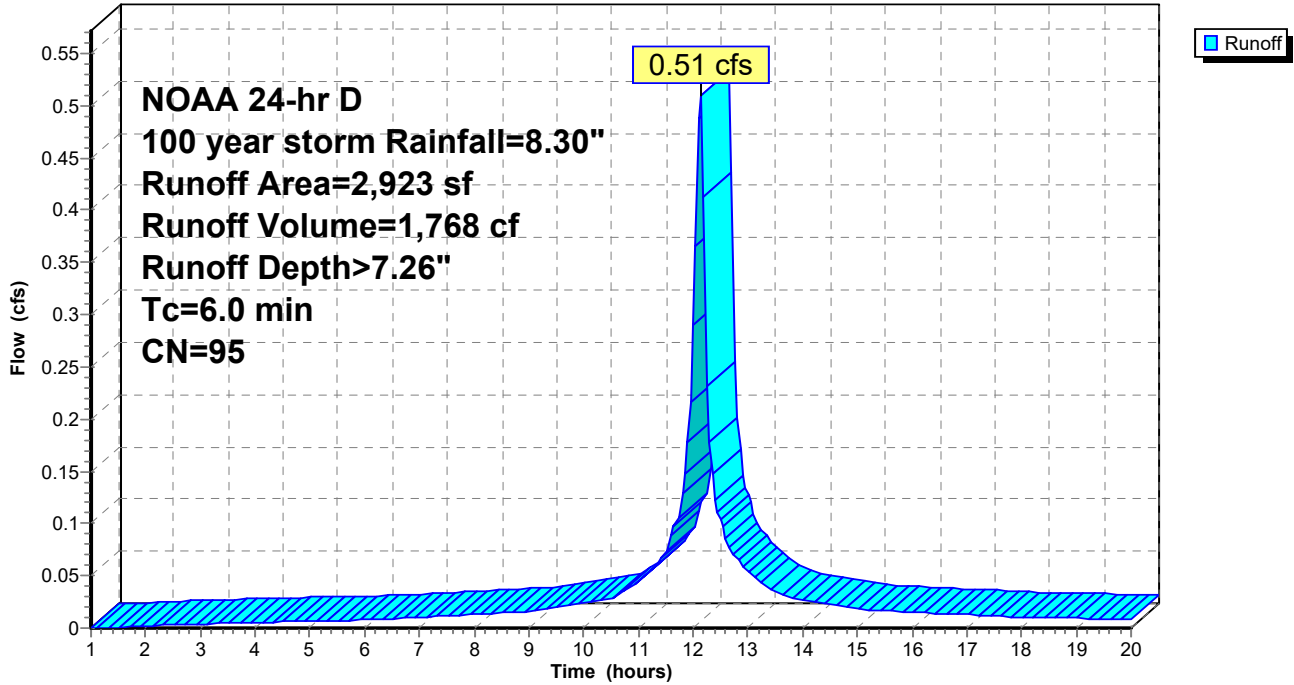
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
 NOAA 24-hr D 100 year storm Rainfall=8.30"

	Area (sf)	CN	Description
*	1,881	98	existing roof
*	655	98	impervious
*	387	74	Lawn
<hr/>			
	2,923	95	Weighted Average
	387		13.24% Pervious Area
	2,536		86.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment 2S: EXISTING**

Hydrograph





**Summary for Subcatchment 5S: UNDETAINED ROOF**

Runoff = 0.11 cfs @ 12.13 hrs, Volume= 403 cf, Depth> 7.61"

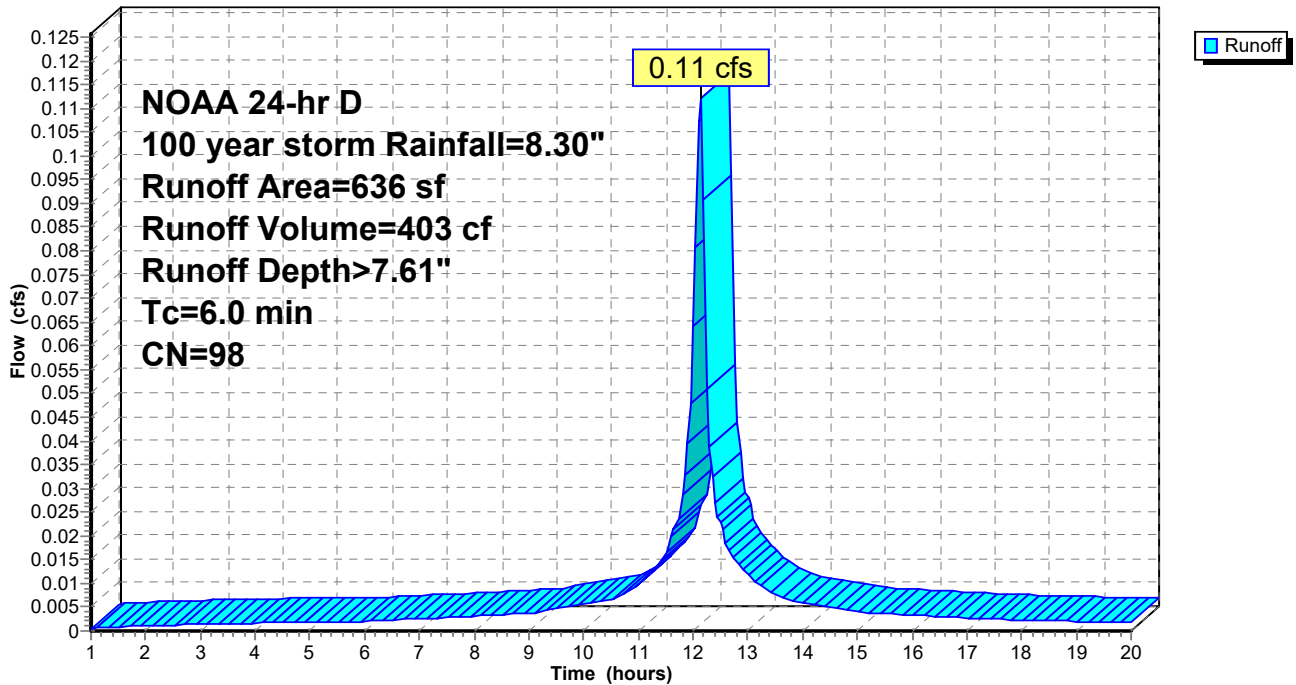
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
 NOAA 24-hr D 100 year storm Rainfall=8.30"

