

March 04, 2024

Project # SEI-2301

Stormwater Management Narrative
103 & 115 Creek Road
Block 70; Lots 11-13
Borough of Keansburg, Monmouth County, New Jersey

Introduction

The project proposes the construction of multiple 4-story townhomes consisting of 1 (one) one-bedroom unit, 1 (one) two-bedroom unit, and 2 (three) three-bedrom units with an area of 4,085 SF. The property previously had a single-family residence that was demolished, so the current site is vacant. The development is bound by Creek Road to the East and the Waackaack Creek to the West. The project is situated within the R-7 Zone.

Stormwater Management Summary

The NJDEP rules regarding stormwater management, N.J.A.C. 7:8-5.2(a), states that stormwater management measures for a major development shall be developed to meet the erosion control, groundwater recharge, stormwater runoff quantity, and stormwater runoff quality standards. N.J.A.C. 7:8-1.2 defines a major development as any development that results in:

1. The disturbance of one or more acres of land since February 2, 2004, or
2. The creation of one-quarter acre or more of “regulated impervious surface” since February 2, 2004, or
3. The creation of one-quarter acre or more of “regulated motor vehicle surface” since March 2, 2021, or
4. A combination of 2 and 3 above that results in a total area of one-quarter acre or more.

The project area contains 10,642 SF (0.24 acres), 692 SF (0.02 acres) of which was existing impervious area. The proposed improvements consist of a total of 5,142 SF (0.12 acres) of impervious, which is a net increase of impervious area by 4,450 SF (0.10 acres). The project area contains an existing 692 SF (0.02 acres) of vehicular surface, while the proposed improvements consist of a total of 982 SF (0.02 acres) of vehicular surface, which results in a net increase of vehicular surface by 290 SF (0.01 acres).

According to the Borough of Keansburg ordinance, §27-3, the Stormwater Management rules only apply to a Major Development which is defined as above. The subject project contains 0.24 acres, of which 0.15 acres are disturbed. Since the proposed improvements create less than one acre of new disturbance, and less than one-quarter acre of impervious surface, the Borough of Keansburg stormwater management rules for a Major Development regarding reduction of stormwater quantity and stormwater quality do not apply.

The runoff from the existing project area is conveyed to the existing stormwater collection system within the Keansburg right-of-way. The proposed improvements will maintain the same drainage patterns that currently exist on site, discharging ultimately to the stormwater collection system within the right-of-way. The pre and post development runoff was calculated for the 2, 10, 25 and 100-year storm events. The table below provides a summary of the pre and post-development peak runoff rates for the project area:

Storm Event (Years)	Pre-Dev Runoff (cfs)	Post-Dev Runoff (cfs)
2	0.35	0.50
10	0.63	0.80
25	0.84	1.00
100	1.21	1.38

Offsite Stability

Pursuant to the Standards for Soil Erosion and Sediment Control in New Jersey, the site is required to maintain the stability and integrity of natural resources on downstream property. The site generally flat and even and the proposed grading maintains that condition. Proposed grading on site does not have well defined channel or vegetation that would concentrate flows to the storm system in Creek Road. All off-site flows will disperse evenly across pavement, sidewalk, and stone. With low run-off rates and no discharge over vegetation, the risk for soil erosion and unstable conditions are at a minimum. Additionally, stormwater discharged into the stormwater system within Creek Road is directly discharged into Waackaack Creek.

Conclusion

The proposed improvements will maintain the existing drainage patterns in the post-developed condition. Runoff rates are increased in the post-development, however, by an amount that would not have any negative impact to downstream drainage systems. The erosion control methods used will ensure the proposed project will not have a negative impact to the surrounding area or downstream drainage system. By creating less than one acre of new disturbance, the project does not meet the definition of Major Development as defined in the Borough of Keansburg stormwater management rules and therefore the standards for stormwater quantity reduction and stormwater quality do not apply.

MidAtlantic Engineering Partners



Joe Mele

03/04/24

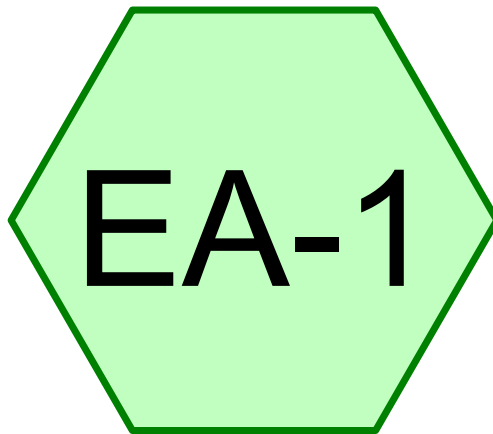
Joseph Mele, PE, PLS, PP

Date

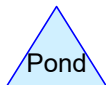
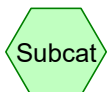
PROFESSIONAL ENGINEER & LAND SURVEYOR

NJ LICENSE NO. GB43239

Appendix A – Pre-Development Drainage Analysis



EA-1



Summary for Subcatchment EA-1: EA-1

Runoff = 0.35 cfs @ 12.12 hrs, Volume= 0.024 af, Depth= 1.91"

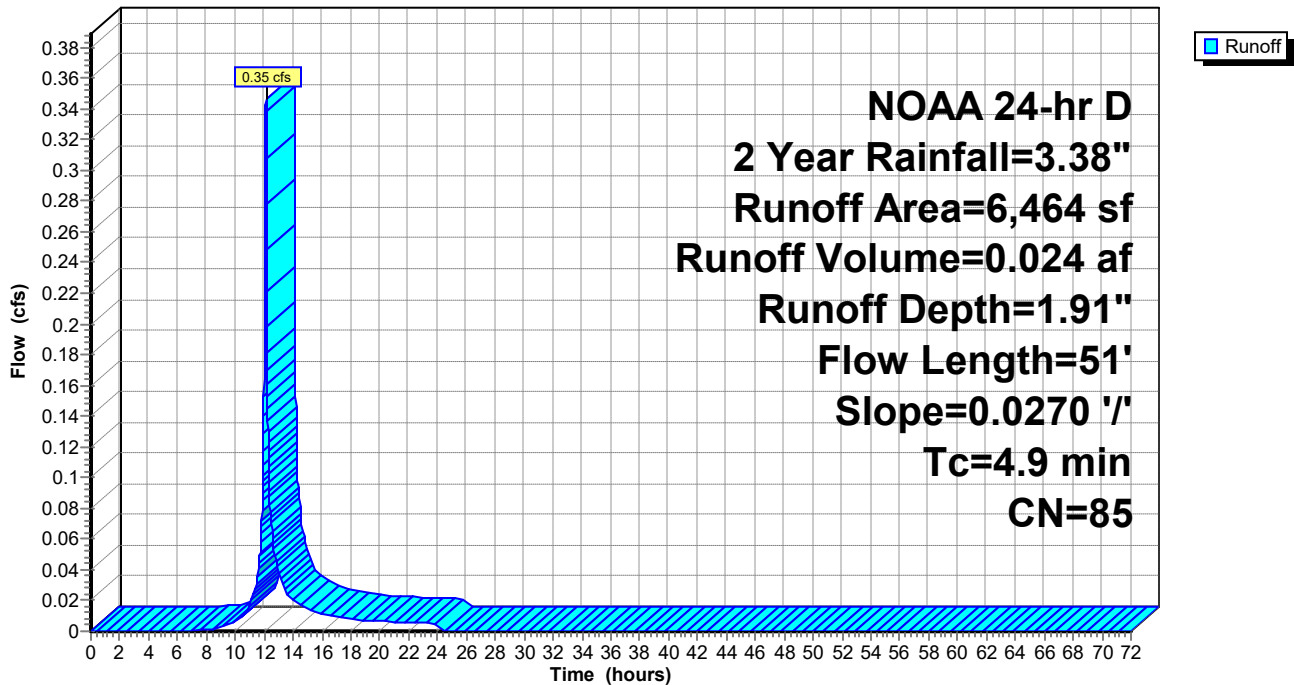
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2 Year Rainfall=3.38"

Area (sf)	CN	Description
692	98	Paved parking, HSG D
5,772	84	50-75% Grass cover, Fair, HSG D
6,464	85	Weighted Average
5,772		89.29% Pervious Area
692		10.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	51	0.0270	0.17		Sheet Flow, grass SF
					Grass: Short n= 0.150 P2= 3.38"