Area (sf)	CN	Description
* 636	98	UNDETAINED ROOF
636		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment 5S: UNDETAINED ROOF**

Hydrograph



**Summary for Pond 3P: BLUE ROOF**

Inflow Area = 2,923 sf, 100.00% Impervious, Inflow Depth > 7.61" for 100 year storm event  
 Inflow = 0.52 cfs @ 12.13 hrs, Volume= 1,853 cf  
 Outflow = 0.32 cfs @ 12.21 hrs, Volume= 1,830 cf, Atten= 39%, Lag= 5.3 min  
 Primary = 0.32 cfs @ 12.21 hrs, Volume= 1,830 cf

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 0.14' @ 12.21 hrs Storage= 286 cf

Plug-Flow detention time= 26.1 min calculated for 1,825 cf (98% of inflow)  
 Center-of-Mass det. time= 19.9 min ( 728.6 - 708.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,016 cf	<b>BLUE ROOF</b> Listed below

Elevation (feet)	Cum.Store (cubic-feet)
0.00	0
0.54	1,088
1.00	2,016

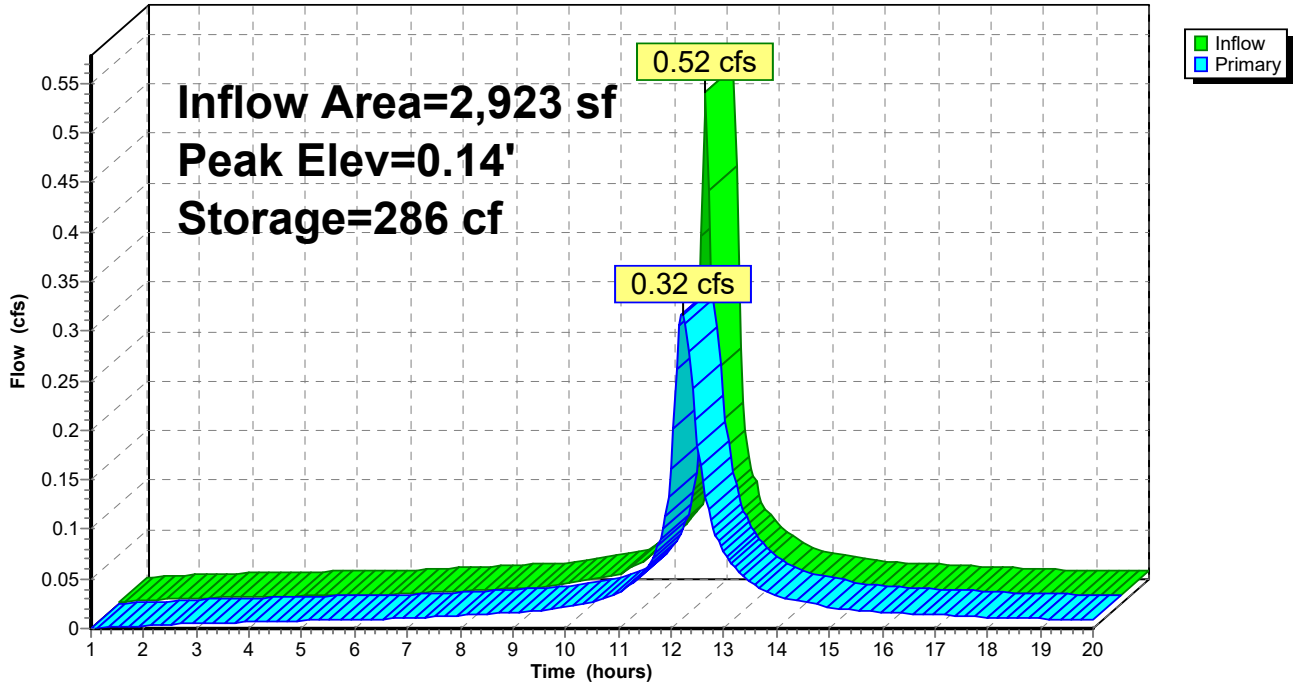
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	<b>4.0" Horiz. Orifice/Grate X 2.00</b> C= 0.600 Limited to weir flow at low heads
#2	Primary	0.54'	<b>6.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=0.32 cfs @ 12.21 hrs HW=0.14' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.32 cfs @ 1.81 fps)
- 2=Orifice/Grate ( Controls 0.00 cfs)

### Pond 3P: BLUE ROOF

Hydrograph



### Summary for Link 4L: PROP

Inflow Area = 3,559 sf, 100.00% Impervious, Inflow Depth > 7.53" for 100 year storm event  
 Inflow = 0.41 cfs @ 12.16 hrs, Volume= 2,233 cf  
 Primary = 0.41 cfs @ 12.16 hrs, Volume= 2,233 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

### Link 4L: PROP

Hydrograph