Subcatchment EA-1: EA-1

Hydrograph



Summary for Subcatchment EA-1: EA-1

Runoff = 0.63 cfs @ 12.12 hrs, Volume= 0.044 af, Depth= 3.58"

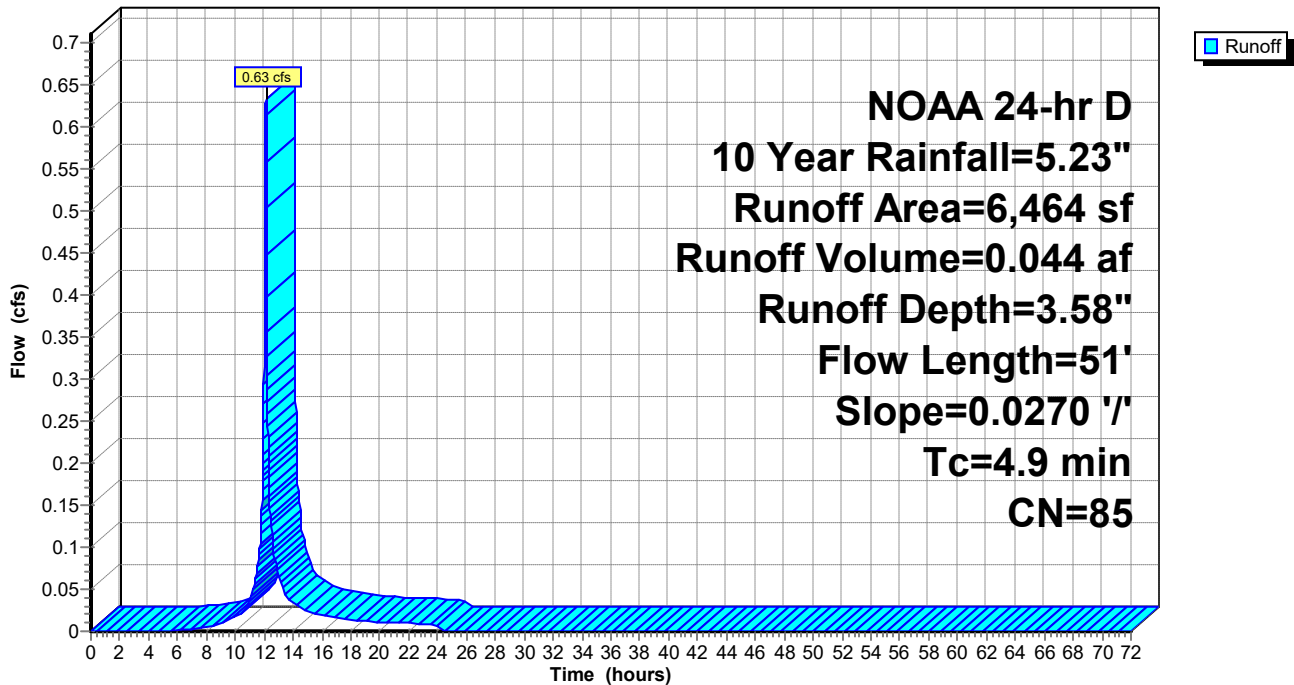
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10 Year Rainfall=5.23"

Area (sf)	CN	Description
692	98	Paved parking, HSG D
5,772	84	50-75% Grass cover, Fair, HSG D
6,464	85	Weighted Average
5,772		89.29% Pervious Area
692		10.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	51	0.0270	0.17		Sheet Flow, grass SF Grass: Short n= 0.150 P2= 3.38"

Subcatchment EA-1: EA-1

Hydrograph



Summary for Subcatchment EA-1: EA-1

Runoff = 0.84 cfs @ 12.12 hrs, Volume= 0.059 af, Depth= 4.80"

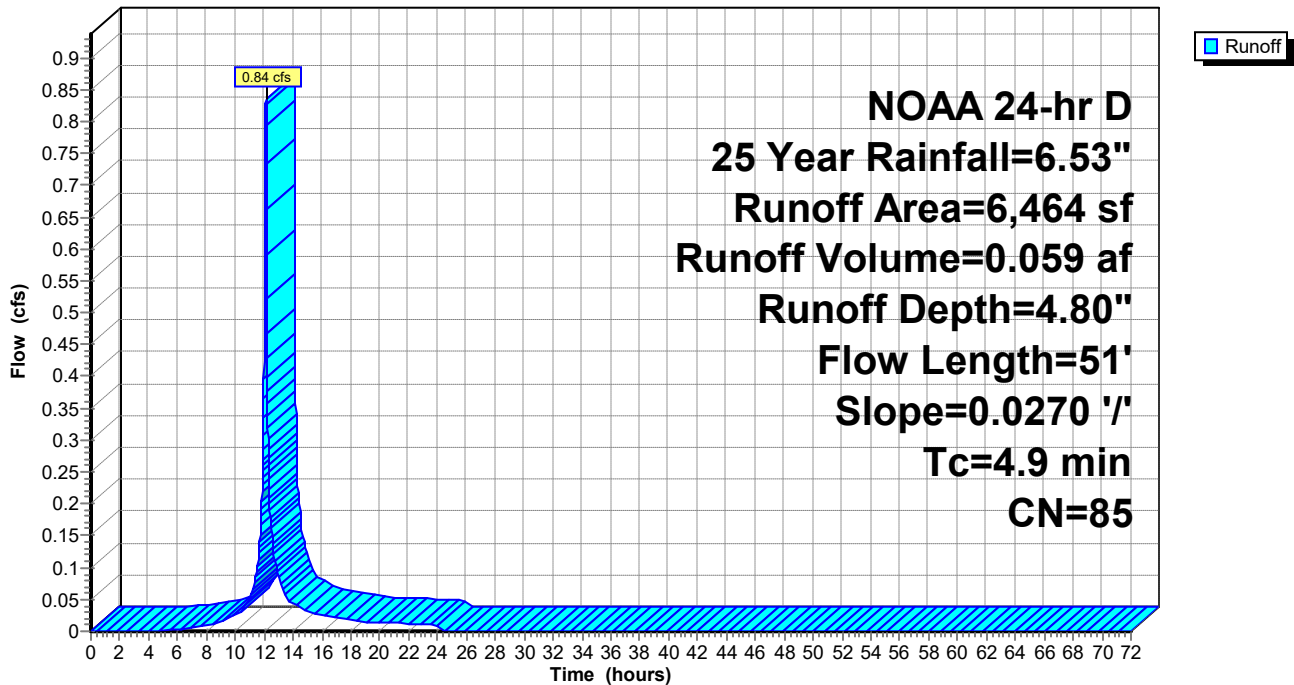
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25 Year Rainfall=6.53"

Area (sf)	CN	Description
692	98	Paved parking, HSG D
5,772	84	50-75% Grass cover, Fair, HSG D
6,464	85	Weighted Average
5,772		89.29% Pervious Area
692		10.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	51	0.0270	0.17		Sheet Flow, grass SF
					Grass: Short n= 0.150 P2= 3.38"

Subcatchment EA-1: EA-1

Hydrograph



Summary for Subcatchment EA-1: EA-1

Runoff = 1.21 cfs @ 12.12 hrs, Volume= 0.088 af, Depth= 7.12"

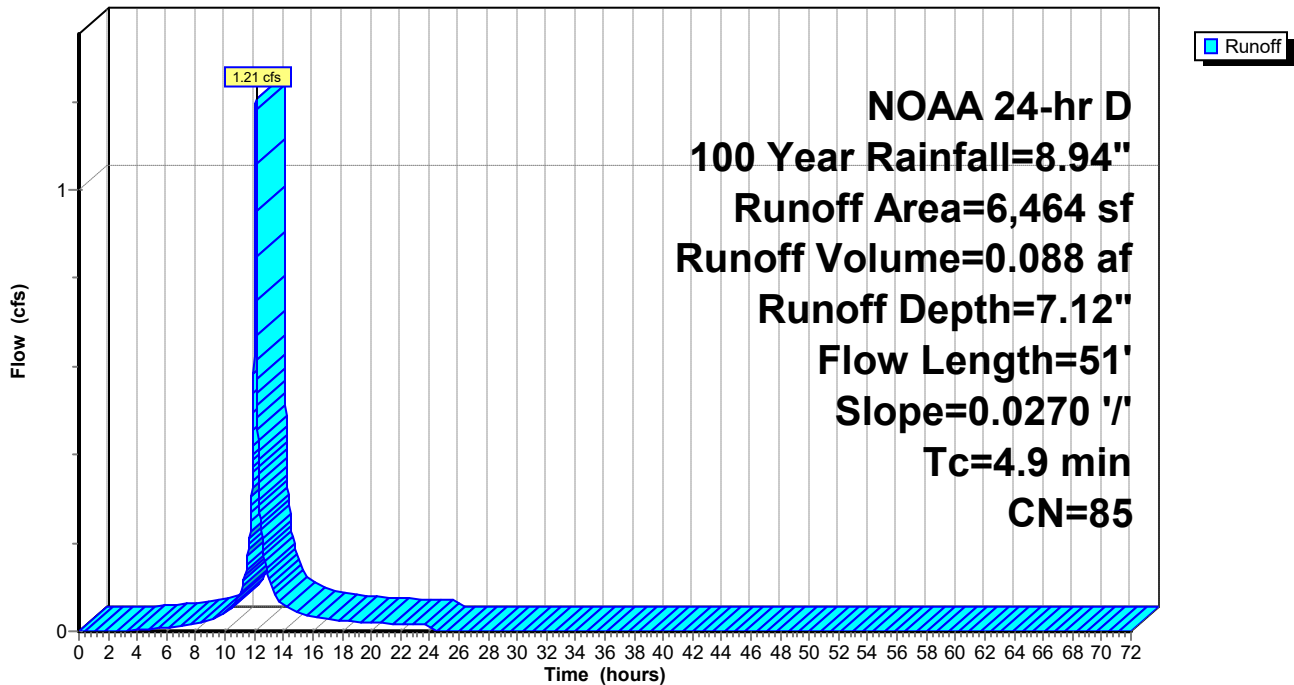
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100 Year Rainfall=8.94"

Area (sf)	CN	Description
692	98	Paved parking, HSG D
5,772	84	50-75% Grass cover, Fair, HSG D
6,464	85	Weighted Average
5,772		89.29% Pervious Area
692		10.71% Impervious Area

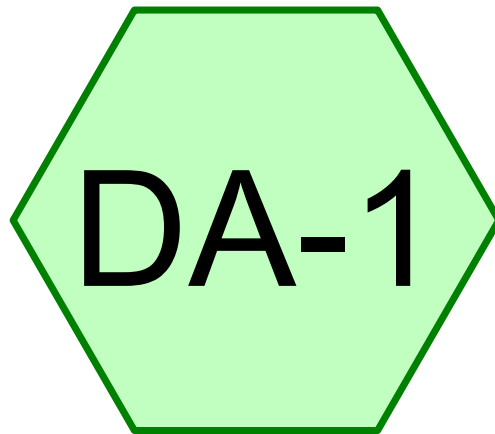
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	51	0.0270	0.17		Sheet Flow, grass SF Grass: Short n= 0.150 P2= 3.38"

Subcatchment EA-1: EA-1

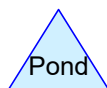
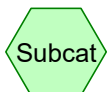
Hydrograph



Appendix B – Post-Development Drainage Analysis



DA-1



Summary for Subcatchment DA-1: DA-1

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 2.82"

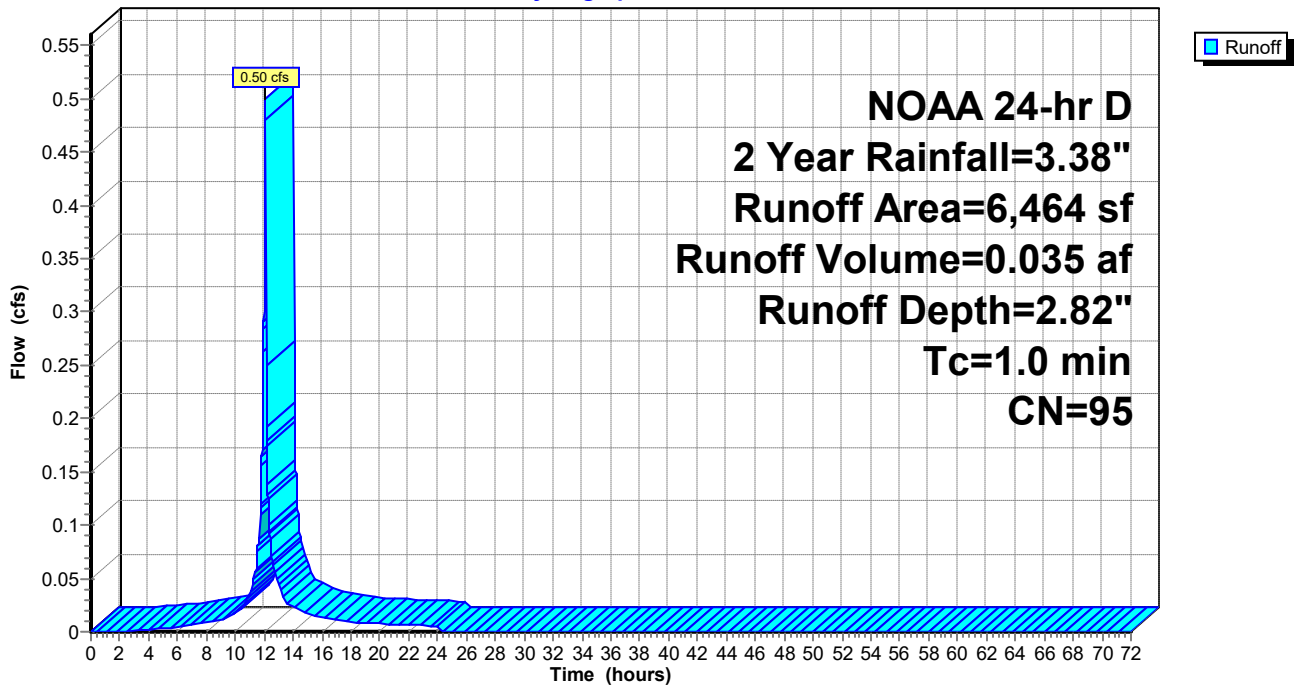
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2 Year Rainfall=3.38"

Area (sf)	CN	Description
5,142	98	Paved parking, HSG D
1,322	84	50-75% Grass cover, Fair, HSG D
6,464	95	Weighted Average
1,322		20.45% Pervious Area
5,142		79.55% Impervious Area

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

Subcatchment DA-1: DA-1

Hydrograph



Summary for Subcatchment DA-1: DA-1

Runoff = 0.80 cfs @ 12.09 hrs, Volume= 0.057 af, Depth= 4.65"

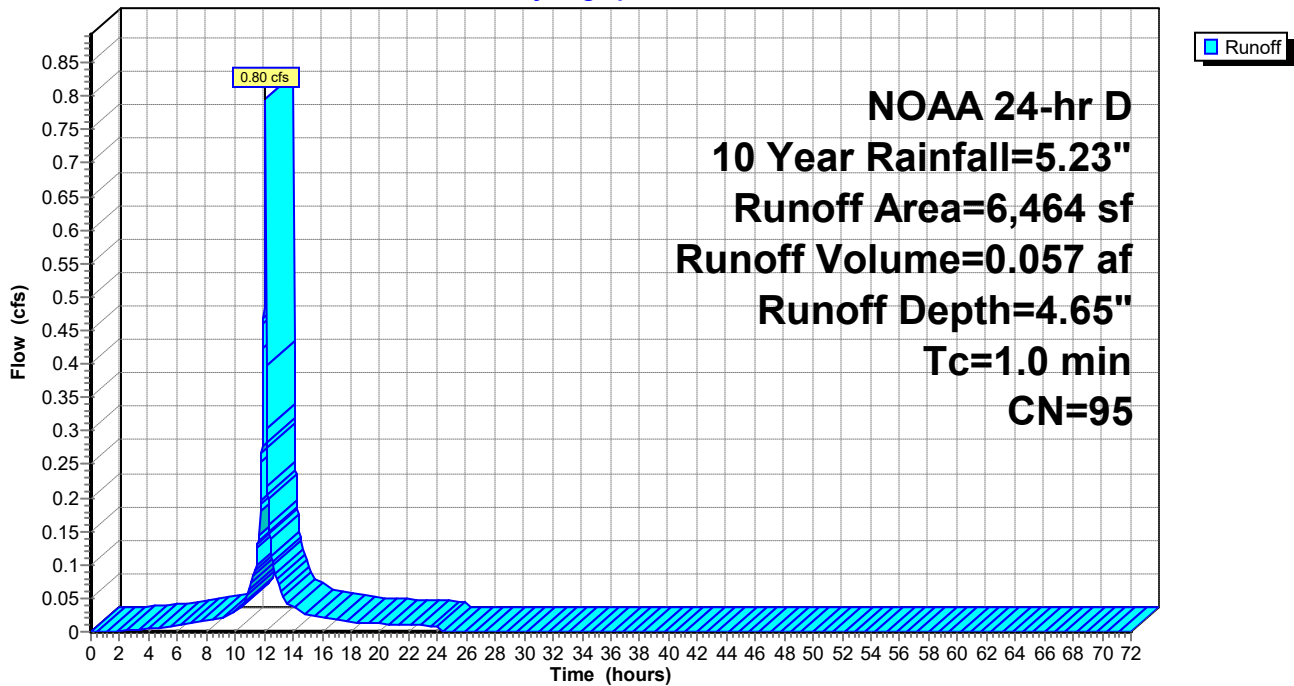
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10 Year Rainfall=5.23"

Area (sf)	CN	Description
5,142	98	Paved parking, HSG D
1,322	84	50-75% Grass cover, Fair, HSG D
6,464	95	Weighted Average
1,322		20.45% Pervious Area
5,142		79.55% Impervious Area

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

Subcatchment DA-1: DA-1

Hydrograph



Summary for Subcatchment DA-1: DA-1

Runoff = 1.00 cfs @ 12.09 hrs, Volume= 0.073 af, Depth= 5.94"

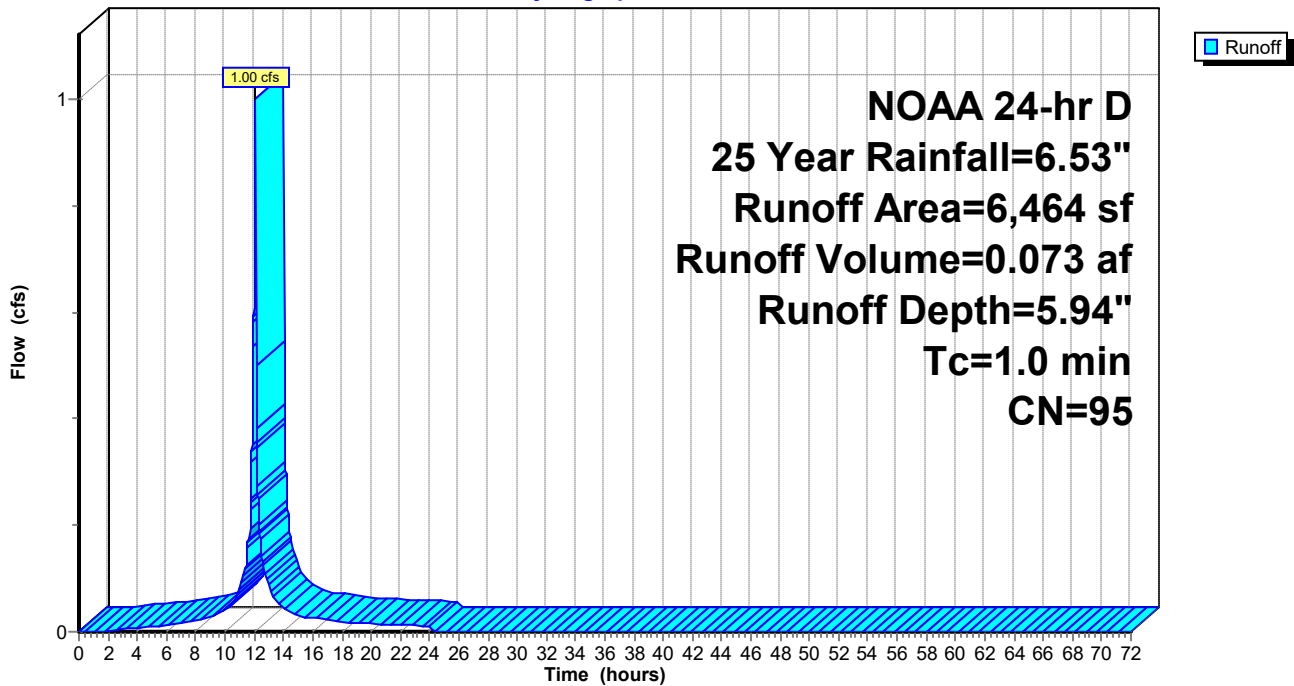
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25 Year Rainfall=6.53"

Area (sf)	CN	Description
5,142	98	Paved parking, HSG D
1,322	84	50-75% Grass cover, Fair, HSG D
6,464	95	Weighted Average
1,322		20.45% Pervious Area
5,142		79.55% Impervious Area

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

Subcatchment DA-1: DA-1

Hydrograph



Summary for Subcatchment DA-1: DA-1

Runoff = 1.38 cfs @ 12.09 hrs, Volume= 0.103 af, Depth= 8.34"

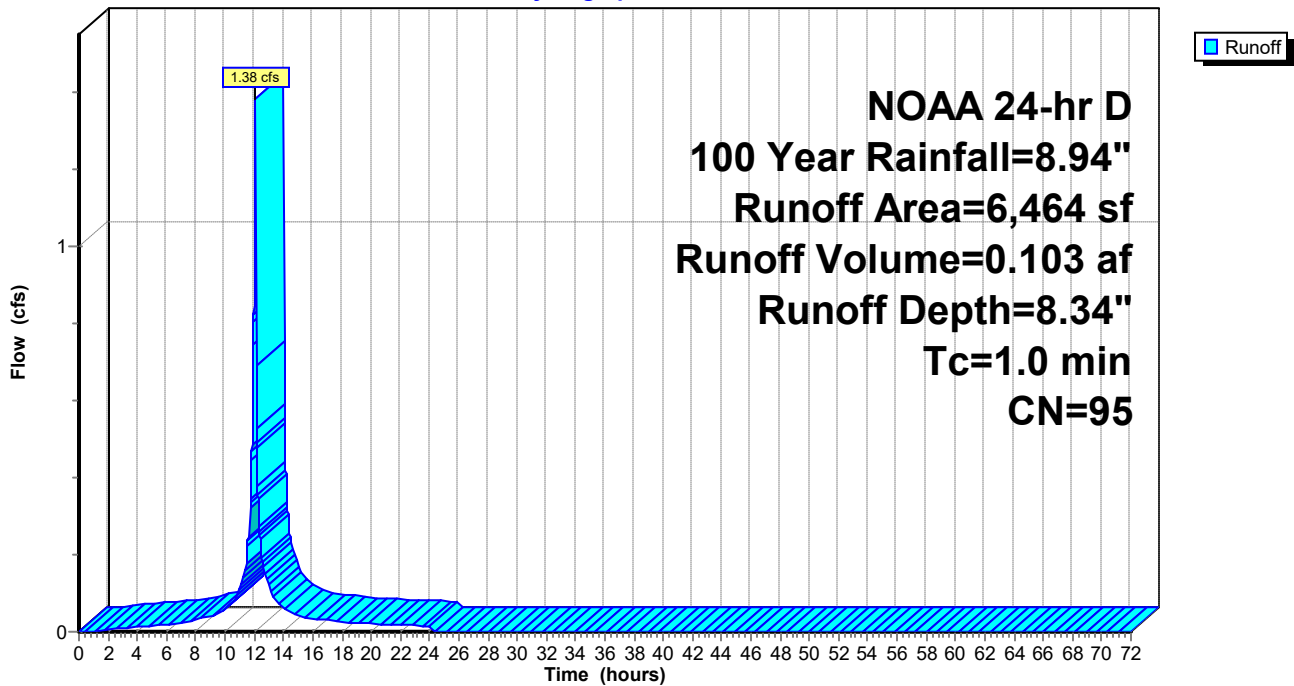
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100 Year Rainfall=8.94"

Area (sf)	CN	Description
5,142	98	Paved parking, HSG D
1,322	84	50-75% Grass cover, Fair, HSG D
6,464	95	Weighted Average
1,322		20.45% Pervious Area
5,142		79.55% Impervious Area

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

Subcatchment DA-1: DA-1

Hydrograph



Appendix C – Drainage Area Maps

